Amplify Desmos Math

GRADE 3

Ancillary Sampler

About Amplify

Amplify is dedicated to collaborating with educators to create learning experiences that are rigorous and riveting for all students. Amplify creates K–12 core and supplemental curriculum, assessment, and intervention programs for today's students.

A pioneer in K–12 education since 2000, Amplify is leading the way in next-generation curriculum and assessment. All of our programs provide teachers with powerful tools that help them understand and respond to the needs of every student.

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55 Washington Street, Suite 800,
Brooklyn, NY 11201
www.amplify.com

Overview information

Welcome to your Amplify Desmos Math ancillary sampler!

One of the core tenets of the program's design is that students can catch up while keeping up with grade-level math. To ensure all students access grade-level math, Amplify Desmos Math includes core instruction, a suite of assessments, and tailored practice resources that adjust to student learning.

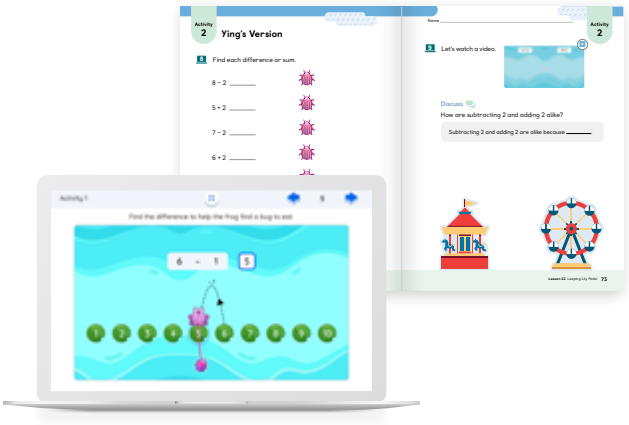
Multiple points of entry to lesson content and Responsive Feedback enable every student to be challenged, yet successful. Cohesive differentiation and intervention resources provide the necessary support to prevent students from falling behind or allow them to extend their thinking.

Amplify Desmos Math includes print blackline master ancillaries for Assessment, and Intervention. On the pages that follow, you'll find examples of Amplify Desmos Math Mini-Lessons, assessment resources from a sample unit, centers, and more.

Sample resources

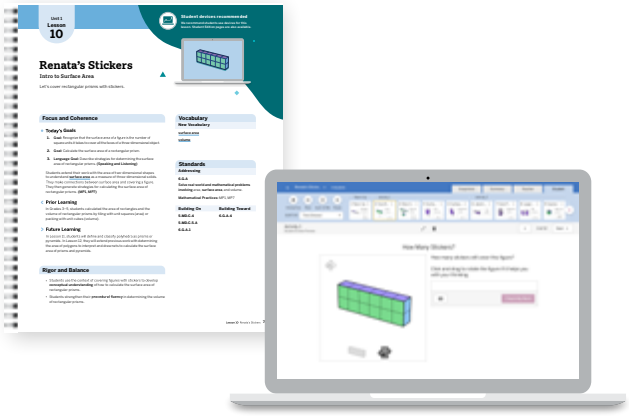
Program Resources

For Students



- Student Edition (two volumes)
- Digital access to lesson resources and practice
- Interactive student activity screens
- Responsive Feedback
- Collaboration tools
- Personalized practice

For Teachers



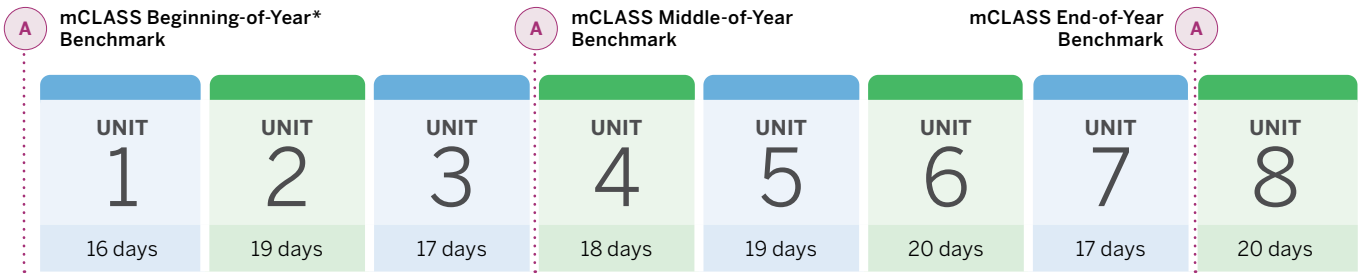
- Teacher Edition (two volumes)
- Digital access to planning and instruction resources
- Presentation Screens
- Facilitation and progress-monitoring tools
- Assessment and reporting suite, including mCLASS® Assessments

Optional: Manipulative Kits

Assessment Resources, Center Resources, Intervention and Extension Resources

Program Architecture

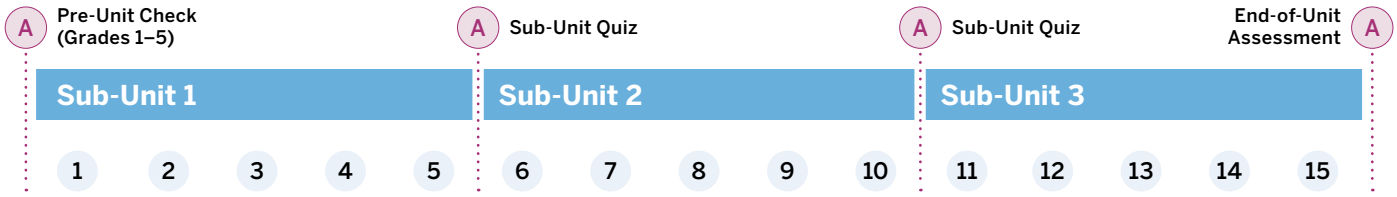
Course



Note: The number of lessons varies from unit to unit. See Scope and Sequence for the full program scope.

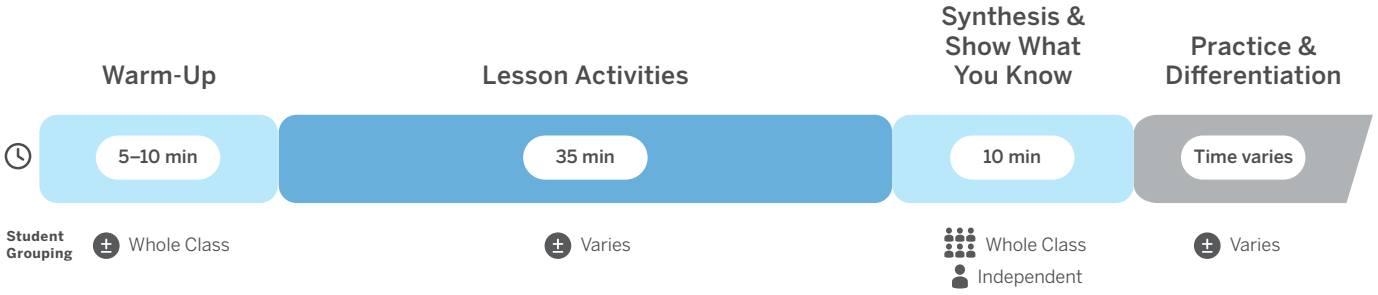
*A brief, but powerful, mCLASS Beginning-of-Year Screener is provided when mCLASS Benchmark is not included.

Unit



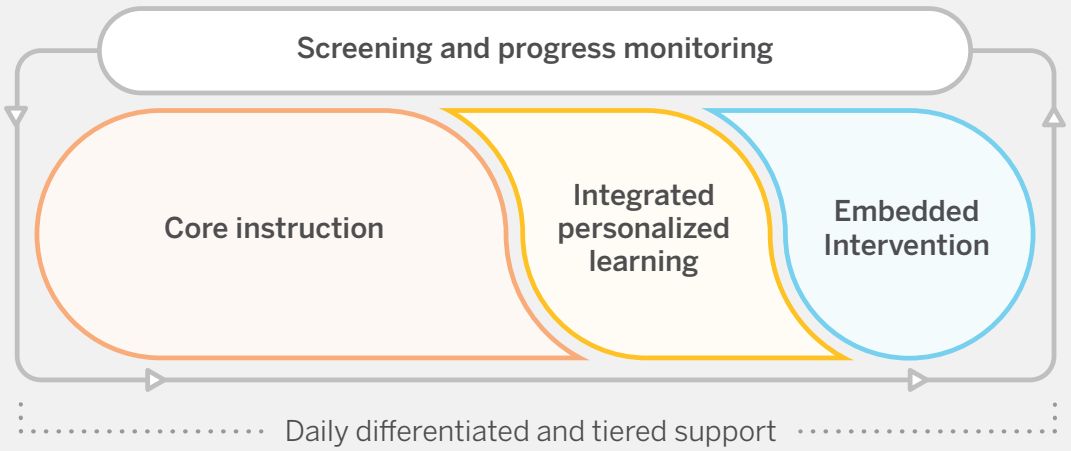
Note: The number of sub-units per unit and lessons within each sub-unit varies. This depiction shows the general structure of a unit. See the course Table of Contents in the print Teacher Edition for more details.

Lesson



Support math classrooms with one integrated, data-driven solution.

In Amplify Desmos Math, data informs instruction within integrated resources. Cohesive differentiation and intervention resources support and challenge students toward a deeper understanding of the learning goals, ensuring all students can keep up with or stretch beyond grade-level math.



Screening and progress monitoring

mCLASS® Assessments, along with daily formative checks, measure what students know and how they think. The asset-based assessment system provides teachers with targeted, actionable insights, linked to core instruction and intervention resources.

Core instruction

Amplify Desmos Math lessons provide a structured approach to problem-based learning, helping teachers create a collaborative math community with students at its center. Each lesson systematically builds on students' curiosity to develop lasting grade-level understandings for all students.

Integrated personalized learning

Boost Personalized Learning activities help students access grade-level math through engaging, independent digital practice. Responsive Feedback adjusts to students' work, providing item-level adaptivity to further support their learning.

Embedded intervention

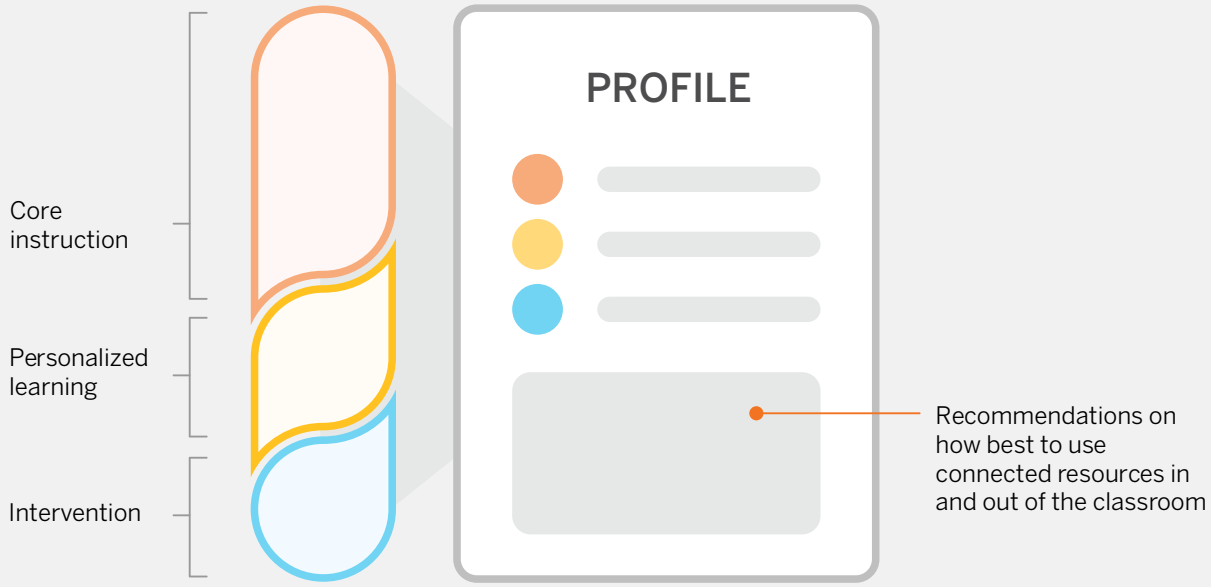
Integrated resources like Mini-Lessons, Math Fluency, Math Adventures, and Extensions provide targeted intervention on a specific concept or skill. This intervention is directly connected to daily content and offer students the individualized supports they need.

Tailored to what students think and know

Every time students demonstrate what they know, we analyze their work to create an accurate and up-to-date picture of how students think and what they know.

We've charted how mathematical thinking skills are linked, influence learning, and connect to mathematical standard mastery. Our model uses this information to tailor Personalized Learning supports to instructional areas that directly build toward grade-level concepts or skills.

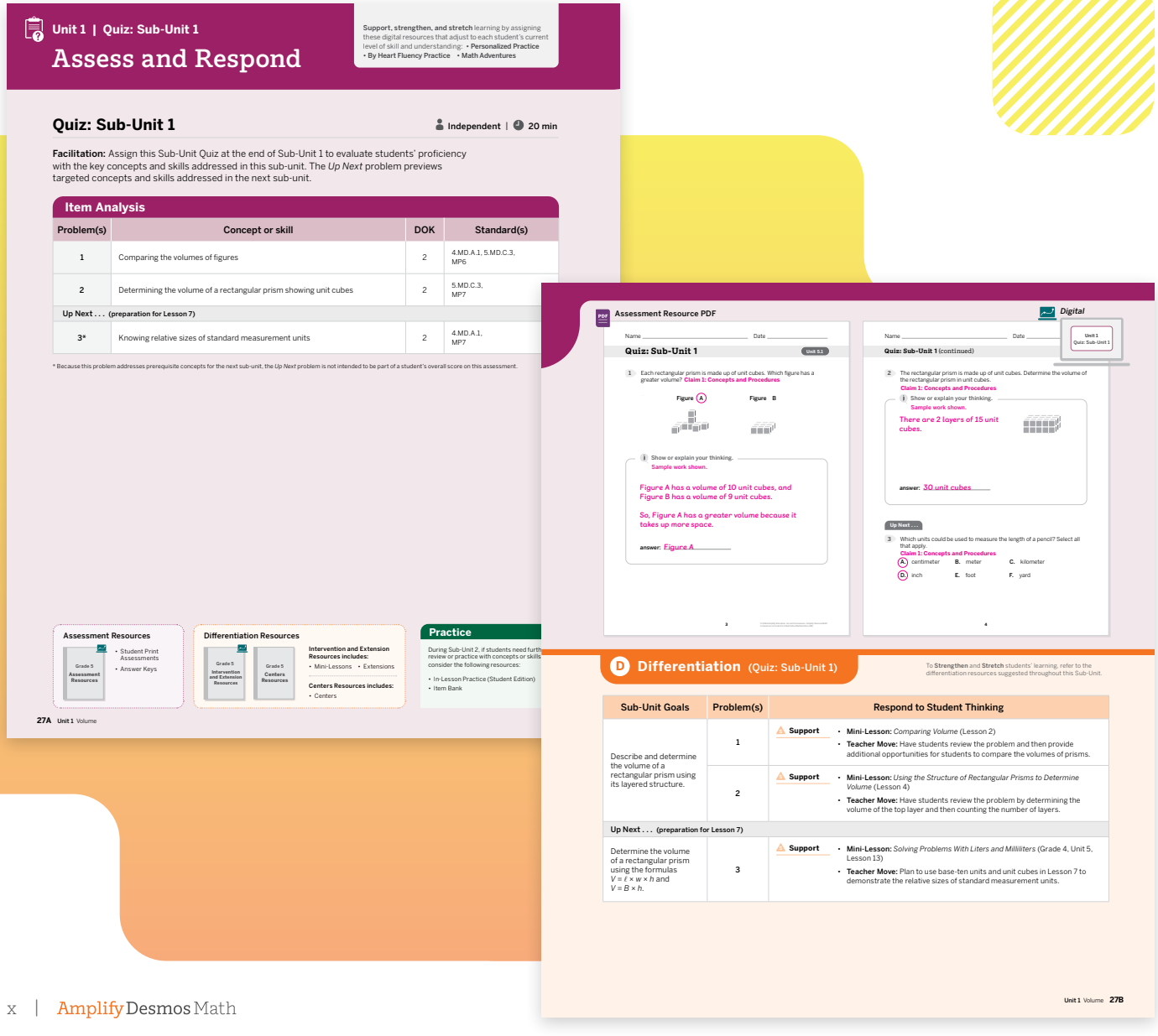
Comprehensive Student Profiles provide full data on students' assets and skills, empowering teachers to provide just-in-time scaffolds throughout core instruction and targeted intervention when needed.



Robust assessments drive learning and inform instruction.

A variety of performance data in Amplify Desmos Math provides evidence of student learning while helping students bolster their skills and understanding.

Throughout lessons, units, and the entire program, you'll find summative and formative assessments meant to provide insights into students' conceptual understandings. Student learning is never a surprise at the end of a unit—with Amplify Desmos Math, understanding is made continually visible.



Unit 1 | Quiz: Sub-Unit 1

Assess and Respond

Support, strengthen, and stretch learning by assigning these digital resources that adjust to each student's current level of skill and understanding: • **Personalized Practice** • **By Heart Fluency Practice** • **Math Adventures**

Quiz: Sub-Unit 1

Independent | 20 min

Facilitation: Assign this Sub-Unit Quiz at the end of Sub-Unit 1 to evaluate students' proficiency with the key concepts and skills addressed in this sub-unit. The *Up Next* problem previews targeted concepts and skills addressed in the next sub-unit.

Item Analysis

Problem(s)	Concept or skill	DOK	Standard(s)
1	Comparing the volumes of figures	2	4.MD.A.1, 5.MD.C.3, MP6
2	Determining the volume of a rectangular prism showing unit cubes	2	5.MD.C.3, MP7
Up Next . . . (preparation for Lesson 7)			
3*	Knowing relative sizes of standard measurement units	2	4.MD.A.1, MP7

* Because this problem addresses prerequisite concepts for the next sub-unit, the *Up Next* problem is not intended to be part of a student's overall score on this assessment.

Assessment Resources

- Student Print Assessments
- Answer Keys

Differentiation Resources

Intervention and Extension Resources includes:
- Mini-Lessons
- Extensions

Centers Resources includes:
- Centers

Practice

During Sub-Unit 2, if students need further review or practice with concepts or skills, consider the following resources:

- In-Lesson Practice (Student Edition)
- Item Bank

27A Unit 1 Volume

Assessment Resource PDF

Digital

Name _____ Date _____

Quiz: Sub-Unit 1 Unit 1.1

1 Each rectangular prism is made up of unit cubes. Which figure has a greater volume? Claim 1: Concepts and Procedures

Figure A Figure B

Show or explain your thinking. Sample work shown.

Figure A has a volume of 10 unit cubes, and Figure B has a volume of 9 unit cubes.

So, Figure A has a greater volume because it takes up more space.

answer: Figure A

3

Quiz: Sub-Unit 1 (continued)

2 The rectangular prism is made up of unit cubes. Determine the volume of the rectangular prism in unit cubes.
Claim 1: Concepts and Procedures

Show or explain your thinking. Sample work shown.

There are 2 layers of 15 unit cubes.

answer: 30 unit cubes

Up Next . . .

3 Which units could be used to measure the length of a pencil? Select all that apply.
Claim 1: Concepts and Procedures

A. centimeter B. meter C. kilometer
D. inch E. foot F. yard

4

D Differentiation (Quiz: Sub-Unit 1)

To **Strengthen** and **Stretch** students' learning, refer to the differentiation resources suggested throughout this Sub-Unit.

Sub-Unit Goals	Problem(s)	Respond to Student Thinking
Describe and determine the volume of a rectangular prism using its layered structure.	1	Support • **Mini-Lesson:** *Comparing Volume* (Lesson 2) • **Teacher Move:** Have students review the problem and then provide additional opportunities for students to compare the volumes of prisms.
	2	Support • **Mini-Lesson:** *Using the Structure of Rectangular Prisms to Determine Volume* (Lesson 4) • **Teacher Move:** Have students review the problem by determining the volume of the top layer and then counting the number of layers.
Up Next . . . (preparation for Lesson 7)		
Determine the volume of a rectangular prism using the formulas $V = \ell \times w \times h$ and $V = B \times h$.	3	Support • **Mini-Lesson:** *Solving Problems With Liters and Milliliters* (Grade 4, Unit 5, Lesson 13) • **Teacher Move:** Plan to use base-ten units and unit cubes in Lesson 7 to demonstrate the relative sizes of standard measurement units.

Unit 1 Volume 27B

Unit-level assessments

Our embedded unit assessments offer key insights into students' conceptual understanding of math. These assessments provide regular, actionable information about how students are thinking about and processing math, with both auto-scoring and in-depth rubrics that help teachers anticipate and respond to students' learning needs.

Pre-Unit Check (grades 2–A1)

Each unit begins with an assessment designed to identify the student skills that will be particularly relevant to the upcoming unit. This check is agnostic to the standards covered in the following unit and serves not as a deficit-based acknowledgment of what students do not know, but rather as an affirmation of the knowledge and skills with which students come in.

End-of-Unit Assessment

Students engage with rigorous grade-level mathematics through a variety of formats and tasks in the End-of-Unit Assessment. A combination of autoscored and rubric-scored items provide deep insights into student thinking. All Amplify Desmos Math End-of-Unit Assessments include two forms.

Sub-Unit Quizzes (grades 1–A1)

With regular Sub-Unit Quizzes, student understanding never comes as an end-of-unit surprise. In these checks, students are assessed on a subset of conceptual understandings from the unit, with rubrics that help illuminate students' current understanding and provide guidance for responding to student thinking.

Sub-Unit Checklists (grades K–1)

These checklists enable teachers to observe key skills and concepts that cannot be assessed on a pencil-and-paper assessment. The checklists outline the supports students need to get where they need to go.

Lesson-level assessments

Amplify Desmos Math lessons are centered around sense-making and in-the-moment feedback. Daily moments of assessment provide valuable evidence of learning for both the teacher and student.

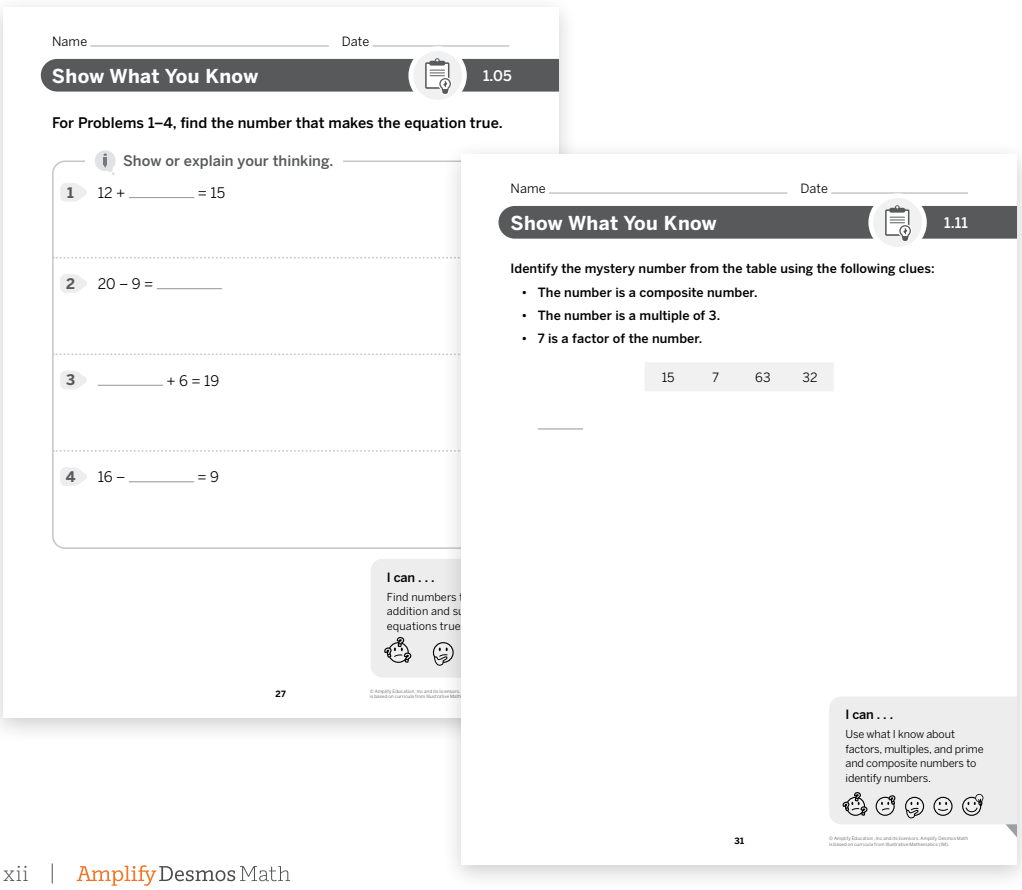
Responsive Feedback

We harness the power of digital math and graphing tools to show students the meaning of their thinking in context. Teachers have the ability to see and provide in-the-moment feedback as students progress through a lesson. Responsive Feedback motivates students and engages them in the learning process.

Show What You Know

Each lesson has a daily formative assessment focused on one of the key concepts in the lesson. Show What You Know moments are carefully designed to minimize the time students take to complete while maximizing the insight the teacher receives on a daily basis to attend to student needs during the following class. *Show What You Know is optional in grades K–1.*

Beginning in grade 2, all unit-level and lesson-level assessments can be completed digitally.


Name _____ Date _____

Show What You Know 1.05

For Problems 1–4, find the number that makes the equation true.

Show or explain your thinking.

1. 12 + _____ = 15
2. 20 − 9 = _____
3. _____ + 6 = 19
4. 16 − _____ = 9

I can . . .

Find numbers t… addition and su… equations true.

27

Name _____ Date _____

Show What You Know 1.11

Identify the mystery number from the table using the following clues:

- **The number is a composite number.**
- **The number is a multiple of 3.**
- **7 is a factor of the number.**

15	7	63	32

_____

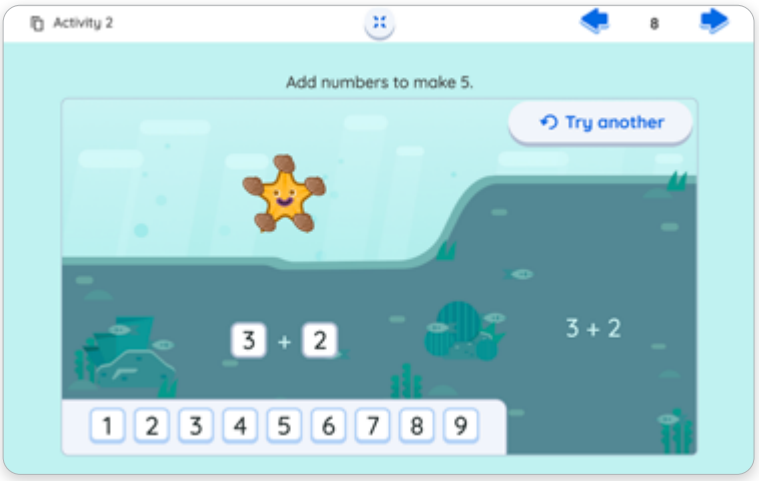
I can . . .

Use what I know about factors, multiples, and prime and composite numbers to identify numbers.

31

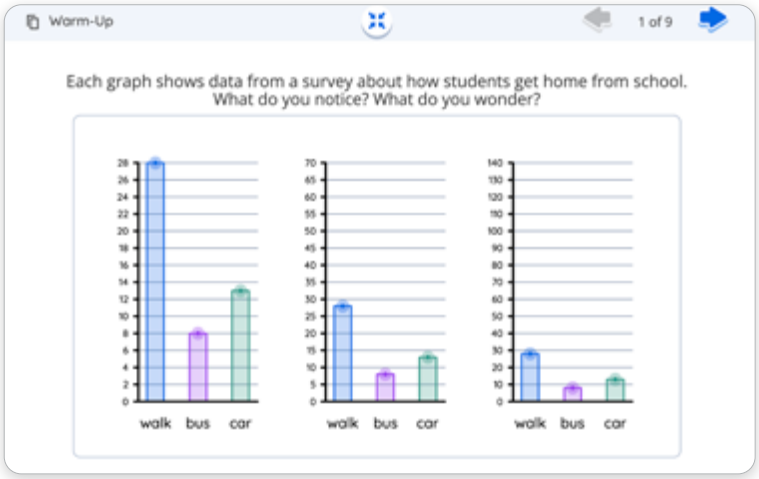
Show What You Know example pages for grades 2 and 4.

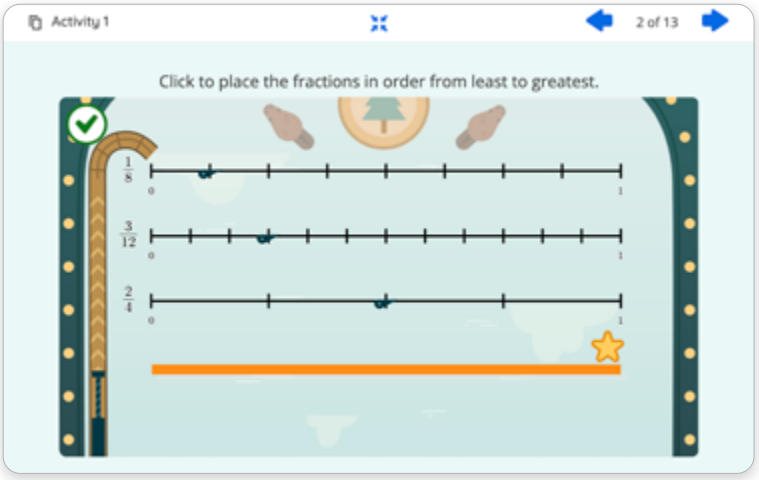
- **Celebrate student thinking with Responsive Feedback.** We harness the power of digital math and graphing tools to show students the meaning of their thinking in context. Responsive Feedback motivates students and engages them in the learning process.



In the Kindergarten lesson Harry Explores the Ocean, students receive immediate feedback on whether their addition equation equals five through an animation of a starfish collecting seashells.

In the grade 3 lesson: 2, 5, or 10?, teachers use interactive bar graphs on a Presentation Screen to help students consider how the same data is represented on graphs with three different scales—2, 5, and 10.





In the grade 4 lesson Getting in Order, students compare and order sets of fractions from least to greatest to control the locations of flippers in a pinball game. When the fractions are in order, a ball will fall through all of the flippers and roll to the star.

Benchmark and progress monitoring assessments identify students' skills and knowledge.

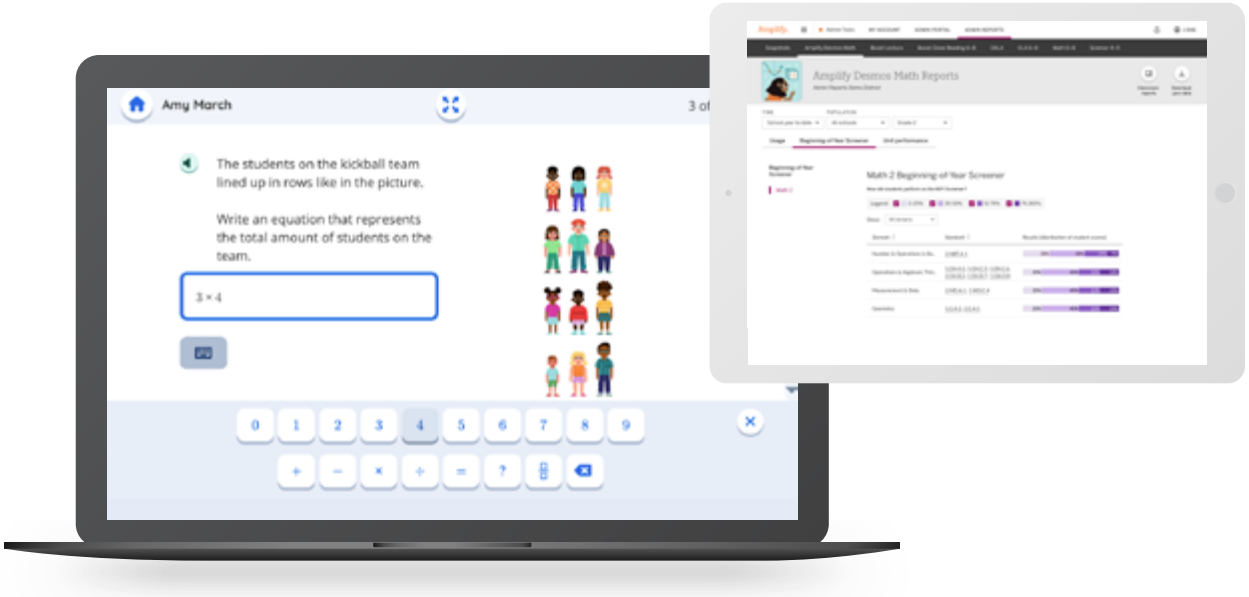
Assessments from mCLASS® surface students' math thinking with an asset-based approach, providing better insights into what students know, where they need support, and which assets to leverage.

mCLASS Benchmark

This powerful digital benchmark assessment system is administered to the whole class three times a year, at the beginning, middle, and end of the year. The assessments are designed to analyze student responses with a focus on revealing underlying math thinking, evaluating student knowledge of grade-level math, and informing instructional decisions.

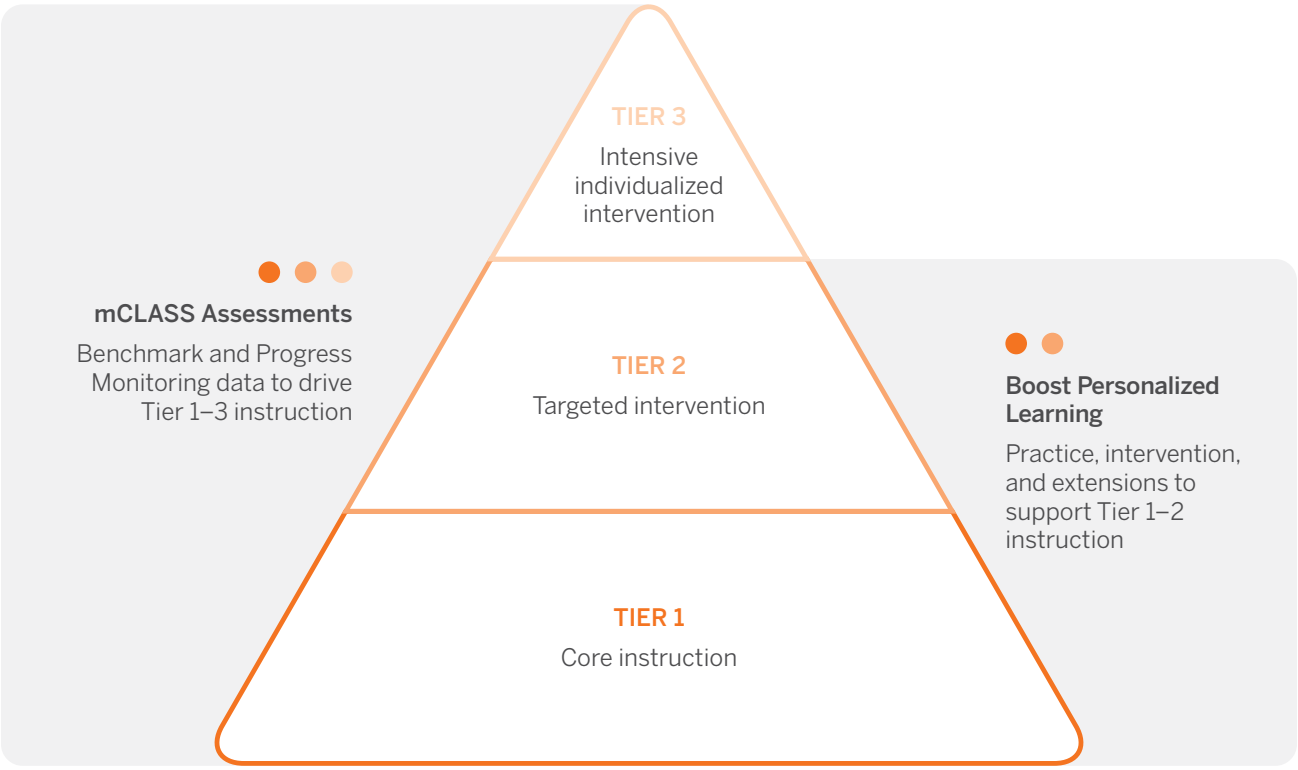
The comprehensive system of assessments also:

- Evaluates student progress toward grade-level expectations for growth measure.
- Identifies specific areas of strength and developmental need for each student to inform differentiation in Amplify Desmos Math and Boost Personalized Learning.
- Benchmark also includes an adaptive diagnostic module that can be optionally administered to collect additional information for Tier 1 and Tier 2 intervention targeting.



mCLASS Progress Monitoring

Progress Monitoring helps teachers chart students' progression between assessment periods. For students receiving targeted support, progress monitoring informs whether intervention is working or whether adjustments are needed to improve student learning.



As an essential part of a school's MTSS or Response to Intervention (RTI) framework, these assessments can be used to track student progress in specific areas as part of targeted instructional support towards benchmark goals.

Progress Monitoring is designed to be brief and easily administered every two weeks, although teachers are encouraged to use these in ways that best meet their instructional needs and goals for the student.

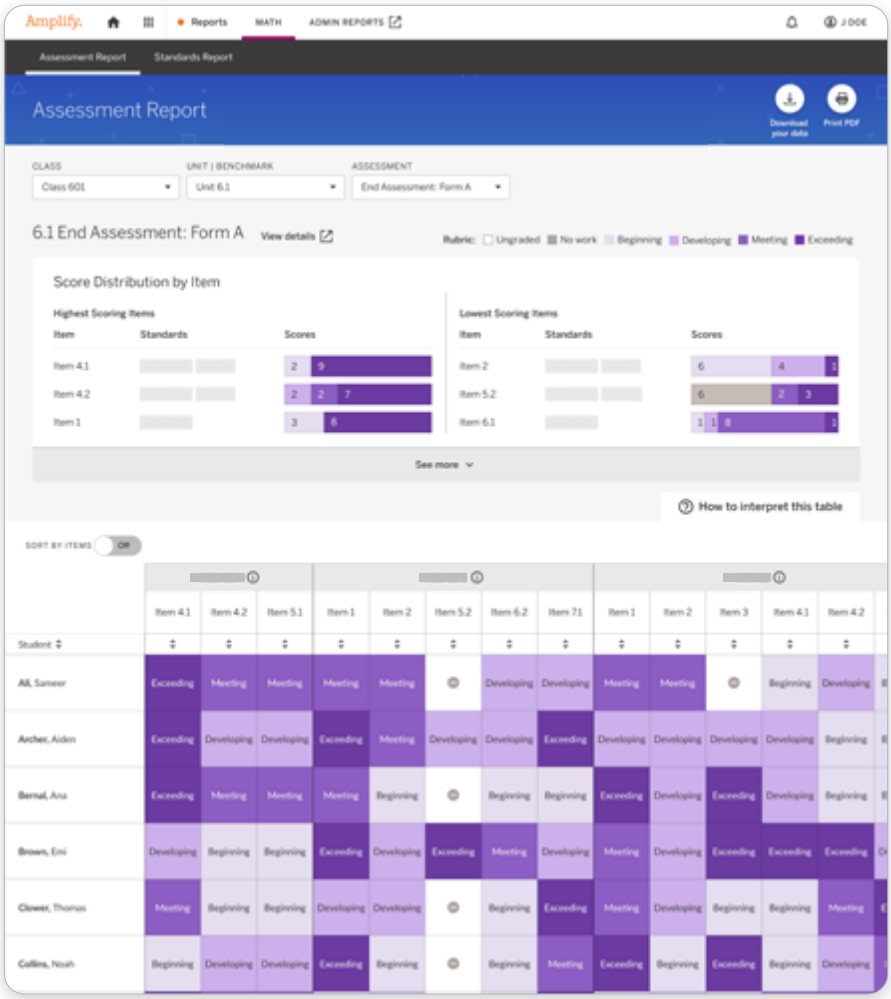
Reporting tools provide integrated insight into learning.

Amplify Desmos Math provides teachers and administrators with unified reporting and insights so that educators have visibility into what students know about grade-level math—and can plan instruction accordingly for the whole class, small groups, and individual students.

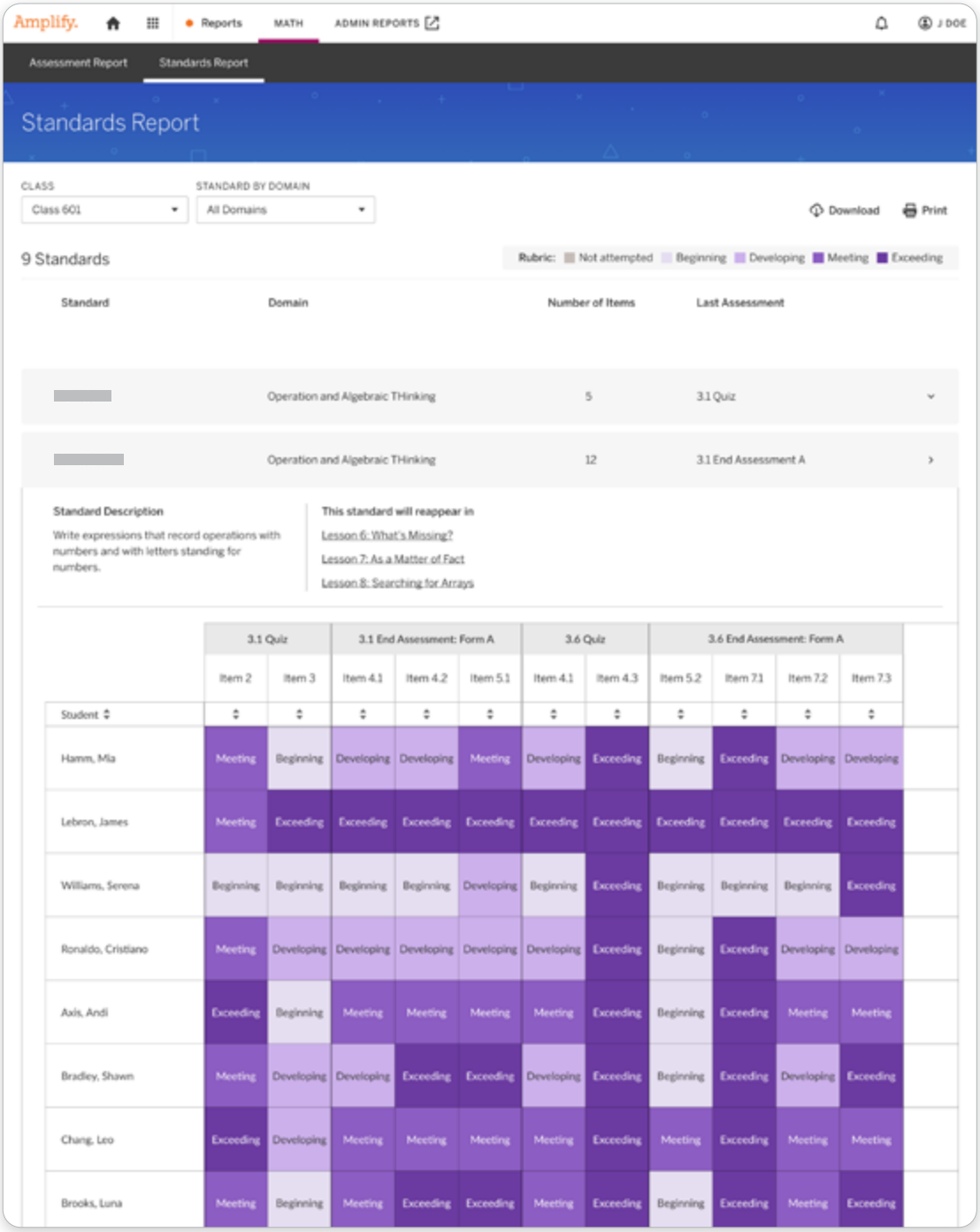
Reporting functionality integrates unit assessments, lesson assessments, personalized learning, benchmark assessments, and progress monitoring for a comprehensive look at student learning.

Amplify Desmos Math is designed to fit your specific data and reporting needs. Reporting functionality integrates unit assessments and lesson assessments for a comprehensive look at student learning.

At-a-glance views of unit-level assessment results inform instructional planning, and you can also drill down to item-level analysis



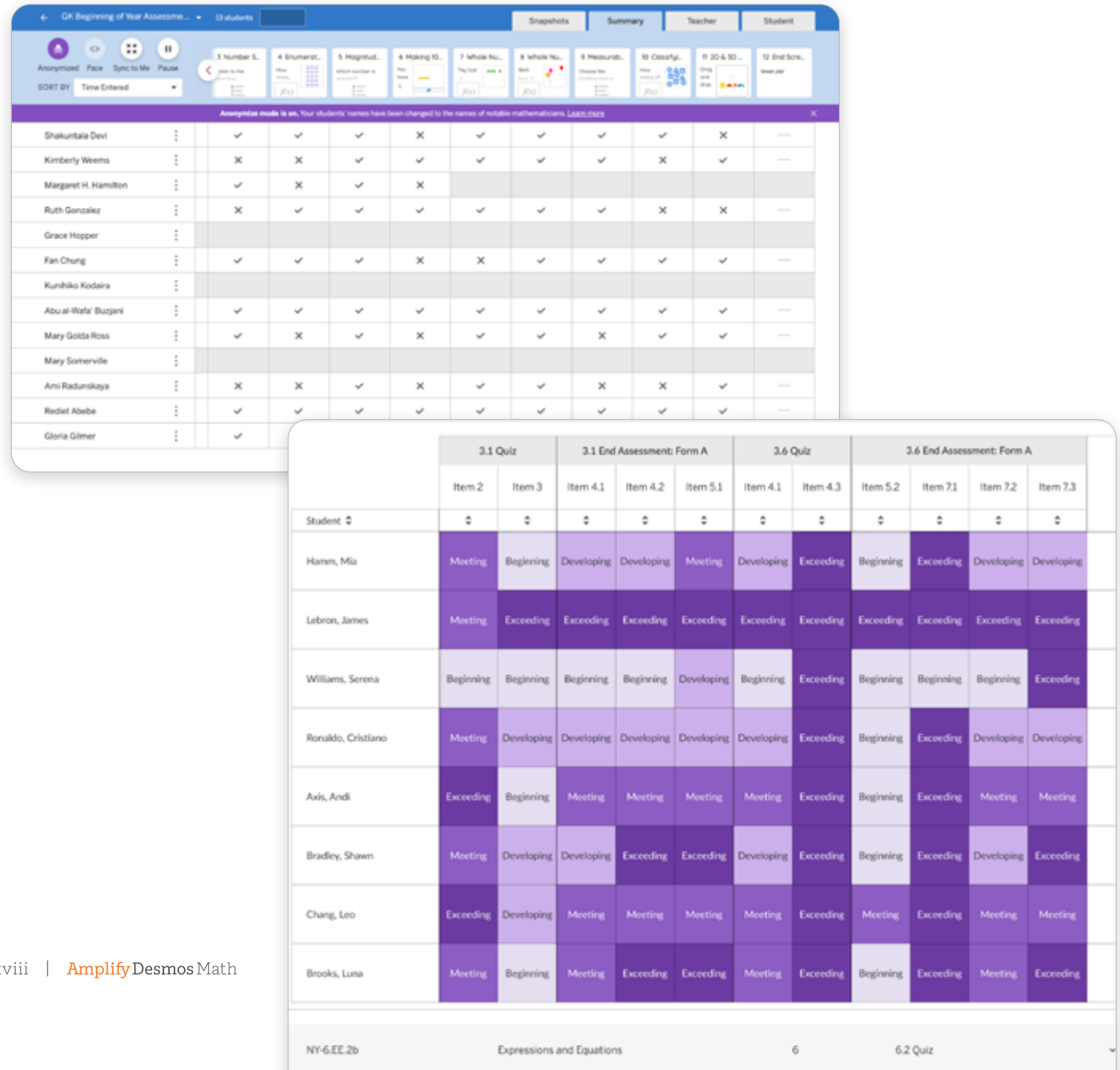
Our standards report allows you to monitor proficiency at the class and individual student levels.



Teachers have data at their fingertips to guide and differentiate instruction.

A variety of performance data in Amplify Desmos Math provides evidence of student learning while helping students bolster their skills and understanding.

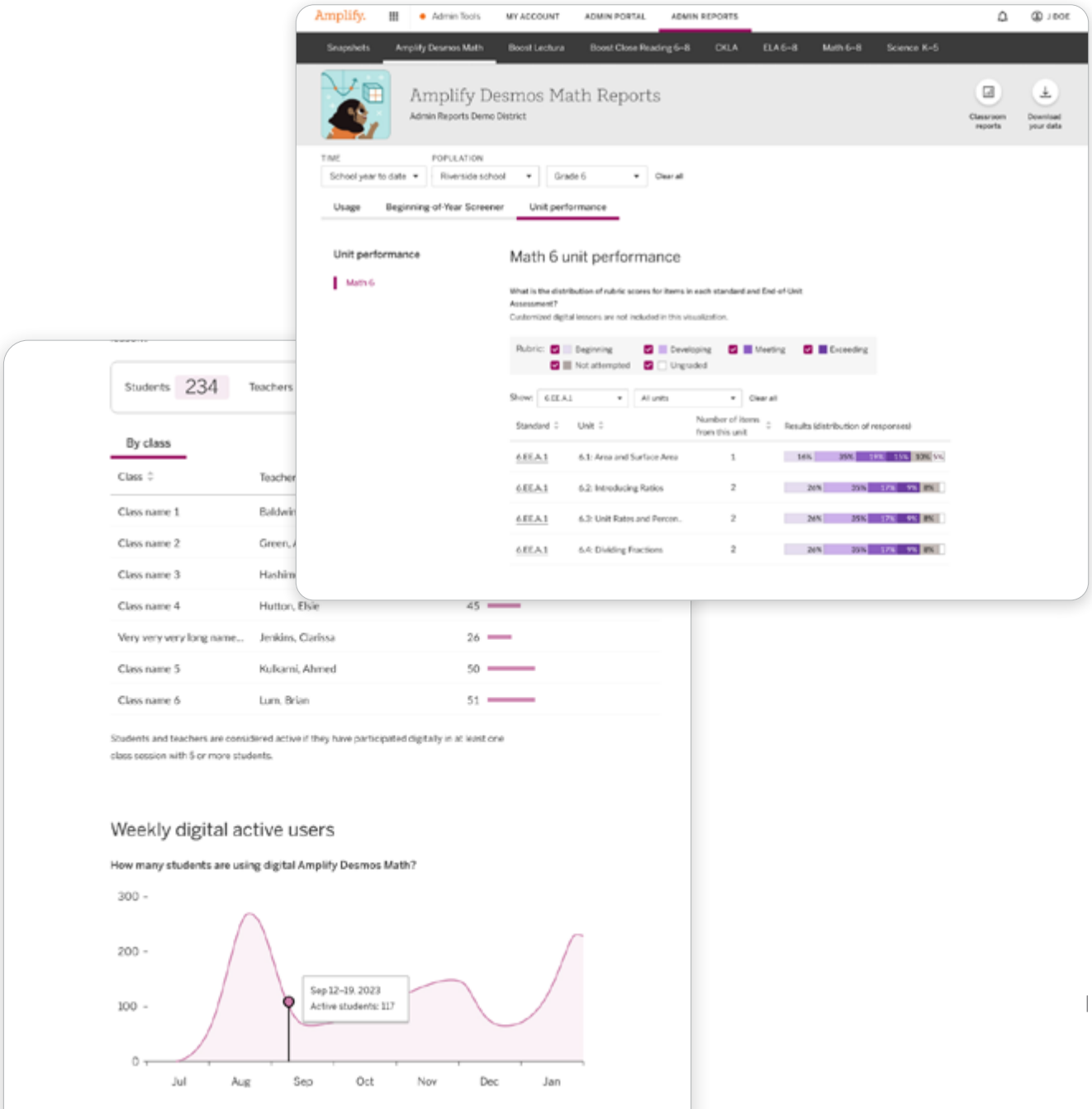
- Proficiency and growth is shown by domain, cluster, standard, and priority concepts. Areas of potential student need are highlighted to allow teachers to modify their instruction and target differentiated support.
- With actionable insights provided by mCLASS Benchmark and Progress Monitoring assessments, teachers are given the data they need to inform Tier 2 and Tier 3 intervention.
- Caregiver-friendly visuals and language enable educators to easily share and celebrate growth with families.



Administrator Reporting

Amplify Desmos Math provides a complete picture of student, class, and district performance, allowing administrators to implement instructional and intervention plans.

- Track student, class, and district performance with usage, completion, and assessment data.
- Accurately group students and classes with the Benchmark and Progress Monitoring data of mCLASS Math and allow teachers to reliably implement and track the progress of Tier 2 and Tier 3 intervention.
- Provide one data-driven solution that educators can rely on for high-quality math instruction.



Boost Personalized Learning

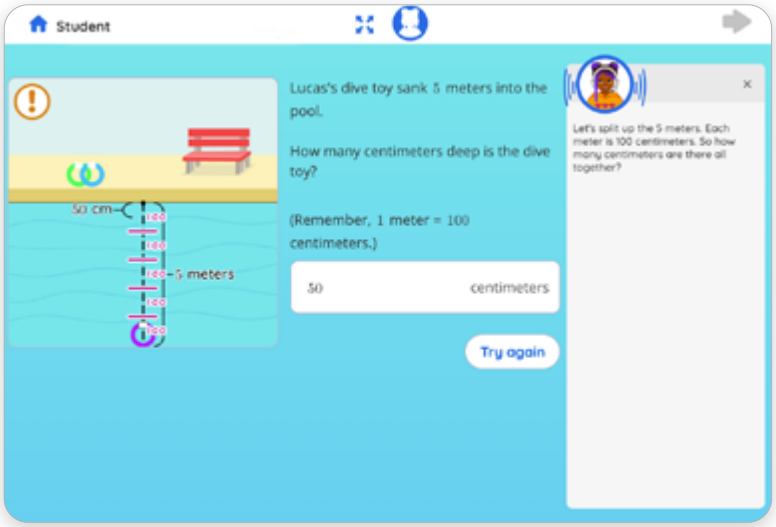
Amplify Desmos Math includes digital, adaptive practice that provides the personalized support a student needs to access grade-level math every day. Boost Personalized Learning activities target a skill or concept aligned to the day's core lesson, with each student receiving personalized scaffolds based on what they already know.

This adaptive technology complements daily learning and provides another layer of support to the in-lesson differentiation and instructional guidance provided to teachers.

Personalized feedback, scaffolds, and supports

Activities adapt to each student's unique needs based on prior assessment data and student responses. Tailored, differentiated support includes:

- **Responsive Feedback**: Visual, mathematical representation of the student's response
- **Guidance and tips**: Adaptive suggestions to help get students unstuck
- **Strategy modeling**: Moments of explicit instruction to summarize key concepts and support sensemaking
- **Precursor skill support**: Instruction and practice on skills and concepts that highly influence the development of grade-level understanding



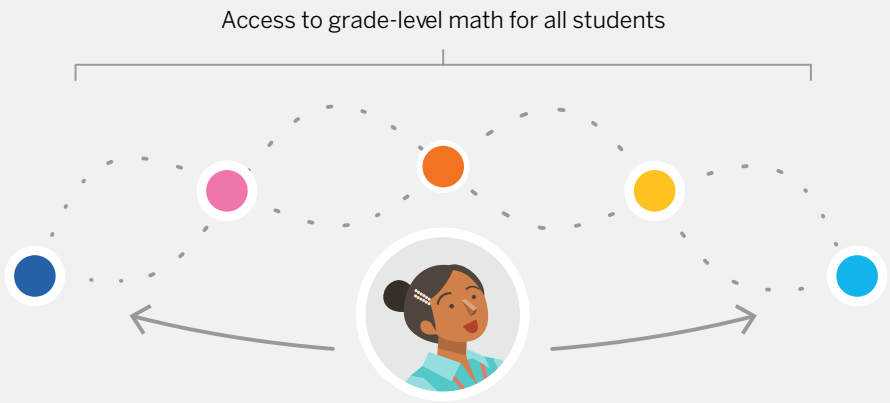
TRY IT!

Go to **amplify.com/admsample** to access sample activities

All students can access grade-level math, every day.

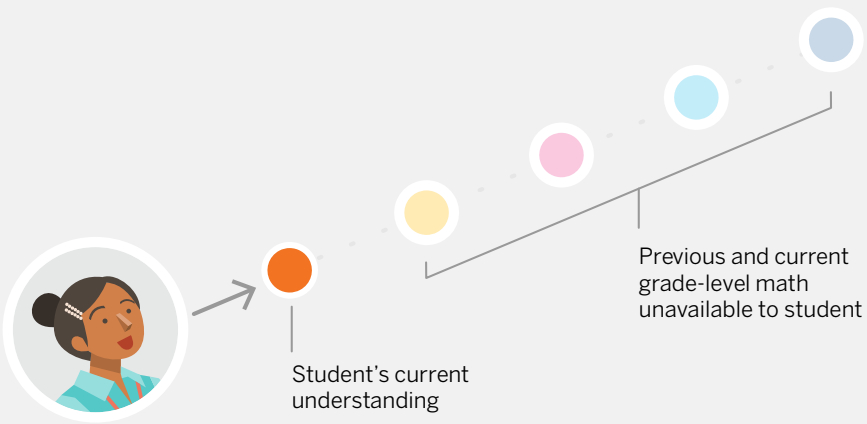
Boost Personalized Learning enables all students to access grade-level math in each activity with tailored supports based on what they already know. This eliminates the long path where students receive interventions that slowly build understanding unrelated to daily instruction.

The asset-based approach of Boost Personalized Learning



Daily personalized differentiation and support enable all students to develop grade-level understanding within every activity.

The traditional, deficit-based approach to intervention



Long, personalized learning paths only focus on prior skills by practicing content disconnected from daily instruction.

More opportunities for personalized practice

Math Adventures

Math Adventures are strategy-based digital math games that offer students a fun, engaging and low-stakes way of practicing math skills. Unlike simple, repetitive math games, students navigate through various levels of complex worlds with Responsive Feedback along the way.

Math Adventures are perfect for times when teachers need students to be independent after finishing classwork, an assessment, or group work.

Twelve a Dozen

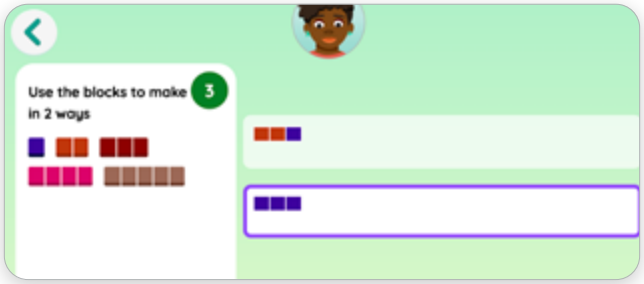
A story-rich puzzle platform game that integrates algebraic math into core game mechanics. Players must use their factoring skills and solve order-of-operations puzzles to save the world.

Formula Won

A racing game in which players advance around different game board race tracks, competing against an AI opponent by picking sets of cards and operations. Requires players to operate with integers, mixed numbers, or decimals.

Number Jumper

Take an adventure across different lands. Students practice addition and subtraction facts by jumping from platform to platform as they travel through swamps, caves, forests, pillow forts, and many more settings.



Connect the Blocks

Students use blocks to compose different combinations of target numbers. Students see equations that match their builds and receive feedback in the form of a length bar. Students develop their fluency through repeated opportunities to flexibly build and recognize different parts of a whole.

Fluency Practice

Fact fluency frees up brainpower and working memory for students to do more complex mathematical work. When basic facts and procedures are second nature, it's easier to figure out how to structure a multi-step word problem, model a solution, or puzzle out systems of equations.

We've partnered with Math for Love to iterate on the popular Multiplication by Heart for the other basic operations, such as Addition and Subtraction by Heart, Division by Heart, and fluency of other math procedures.

The Fluency Practice of Amplify Desmos Math uses an evidence-based approach to memory retention—spaced repetition—for the basic facts. The focus is conceptual understanding, not just "drill and kill" focused on rote memorization. The adaptive nature of the practice allows students to focus less and less on the facts they already know. This approach builds fluency without the anxiety that timed tests can cause.

TRY IT!

Go to **fluency.amplify.com** to access sample activities

About Mini-Lessons

Intervention Mini-Lessons aligned to core instruction

Amplify Desmos Math Mini-Lessons are 15-minute lessons aligned to the most critical topics throughout a unit. Teacher-led Mini-Lessons are used to provide targeted intervention to small groups of students who need additional support or to re-engage students with content that they may need more time on.

Amplify Desmos Math Mini-Lessons are the perfect complement to our problem-based approach, because they provide more explicit instruction opportunities and leverage a consistent instructional routine (Modeled Review, Guided Practice, Check for Understanding).

A minds-on experience to support your students' curiosity and thinking beyond the core lesson

Rather than serving as simple solo drills or worksheets, Mini-Lessons tie directly into critical topics to keep students thinking and exploring the grade-level math they need more time with.

Differentiation where and when it matters most, to help all students access grade-level math

Mini-Lessons are used to address critical prerequisite skills for upcoming lessons or to engage students in grade-level math immediately after a core lesson, when they need more time to think about a concept or skill. Mini-Lessons reinforce the same topics and content students see in core instruction.

Faded worked examples build proficiency

The design of Amplify Desmos Math Mini-Lessons is informed by the extensive research around worked examples, in particular faded worked examples. Because novice learners benefit more from worked examples than more experienced learners (Kalyuga, Ayres, Chandler, & Sweller, 2003), one pedagogical approach involves scaffolding, or fading away, the support given in the worked examples as practice goes on and students become more proficient (Atkinson et al., 2003; van Merrienboer, Kirschner, & Kester, 2003).

In essence, the worked examples get less "worked out" over time. Studies on the use of faded worked examples have found benefits for problem solving, both in terms of better performance on difficult problems (Atkinson et al., 2003) and less time taken to achieve the same level of performance (Flores & Inan, 2014). Students working with faded worked examples have also been shown to have fewer unproductive moments during their practice sessions (Renkl et al., 2004).

Structure of a Mini-Lesson

Structure of a Mini-Lesson

Easy as one, two, three:

1 **Modeled review**

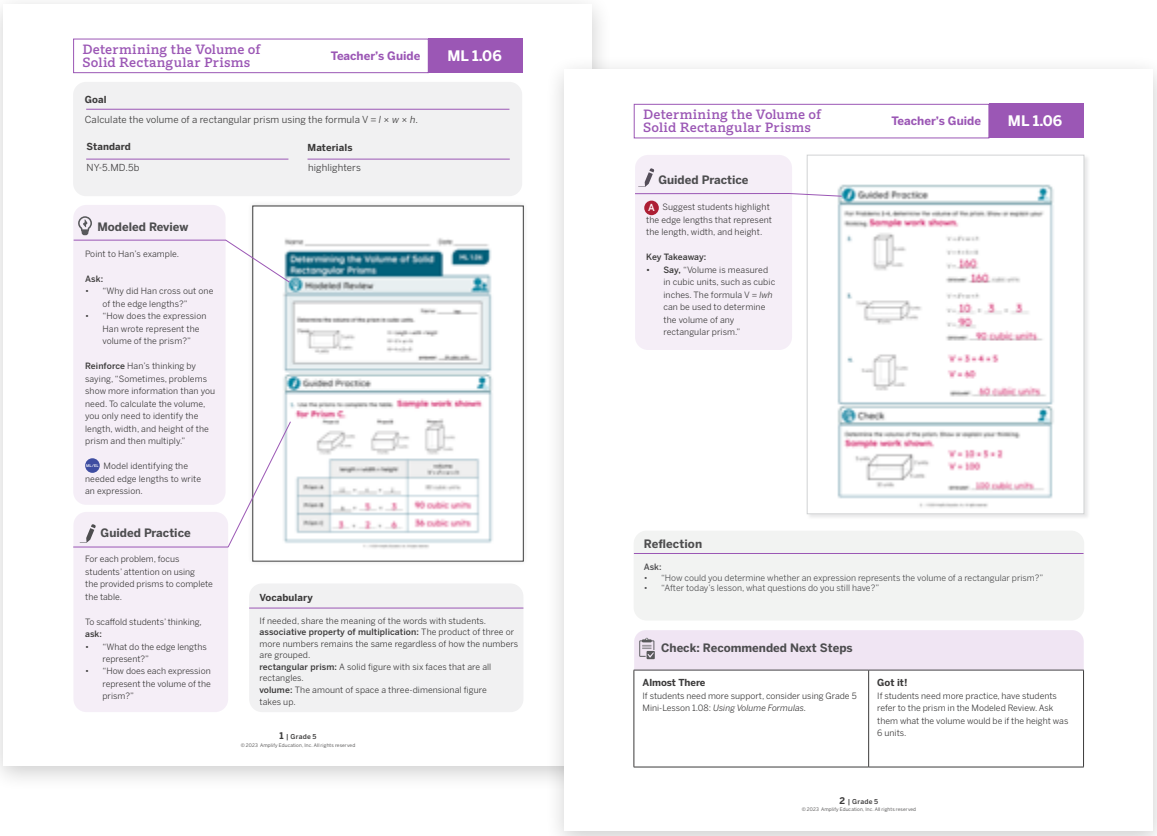
Teachers work through an example with students.

2 **Guided practice**

Teachers guide students through faded examples, where scaffolds are heavier early on and are gradually removed.

3 **Check for understanding**

Teachers provide students an opportunity to show what they have learned.



Determining the Volume of Solid Rectangular Prisms — Teacher's Guide — ML 1.06

Goal

Calculate the volume of a rectangular prism using the formula $V = l \times w \times h$.

Standard

NY-5.MD.5b

Materials

highlighters

Modeled Review

Point to Han's example.

Ask:

- "Why did Han cross out one of the edge lengths?"
- "How does the expression Han wrote represent the volume of the prism?"

Reinforce Han's thinking by saying, "Sometimes, problems show more information than you need. To calculate the volume, you only need to identify the length, width, and height of the prism and then multiply."

Model identifying the needed edge lengths to write an expression.

Guided Practice

For each problem, focus students' attention on using the provided prisms to complete the table.

To scaffold students' thinking, **ask:**

- "What do the edge lengths represent?"
- "How does each expression represent the volume of the prism?"

Vocabulary

If needed, share the meaning of the words with students.
associative property of multiplication: The product of three or more numbers remains the same regardless of how the numbers are grouped.
rectangular prism: A solid figure with six faces that are all rectangles.
volume: The amount of space a three-dimensional figure takes up.

1 | Grade 5

Determining the Volume of Solid Rectangular Prisms — Teacher's Guide — ML 1.06

Guided Practice

Suggest students highlight the edge lengths that represent the length, width, and height.

Key Takeaway:

- **Say,** "Volume is measured in cubic units, such as cubic inches. The formula $V = lwh$ can be used to determine the volume of any rectangular prism."

Reflection

Ask:

- "How could you determine whether an expression represents the volume of a rectangular prism?"
- "After today's lesson, what questions do you still have?"

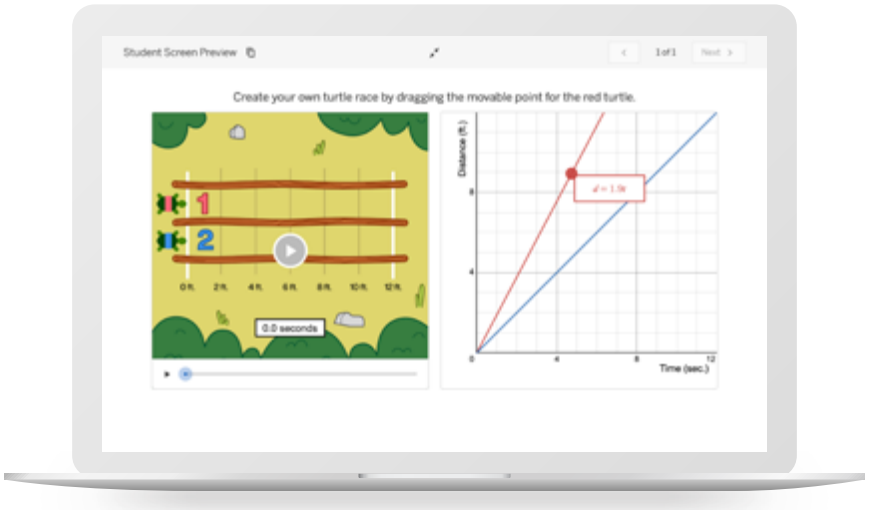
Check: Recommended Next Steps

Almost There	Got it!
If students need more support, consider using Grade 5 Mini-Lesson 1.08: *Using Volume Formulas*.	If students need more practice, have students refer to the prism in the Modeled Review. Ask them what the volume would be if the height was 6 units.

2 | Grade 5

Accessing Mini-Lessons in Amplify Desmos Math

Amplify Desmos Math Mini-Lessons are easily accessible at point-of-use for teachers.

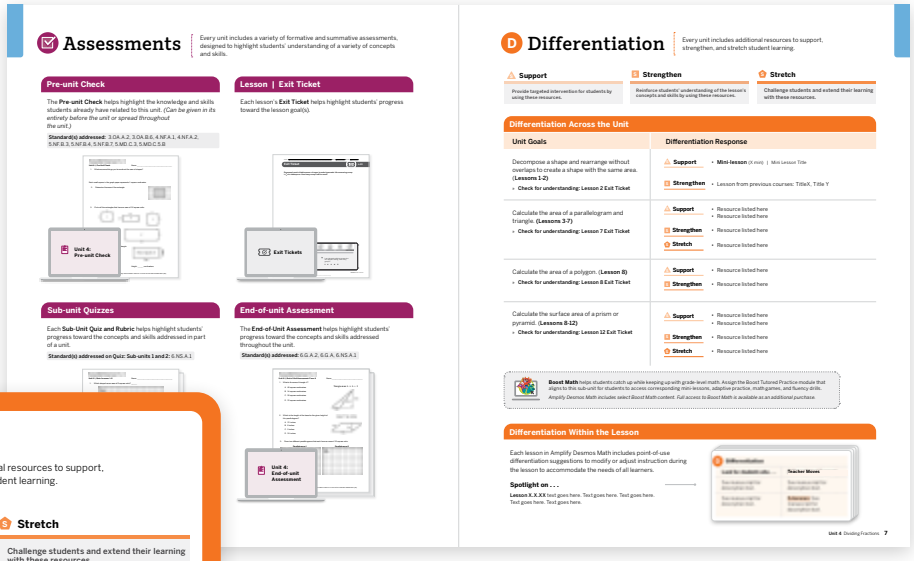


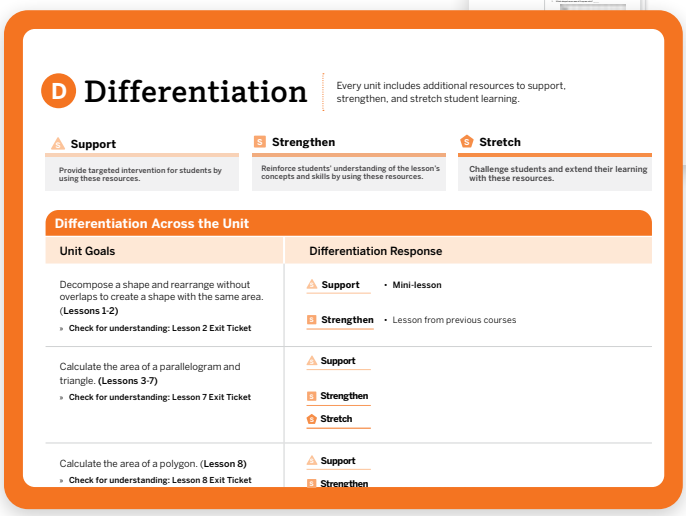
In the digital experience

Online, Teacher Edition PDF pages for each Mini-Lesson, along with the Teacher Presentation Screens, can be accessed within sub-unit resources.

In the print Teacher Edition

In the Amplify Desmos Math Teacher Edition, Mini-Lessons will be referenced in the differentiation table at the sub-unit level.





Centers

Game-based Centers strengthen student engagement and reinforce key skills and concepts

Centers are engaging, hands-on games for students to play collaboratively to strengthen their understanding of key skills and concepts.

Centers are designed so that students engage in them with minimal teacher direction and support. Each Center has multiple stages so that students return to the same Center game repeatedly within and across grade levels, with the content of the Center growing in complexity to align with grade-level standards in a scaffolded manner.

Daily Center Time (Grades K–1)

The last 15 minutes of the daily lesson is always Center Time. Depending on where the lesson falls in the learning trajectory, students will either:

- Be introduced together to a new Center
- Engage in Center Choice Time, choosing previously introduced Centers to revisit

Centers as Activities

New Centers are strategically introduced to the whole class as one of the Lesson Activities.

- Students return to these Centers in future Center Choice Times
- Teachers can also engage students in Centers as a Differentiation activity

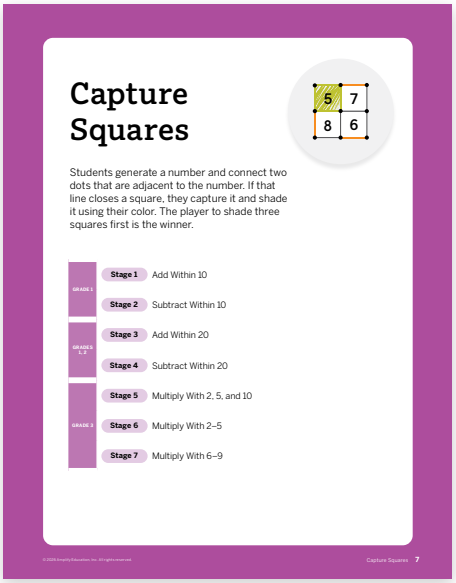
Differentiation

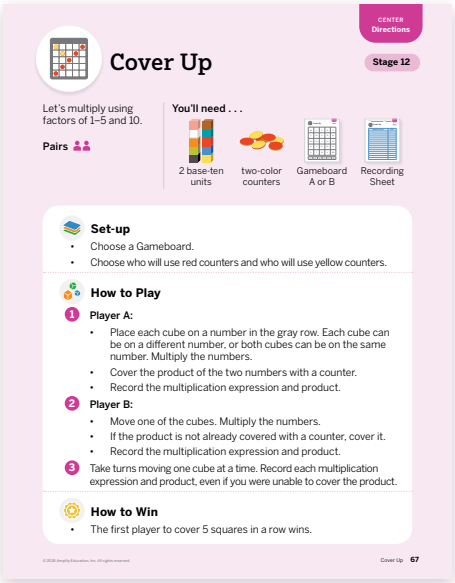
Each lesson lists specific Centers that teachers can use with small groups to strengthen their understanding of key learning goals.

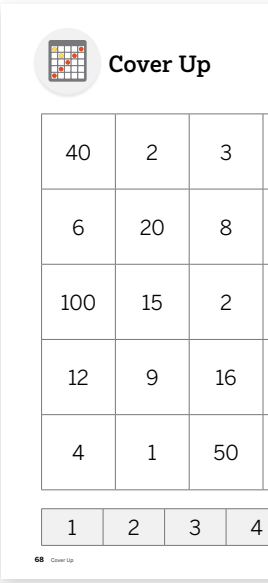
- Students usually have previously been introduced to at least an earlier stage of these Centers
- Teachers can also use Centers after Assessment points

The materials required to utilize Centers are included in program materials.

- Work mats and instruction cards are included in the Centers Resource book
- The required manipulatives are included in the Manipulative Kit







Stretch student mathematical thinking with Extensions.

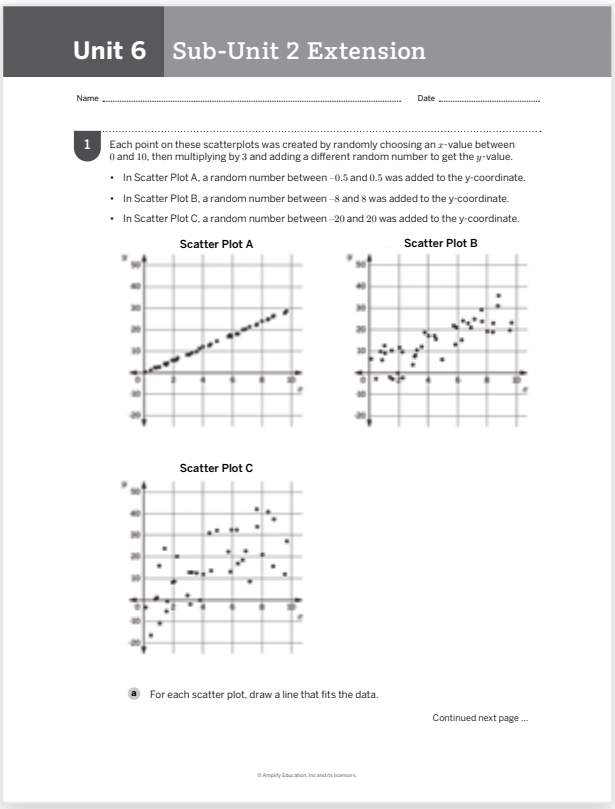
All students should have access to fun and challenging problems. Amplify Desmos Math extensions are 10–15-minute activities aligned to the most critical topics in a sub-unit. Extensions can provide targeted intervention to small groups of students ready for an extra challenge or whole-class.

Amplify Desmos Math extensions build on our student-led, problem-based approach, providing more opportunities for students to engage in creative and rigorous problems that can be approached with different strategies.

These low-lift activities give teachers flexibility and provide students with open-ended, hands-on problems they can choose from.

Challenge Extension Activities

These activities focus on student choice and provide open-ended problem-solving questions to discuss together. They are hands-on and require only a pencil and paper.



Unit 6 Sub-Unit 2 Extension

Name ..... Date .....

1 Each point on these scatterplots was created by randomly choosing an x-value between 0 and 10, then multiplying by 3 and adding a different random number to get the y-value.

- In Scatter Plot A, a random number between -0.5 and 0.5 was added to the y-coordinate.
- In Scatter Plot B, a random number between -8 and 8 was added to the y-coordinate.
- In Scatter Plot C, a random number between -20 and 20 was added to the y-coordinate.

Scatter Plot A

Scatter Plot B

Scatter Plot C

a. For each scatter plot, draw a line that fits the data.

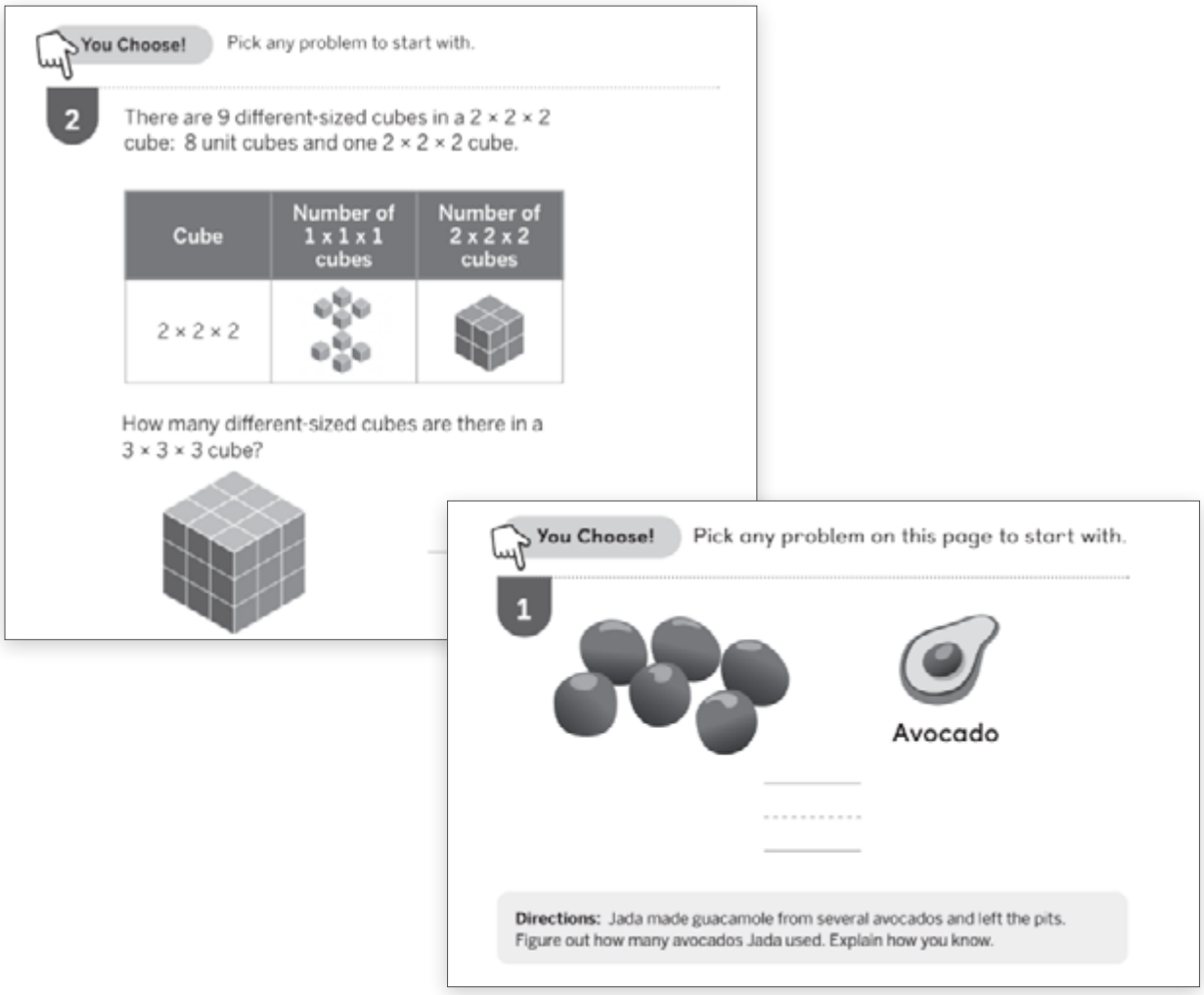
Continued next page ...

Extensions are structured on the principle of student choice and designed to be student-led. Every sub-unit comes with an Extension problem set.

Extension Activities will be referenced in the differentiation table at the lesson-level. You will also find the sub-unit extensions recommended for each lesson digitally on the differentiation tab.

Teachers are provided with:

- Key background information about the math in the problem
- Sample responses
- Hints to share with students (when needed)
- Suggestions for which problems to share with the whole class



GRADE 3

Assessments and Rubrics

The following section includes one full unit of unit-level assessments. These include the Pre-Unit Check, Sub-Unit Quizzes, and End-of-Unit Assessment. These assessments will also be available for students to complete digitally in Grades 2–5.

Name _____ Date _____

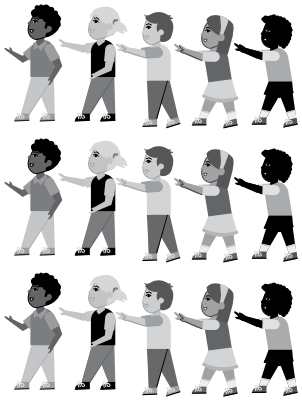
Pre-Unit Check

Unit 3.1

Find the total amount of children in each relay race. Write an equation that represents how you found the total.

Show your thinking. Sample equations shown.

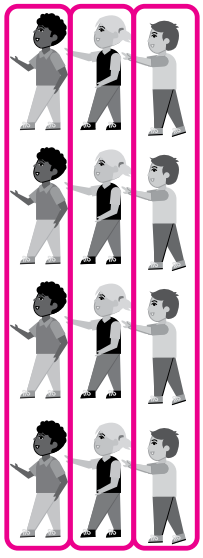
1



answer: 15 children

equation: 5 + 5 + 5 = 15

2



answer: 12 children

equation: 4 + 4 + 4 = 12

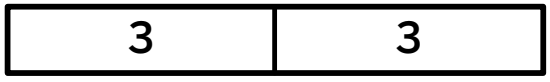
Name _____ Date _____

Quiz: Sub-Unit 1

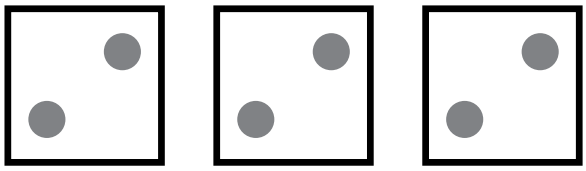
Unit 3.1

1 Jada has 2 bowls. Each bowl has 3 apples. Select *all* representations of the number of Jada's apples.

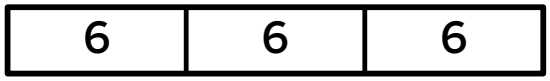
A.



B.



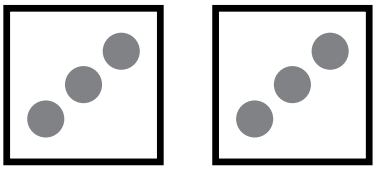
C.



D. 2×3

E. $2 + 3$

F.

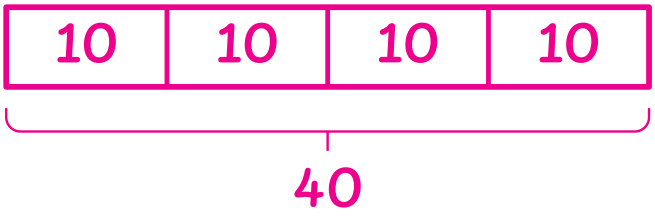


Name _____ Date _____

2 There are 4 bunches of grapes. Each bunch has 10 grapes. How many grapes are there?

Show or explain your thinking.

Sample work shown.



$4 \times 10 = 40$

answer: 40

3 There are 30 people in some cars. Each car has 5 people in it. How many cars are there?

Show or explain your thinking.

Sample work shown.

I counted 5, 10, 15, 20, 25, 30, and that's 6 times to get to 30. So, there are 6 cars.

answer: 6 cars

Up Next . . .

4 How many dots are in the array?

15

Name _____ Date _____

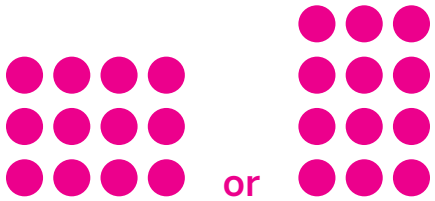
Quiz: Sub-Unit 2

Unit 3.1

1 Create an array that represents the expression 3 × 4.

Draw

Sample response shown.



There are 3 rows of chairs in the room. Each row has 7 chairs. How many chairs are there? Use this information for Problems 2–4.

2 Create an array to represent the total number of chairs.

Draw

Sample response shown.

3 Write 2 equations to represent the total number of chairs. Use a ? for the unknown.

3 × 7 = ? and 7 × 3 = ?

4 Determine the number of chairs.

Show or explain your thinking.

Sample work shown.

7 + 7 = 14

14 + 7 = 21

answer: 21 chairs

Up Next . . .

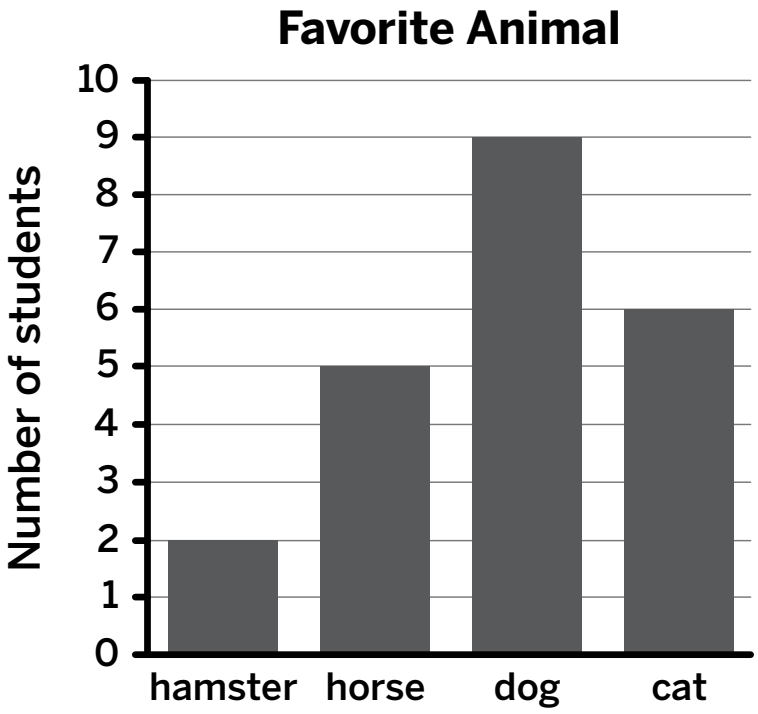
Use the bar graph to complete Problems 5 and 6.

5 How many students recorded their favorite animal?

22 students

6 How many fewer students chose hamster than dog?

7 students



Name _____ Date _____

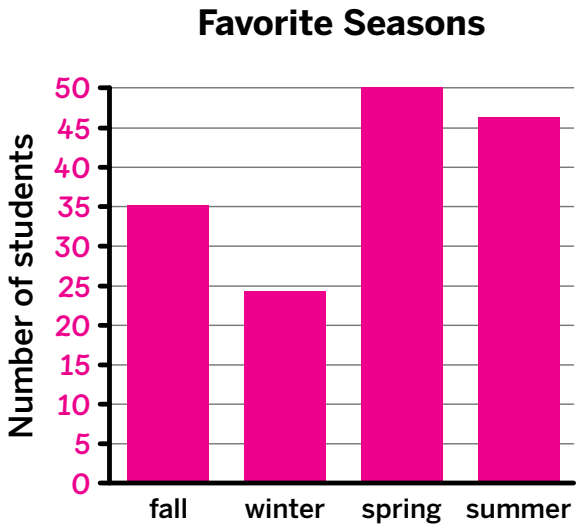
End-of-Unit Assessment

Unit 3.1

1 The table shows the favorite seasons of a group of students. Create a scaled bar graph to represent the data. Consider a scale of 5 or 10. Explain how you chose the scale.

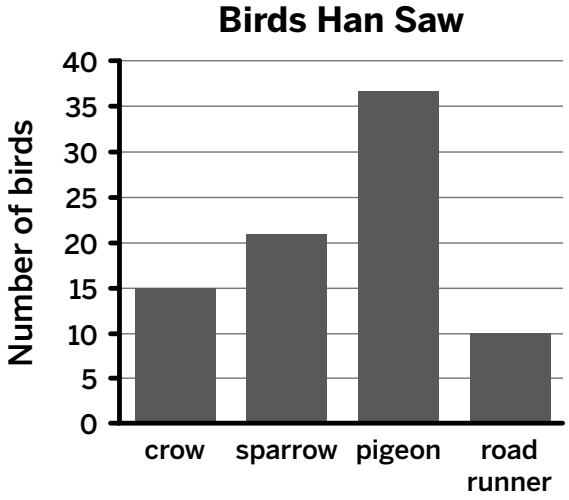
Sample response shown.

Favorite season	Number of students
fall	35
winter	24
spring	50
summer	46



I used 5 for a scale because I was able to draw the bars accurately.

2 The bar graph shows the kinds of birds that Han saw one day. Select *all* true statements.



A. Han saw 3 crows.

B. Han saw 37 pigeons.

C. Han saw 22 more pigeons than crows.

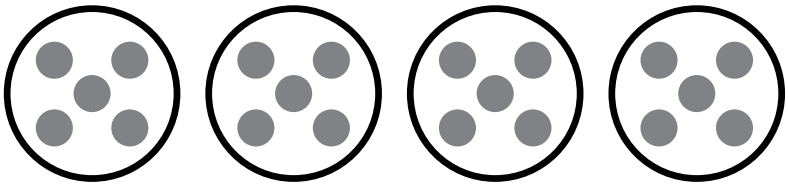
D. Han saw fewer sparrows than road runners.

E. Han saw fewer crows than pigeons.

F. Han saw 5 fewer crows than road runners.

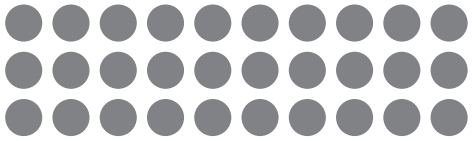
Name _____ Date _____

3 Write a multiplication expression that could represent the number of dots in the drawing.



4 × 5 or 5 × 4

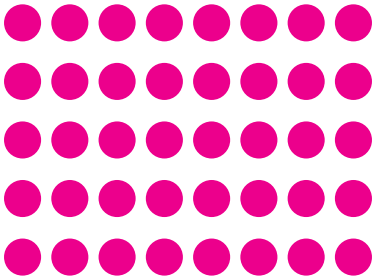
4 Write a multiplication expression that could represent the number of dots in the drawing.



3 × 10 or 10 × 3

5 Jada has 5 bags. Each bag has 8 rubber bands. How many rubber bands does Jada have? **Sample work shown.**

Show or explain your thinking.



answer: 40 rubber bands

6 There are 3 soccer teams on the field. Each team has 10 players. How many players are on the field?

A. 7

B. 13

C. 20

D. 30

For Problems 7–9, determine the number that makes the equation true.

7 $2 \times 6 =$ 12

8 $5 \times$ 7 $= 35$

9 4 $\times 10 = 40$

Use the information to complete Problems 10–12.

Diego has 18 cards. He arranged the cards in 3 rows. Each row has the same number of cards. Sample responses shown.

10 Explain how the equation 3 × ? = 18 relates to Diego's cards.

If ? is the number of cards in each row, then 3 × ? = 18 because 18 is how many cards he has altogether and 3 is the number of rows.

11 How many cards are in each row? Explain your thinking.

6; I put dots in 3 rows and there are 3, 6, 9, 12, 15, 18 dots. It takes 6 dots in each row to get 18 total.

12 Describe another way Diego could arrange the cards. Explain your thinking.

I could use the equation 6 × ? = 18. So, Diego could arrange the cards in 6 rows with 3 cards in each row. If I put dots in 6 rows, there are 6, 12, 18 dots. It takes 3 dots in each row to get 18 total.

Standard	3.MD.B.3	3.OA.A.1	3.OA.A.3	3.OA.A.4
Problem(s)	1–2	3–4	5–6, 10–12	7–9

Problem 1

Standards: 3.MD.B.3, MP3, MP6

4 Exceeding	3 Meeting	2 Approaching	1 Beginning
Scaled bar graph and explanation are complete and correct. **Correct response:** I used 5 for a scale because I was able to draw the bars accurately.	Response shows **conceptual understanding** with minor errors and/or incomplete reasoning. Student response includes a correct scaled bar graph with an incomplete explanation. Student response includes an incorrect scaled bar graph with an explanation that communicates a partial understanding of the situation.	Response shows **incomplete understanding** with significant errors. Student response includes an attempt to graph with a scale of 1.	Response shows **limited understanding.**

Problem 2

Standards: 3.MD.B.3, MP6

4 Exceeding	3 Meeting	2 Approaching	1 Beginning
All correct choices and **no incorrect** choices. **Correct response:** B. Han saw 37 pigeons. C. Han saw 22 more pigeons than crows. E. Han saw fewer crows than pigeons.	**Two correct** choices and **no incorrect** choices. **All correct** choices and **one incorrect** choice.	**One or two correct** choices and **one incorrect** choice.	**Only incorrect** choices. **Two or more incorrect** choices with some correct choices.

Problem 3

Standards: 3.OA.A.1, MP7

4 Exceeding	3 Meeting	2 Approaching	1 Beginning
Correct response: 4 × 5 or 5 × 4	Some responses may show more understanding than others. Consider assigning Meeting or Approaching based on what can be determined about the student's understanding when applicable.		Response shows **limited understanding.**

Problem 4			**Standards:** 3.OA.A.1, MP7
4 Exceeding	**3 Meeting**	**2 Approaching**	**1 Beginning**
Correct response: 3 × 10 or 10 × 3	Some responses may show more understanding than others. Consider assigning Meeting or Approaching based on what can be determined about the student's understanding when applicable.		Response shows **limited understanding.**

Problem 5			**Standards:** 3.OA.A.3, MP2, MP4
4 Exceeding	**3 Meeting**	**2 Approaching**	**1 Beginning**
Correct response and complete explanation or representation. **Correct response:** 40 rubber bands	Response shows **conceptual understanding** with minor errors and/or incomplete reasoning. Student response includes an accurate array but does not identify the answer. Student response identifies the answer but has an incomplete explanation.	Response shows **incomplete understanding** with significant errors. Student response includes an incorrect array or inaccurate multiplication equation.	Response shows **limited understanding.**

Problem 6			**Standards:** 3.OA.A.3, MP2, MP4
4 Exceeding	**3 Meeting**	**2 Approaching**	**1 Beginning**
Correct response: D. 30	Some responses may show more understanding than others. Consider assigning Meeting or Approaching based on what can be determined about the student's understanding when applicable.		Response shows **limited understanding.**

Problem 7			**Standards:** 3.OA.A.4, MP7
4 Exceeding	**3 Meeting**	**2 Approaching**	**1 Beginning**
Correct response: 12	Some responses may show more understanding than others. Consider assigning Meeting or Approaching based on what can be determined about the student's understanding when applicable.		Response shows **limited understanding.**

Problem 8			**Standards:** 3.OA.A.4, MP7
4 Exceeding	**3 Meeting**	**2 Approaching**	**1 Beginning**
Correct response: 7	Some responses may show more understanding than others. Consider assigning Meeting or Approaching based on what can be determined about the student's understanding when applicable.		Response shows **limited understanding.**

Problem 9			**Standards:** 3.OA.A.4, MP7
4 Exceeding	**3 Meeting**	**2 Approaching**	**1 Beginning**
Correct response: 4	Some responses may show more understanding than others. Consider assigning Meeting or Approaching based on what can be determined about the student's understanding when applicable.		Response shows **limited understanding.**

Problem 10			**Standards:** 3.OA.A.3, MP3
4 Exceeding	**3 Meeting**	**2 Approaching**	**1 Beginning**
The equation is accurately related to the situation. **Correct response:** **If ? is the number of cards in each row, then 3 × ? = 18 because 18 is how many cards he has altogether and 3 is the number of rows.**	Response shows **conceptual understanding** with minor errors and/or incomplete reasoning. Student identifies 18 as the total and 3 as a group in the equation but does not identify 3 as the number of rows.	Response shows **incomplete understanding** with significant errors. Student identifies 18 as the total but does not explain the role of 3 in the equation. Student identifies 3 rows.	Response shows **limited understanding.**

Problem 11			**Standards:** 3.OA.A.3, MP2
4 Exceeding	**3 Meeting**	**2 Approaching**	**1 Beginning**
The unknown number of cards is correctly identified and sufficiently explained. **Correct response:** 6; I put dots in 3 rows and there are 3, 6, 9, 12, 15, 18 dots. It takes 6 dots in each row to get 18 total.	Response shows **conceptual understanding** with minor errors and/or incomplete reasoning. The unknown number of cards is correctly identified. However, the explanation is flawed or missing important details.	Response shows **incomplete understanding** with significant errors. The unknown number of cards is incorrectly identified.	Response shows **limited understanding.**

Problem 12			**Standards:** 3.OA.A.3, MP2, MP4
4 Exceeding	**3 Meeting**	**2 Approaching**	**1 Beginning**
Another correct way the cards could be arranged is provided, with a detailed response for why the arrangement is possible. **Correct response:** I could use the equation 6 × ? = 18. So, Diego could arrange the cards in 6 rows, each with 3 cards. If I put dots in 6 rows, there are 6, 12, 18 dots. It takes 3 dots in each row.	Response shows **conceptual understanding** with minor errors and/or incomplete reasoning. Another correct way the cards could be arranged is provided. However, the explanation is flawed or missing important details.	Response shows **incomplete understanding** with significant errors. Another way the cards could be arranged is incorrect and the response demonstrates a misunderstanding of the problem.	Response shows **limited understanding.**

Name _____ Date _____

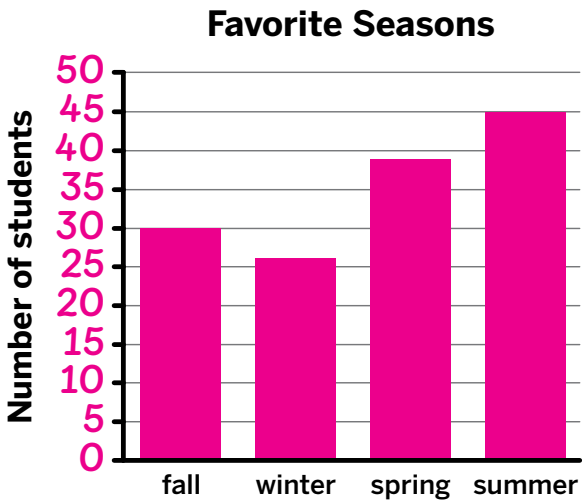
End-of-Unit Assessment

Unit 3.1

1 The table shows the favorite seasons of a group of students. Create a scaled bar graph to represent the data. Consider a scale of 5 or 10. Explain how you chose the scale.

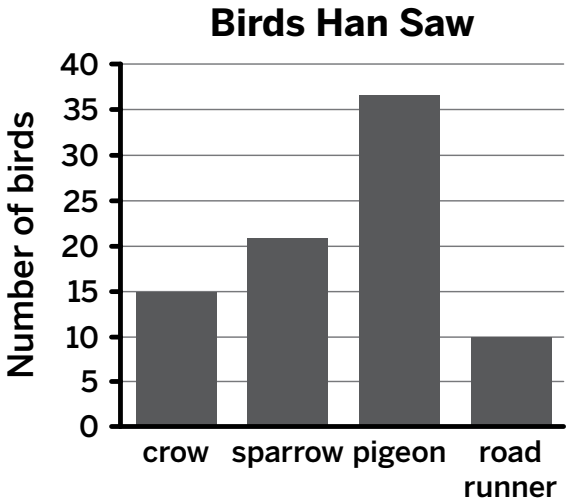
Sample response shown.

Favorite season	Number of students
fall	30
winter	26
spring	39
summer	45



I used 5 for a scale because I was able to draw the bars accurately.

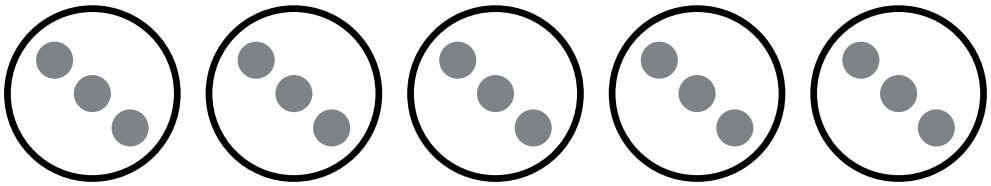
2 The bar graph shows the kinds of birds that Han saw one day. Select *all* true statements.



- **A.** Han saw 21 sparrows.
- **B.** Han saw 2 road runners.
- **C.** Han saw fewer crows than sparrows.
- **D.** Han saw 27 more pigeons than road runners.
- **E.** Han saw fewer piegons than sparrows.
- **F.** Han saw 6 fewer sparrows than crows.

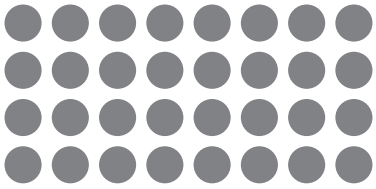
Name _____ Date _____

3 Write a multiplication expression that could represent the number of dots in the drawing.



5 × 3 or 3 × 5

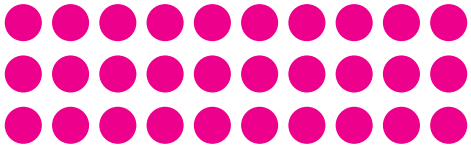
4 Write a multiplication expression that could represent the number of dots in the drawing.



4 × 8 or 8 × 4

5 Jada has 3 bags. Each bag has 10 rubber bands. How many rubber bands does Jada have? **Sample work shown.**

Show or explain your thinking.



answer: 30 rubber bands

Name _____ Date _____

6 There are 4 soccer teams on the field. Each team has 5 players. How many players are on the field?

A. 20

B. 10

C. 9

D. 1

For Problems 7–9, determine the number that makes the equation true.

7 $2 \times 7 =$ 14

8 $5 \times$ 9 $= 45$

9 6 $\times 10 = 60$

Name _____ Date _____

Use the information to complete Problems 10–12.

Diego has 20 cards. He arranges the cards in 4 rows. Each row has the same number of cards. Sample responses shown.

10 Explain how the equation 4 × ? = 20 relates to Diego's cards.

If ? is the number of cards in each row, then 4 × ? = 20 because 20 is how many cards he has altogether and 4 is the number of rows.

11 How many cards are in each row? Explain your thinking.

5; I put dots in 4 rows and there are 4, 8, 12, 16, 20 dots. It takes 5 dots in each row to get 20 total.

12 Describe another way Diego could arrange the cards. Explain your thinking.

I can use the equation 5 × ? = 20. So, Diego can arrange the cards in 5 rows with 4 cards in each row. If I put dots in 5 rows, there are 5, 10, 15, 20 dots. It takes 4 dots in each row to get 20 total.

Standard	3.MD.B.3	3.OA.A.1	3.OA.A.3	3.OA.A.4
Problem(s)	1–2	3–4	5–6, 10–12	7–9

Problem 1

Standards: 3.MD.B.3, MP3, MP6

4 Exceeding	3 Meeting	2 Approaching	1 Beginning
Scaled bar graph and explanation are complete and correct. **Correct response:** I used 5 for a scale because I was able to draw the bars accurately.	Response shows **conceptual understanding** with minor errors and/or incomplete reasoning. Student response includes a correct scaled bar graph with an incomplete explanation. Student response includes an incorrect scaled bar graph with an explanation that communicates a partial understanding of the situation.	Response shows **incomplete understanding** with significant errors. Student response includes an attempt to graph with a scale of 1.	Response shows **limited understanding.**

Problem 2

Standards: 3.MD.B.3, MP6

4 Exceeding	3 Meeting	2 Approaching	1 Beginning
All correct choices and **no incorrect** choices. **Correct response:** A. Han saw 21 sparrows. C. Han saw fewer crows than sparrows. D. Han saw 27 more pigeons than road runners.	**Two correct** choices and **no incorrect** choices. **All correct** choices and **one incorrect** choice.	**One or two correct** choices and **one incorrect** choice.	**Only incorrect** choices. **Two or more incorrect** choices with some correct choices.

Problem 3

Standards: 3.OA.A.1, MP7

4 Exceeding	3 Meeting	2 Approaching	1 Beginning
Correct response: 5 × 3 or 3 × 5	Some responses may show more understanding than others. Consider assigning Meeting or Approaching based on what can be determined about the student's understanding when applicable.		Response shows **limited understanding.**

Problem 4			**Standards:** 3.OA.A.1, MP7
4 Exceeding	**3 Meeting**	**2 Approaching**	**1 Beginning**
Correct response: 4 × 8 or 8 × 4	Some responses may show more understanding than others. Consider assigning Meeting or Approaching based on what can be determined about the student's understanding when applicable.		Response shows **limited understanding.**

Problem 5			**Standards:** 3.OA.A.3, MP2, MP4
4 Exceeding	**3 Meeting**	**2 Approaching**	**1 Beginning**
Correct response and complete explanation or representation. **Correct response:** 30 rubber bands	Response shows **conceptual understanding** with minor errors and/or incomplete reasoning. Student response includes an accurate array but does not identify the answer. Student response identifies the answer but has an incomplete explanation.	Response shows **incomplete understanding** with significant errors. Student response includes an array or a multiplication equation.	Response shows **limited understanding.**

Problem 6			**Standards:** 3.OA.A.3, MP2, MP4
4 Exceeding	**3 Meeting**	**2 Approaching**	**1 Beginning**
Correct response: A. 20	Some responses may show more understanding than others. Consider assigning Meeting or Approaching based on what can be determined about the student's understanding when applicable.		Response shows **limited understanding.**

Problem 7			**Standards:** 3.OA.A.4, MP7
4 Exceeding	**3 Meeting**	**2 Approaching**	**1 Beginning**
Correct response: 14	Some responses may show more understanding than others. Consider assigning Meeting or Approaching based on what can be determined about the student's understanding when applicable.		Response shows **limited understanding.**

Problem 8			**Standards:** 3.OA.A.4, MP7
4 Exceeding	**3 Meeting**	**2 Approaching**	**1 Beginning**
Correct response: 9	Some responses may show more understanding than others. Consider assigning Meeting or Approaching based on what can be determined about the student's understanding when applicable.		Response shows **limited understanding.**

Problem 9			**Standards:** 3.OA.A.4, MP7
4 Exceeding	**3 Meeting**	**2 Approaching**	**1 Beginning**
Correct response: 6	Some responses may show more understanding than others. Consider assigning Meeting or Approaching based on what can be determined about the student's understanding when applicable.		Response shows **limited understanding.**

Problem 10			**Standards:** 3.OA.A.3, MP3
4 Exceeding	**3 Meeting**	**2 Approaching**	**1 Beginning**
The equation is accurately related to the situation. **Correct response:** **If ? is the number of cards in each row, then 4 × ? = 20 because 20 is how many cards he has altogether and 4 is the number of rows.**	Response shows **conceptual understanding** with minor errors and/or incomplete reasoning. Student identifies 20 as the total and 4 as a group in the equation, but does not identify 4 as the number of rows.	Response shows **incomplete understanding** with significant errors. Student identifies 20 as the total but does not explain the role of 4 in the equation. Student identifies 4 rows.	Response shows **limited understanding.**

Problem 11			**Standards:** 3.OA.A.3, MP2
4 Exceeding	**3 Meeting**	**2 Approaching**	**1 Beginning**
The unknown number of cards is correctly identified and sufficiently explained. **Correct response:** 5; I put dots in 4 rows and there are 4, 8, 12, 16, 20 dots. It takes 5 dots in each row to get 20 total.	Response shows **conceptual understanding** with minor errors and/or incomplete reasoning. The unknown number of cards is correctly identified. However, the explanation is flawed or missing important details.	Response shows **incomplete understanding** with significant errors. The unknown number of cards is incorrectly identified.	Response shows **limited understanding.**

Problem 12			**Standards:** 3.OA.A.3, MP2, MP4
4 Exceeding	**3 Meeting**	**2 Approaching**	**1 Beginning**
Another correct way the cards could be arranged is provided, with a detailed response for why the arrangement is possible. **Correct response:** I could use the equation 5 x ? = 20. Diego could arrange the cards in 5 rows, each with 4 cards. If I put dots in 5 rows, there are 5, 10, 15, 20 dots. There are 4 dots in each row.	Response shows **conceptual understanding** with minor errors and/or incomplete reasoning. Another correct way the cards could be arranged is provided. However, the explanation is flawed or missing important details.	Response shows **incomplete understanding** with significant errors. Another way the cards could be arranged is incorrect and the response demonstrates a misunderstanding of the problem.	Response shows **limited understanding.**

Name _____ Date _____

Performance Task

Unit 3.1

Clare bought a package of stickers. The package has 4 sheets of stickers with 8 stickers on each sheet. Jada also bought a package of stickers. Her package has 3 sheets of stickers with 10 stickers on each sheet. How many stickers does each student have?

1 Write a multiplication equation to represent the situation for Clare. Use a ? for the unknown value.

$4 \times 8 = ?$ or $8 \times 4 = ?$

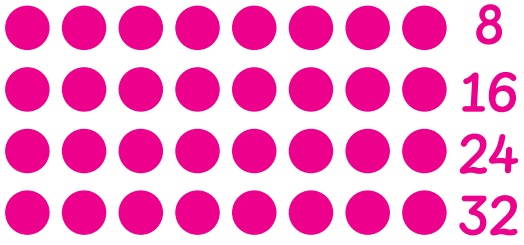
2 Write a multiplication equation to represent the situation for Jada. Use a ? for the unknown value.

$3 \times 10 = ?$ or $10 \times 3 = ?$

3 Determine the number of stickers Clare has. Rewrite your equation with the number that makes it true.

Show or explain your thinking.

Sample work shown.

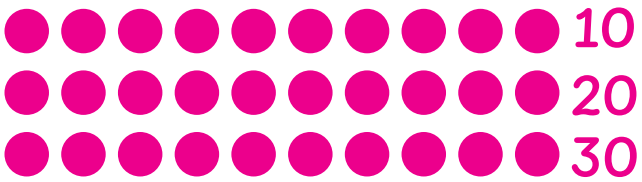


answer: $4 \times 8 = 32$ or $8 \times 4 = 32$

Name _____ Date _____

4 Determine the number of stickers Jada has. Rewrite your equation with the number that makes it true.

Show or explain your thinking. Sample work shown.



answer: 3 × 10 = 30 or 10 × 30 = 30

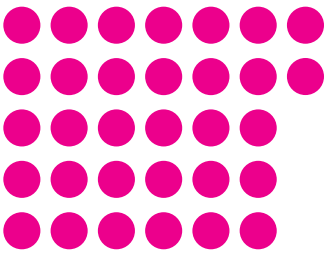
5 Suppose Jada wants to display all of her stickers in an array of 2 rows. How many stickers would be in each row?

Show or explain your thinking. Sample work shown.

answer: 15 stickers

6 Suppose Clare wants to display all of her stickers in an array of 5 rows and 6 columns. Clare says this is possible. Is she correct?

Show or explain your thinking. Sample response shown.



No, she is not correct. There would be 2 stickers remaining and so there would not be equal groups. An array cannot be formed.

Assess and Respond

Support, strengthen, and stretch learning by assigning these digital resources that adjust to each student's current level of skill and understanding: • **Personalized Practice** • **By Heart Fluency Practice** • **Math Adventures**

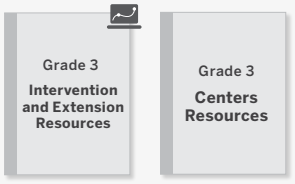
Performance Task

Facilitation: Assign this summative assessment performance task at the end of the unit to evaluate students' proficiency with the concepts and skills addressed in the unit.

Item Analysis

Problem(s)	Concept or skill	Addressed in	DOK	Standard(s)
1–2	Writing an equation to represent a multiplication situation using a symbol for the unknown	Lesson 4	1	3.OA.A.3, 3.OA.A.1, MP2, MP4
3–4	Solving problems in situations involving equal groups, arrays, and measurement quantities	Lesson 5	2	3.OA.A.3, 3.OA.A.1, MP2
5	Solving real-world problems involving equal groups using arrays	Lesson 11	2	3.OA.A, 3.OA.A.3, MP7
6	Solving real-world problems involving equal groups using arrays	Lesson 11	3	3.OA.A, 3.OA.A.3, MP3

Differentiation Resources



Intervention and Extension Resources includes:

- Mini-Lessons
- Extensions

Centers Resources includes:

- Centers

Practice

If students need further review or practice with concepts or skills from Unit 1, consider the following resources:

- In-Lesson Practice (Student Edition)
- Item Bank

Name _____ Date _____

Performance Task

Unit 3.1

Clare bought a package of stickers. The package has 4 sheets of stickers with 8 stickers on each sheet. Jada also bought a package of stickers. Her package has 3 sheets of stickers with 10 stickers on each sheet. How many stickers does each student have?

1 Write a multiplication equation to represent the situation for Clare. Use a ? for the unknown value.

$4 \times 8 = ?$ or $8 \times 4 = ?$

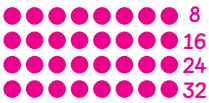
2 Write a multiplication equation to represent the situation for Jada. Use a ? for the unknown value.

$3 \times 10 = ?$ or $10 \times 3 = ?$

3 Determine the number of stickers Clare has. Rewrite your equation with the number that makes it true.

Show or explain your thinking.

Sample work shown.



answer: $4 \times 8 = 32$ or $8 \times 4 = 32$

Name _____ Date _____

Performance Task (continued)

Unit 3.1

4 Determine the number of stickers Jada has. Rewrite your equation with the number that makes it true.

Show or explain your thinking.

Sample work shown.

answer: $3 \times 10 = 30$ or $10 \times 30 = 30$

5 Suppose Jada wants to display all of her stickers in an array of 2 rows. How many stickers would be in each row?

Show or explain your thinking.

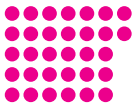
Sample work shown.

answer: 15 stickers

6 Suppose Clare wants to display all of her stickers in an array of 5 rows and 6 columns. Clare says this is possible. Is she correct?

Show or explain your thinking.

Sample response shown.



No, she is not correct. There would be 2 stickers remaining and so there would not be equal groups. An array cannot be formed.

D Differentiation (Performance Task)

To **Strengthen** and **Stretch** students' learning, refer to the differentiation resources suggested throughout this Sub-Unit.

Sub-Unit Goals	Problem(s)	Respond to Student Thinking	
• Represent and solve multiplication problems involving equal groups. • Understand multiplication in terms of equal groups.	1–2	**Support**	• **Mini-Lesson:** *Making Sense of Multiplication Problems* (Lesson 4) • **Teacher Move:** Have students review the problem by using counters to show how many stickers each person has and then checking their multiplication equation.
	3–4	**Support**	• **Mini-Lesson:** *Writing Equations That Represent Equal-Groups Situations* (Lesson 5) • **Teacher Move:** Have students review the problem by making an equal-groups drawing for each person and then checking their multiplication equation and solution.
• Represent and solve multiplication problems involving arrays.	5–6	**Support**	• **Mini-Lesson:** *Solving Multiplication Problems Using Arrays* (Lesson 11) • **Teacher Move:** Consider revisiting Lesson 11, Activity 1. Have students brainstorm different ways the chairs could be arranged in rows and columns in Problem 1.

GRADE 3

Show-What-You-Know Assessments

The following includes all lesson-level Show What You Know assessments from one full unit. These daily formative assessments focus on the key concept of the lesson. Show What You Know assessments will also be available for students to complete digitally in Grades 2–5.

Name _____ Date _____

Show What You Know

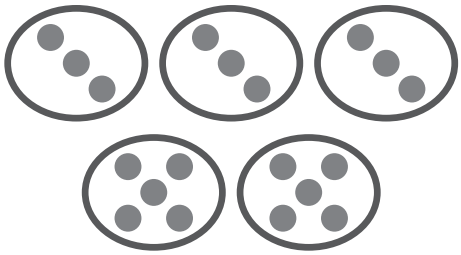
1.02

Jada has 3 bags. Each bag has 5 bracelets in it.

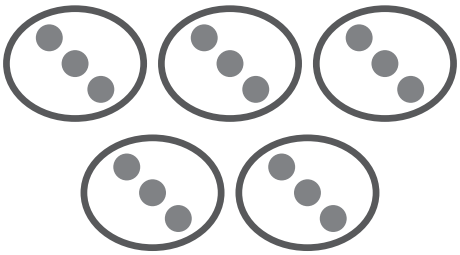
Which drawing represents the situation?

A.

B.



C.



D.

I can . . .

Represent a situation with equal groups.

Name _____ Date _____

Show What You Know

1.03

There are 6 envelopes. Each envelope has 2 notes.

Write a multiplication expression to represent the situation. Explain your thinking.

6 × 2

The 6 represents the 6 envelopes, which is the number of groups. The 2 represents the 2 notes in each envelope, which is the number in each group. So, the expression is 6 × 2.

I can . . .

Represent a multiplication situation with an expression.

Name _____ Date _____

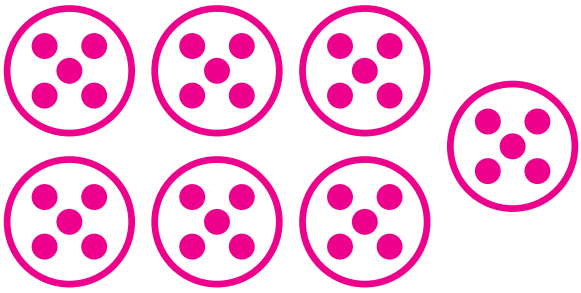
Show What You Know

1.04

There are 7 notebooks in a bin. Each notebook has 5 stickers. Sasha wrote the expression 7 × 5 to represent the total number of stickers.

How many stickers are there altogether? Sample work shown.

Show or explain your thinking.



answer: 35 stickers

I can . . .

Represent and solve a multiplication problem.

Name _____ Date _____

Show What You Know

1.05

There are 10 students playing games in groups of 2. How many groups of students are there? Sample work shown.

Show or explain your thinking.

$10 = ? \times 2$

answer: 5 groups

I can . . .

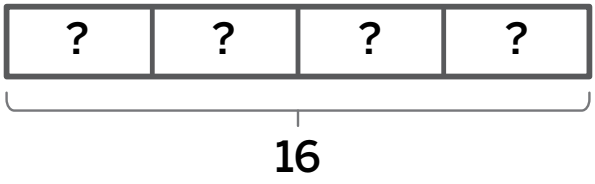
Choose a strategy and use it to solve a multiplication problem.

Name _____ Date _____

Show What You Know

1.06

Use the diagram for Problems 1 and 2.



1 Write an equation to represent the diagram. Use a ? to represent the unknown value. **Sample responses shown.**

$4 \times ? = 16$ or $16 = 4 \times ?$

2 Determine the unknown value for your equation in Problem 1.

Show or explain your thinking.

Sample work shown.

I thought about a number that I could skip count by 4 times to equal 16. 3, 6, 9, 12 did not work. 4, 8, 12, 16 works. $4 \times 4 = 16$

answer: 4

I can . . .

Write a multiplication equation with a symbol for an unknown value.

Name _____ Date _____

Show What You Know

1.07

For Problems 1 and 2, determine the product.

1 10×6 60

2 5×6 30

3 Choose 1 of the expressions and explain your thinking.

Sample response shown.

I know that 5 groups of 5 is 25 and 5 groups of 6 is 1 more group of 5. So, I know that the product of 5 × 6 is 30.

I can . . .

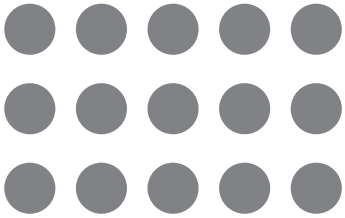
Multiply numbers to determine products within 100.

Name _____ Date _____

Show What You Know

1.08

Which expression represents the array?



A. 3×3

B. $5 + 5$

C. $3 + 5$

D. 3×5

I can . . .

Describe arrays using the structure of multiplication.

Name _____ Date _____

Show What You Know

1.09

Select 2 expressions with the same product.

A. 6×8

B. 8×5

C. 7×8

D. 8×6

Show or explain your thinking.

Sample work shown.

The same number of objects can be put in 6 rows of 8 or 8 rows of 6.

I can . . .

Represent equal amounts with multiplication expressions.

Name _____ Date _____

Show What You Know

1.10

Use the situation for Problems 1 and 2.

Clare has some baseball cards stored in a sheet protector. The sheet protector has 3 rows of slots for cards. Each row has 10 slots. If the sheet protector is full, how many cards are stored in it?

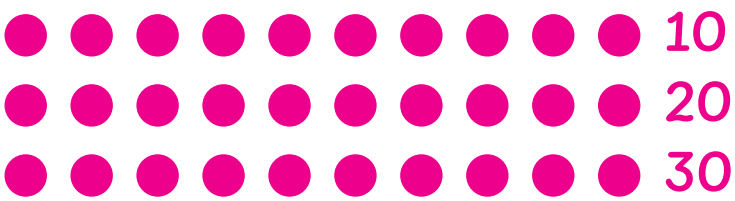
1 Write a multiplication equation that represents the situation. Use a ? for the unknown value. **Sample response shown.**

$3 \times 10 = ?$

2 Represent the problem with an array and solve the problem.

Sample work shown.

Show or explain your thinking.



answer: 30 cards

I can . . .

Represent a problem involving an array with an equation and then solve the problem.

Name _____ Date _____

Show What You Know

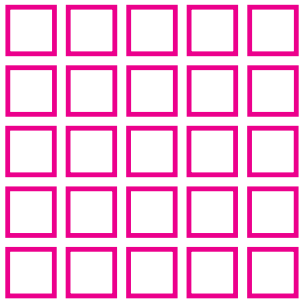
1.11

Use the situation for Problems 1 and 2.

There are 25 students in a class. They each have a cubby in which they store their backpack. Sample responses shown.

1 How could the cubbies be arranged in an array?

Show your thinking.



2 Write an equation that represents your array in Problem 1.

$5 \times 5 = 25$

I can . . .

Represent real-world equal-groups problems.

Name _____ Date _____

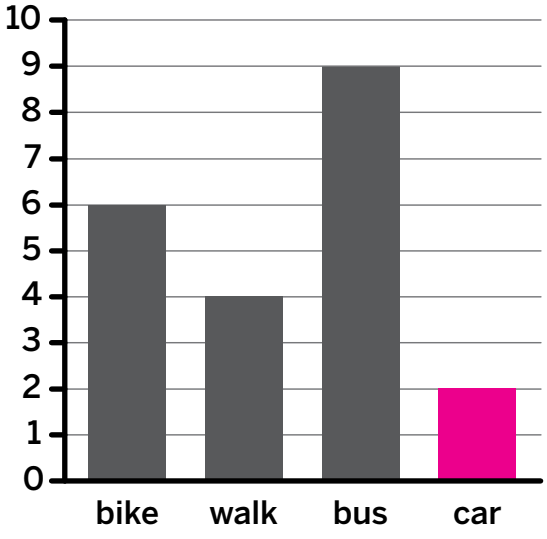
Show What You Know

1.12

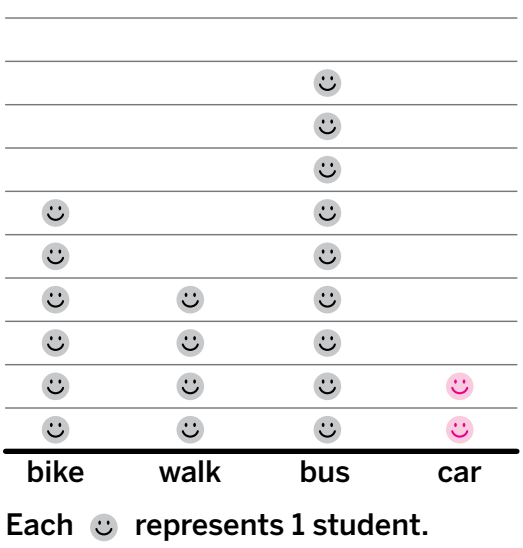
A group of students was asked, "How do you get home from school each day?" Their responses are shown on the graphs.

For Problems 1 and 2, show that 2 students get home by car on the graph.

1



2



I can . . .

Represent data on a picture graph and a bar graph.

Name _____ Date _____

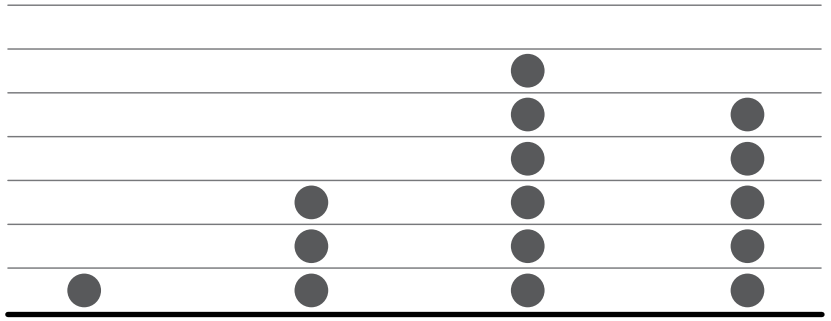
Show What You Know

1.13

Use the information and graph for Problems 1–3.

Jada made a list of how many birds she saw on her way home. Her data is represented on the picture graph.

Birds I Saw on the Way Home



Each ● represents 2 birds.

1. How many birds did Jada see? 30

2. How many sparrows did Jada see? 10

3. How many *more* pigeons than blue jays did Jada see? 6

I can . . .

Read a scaled picture graph to answer questions about the data.

Name _____ Date _____

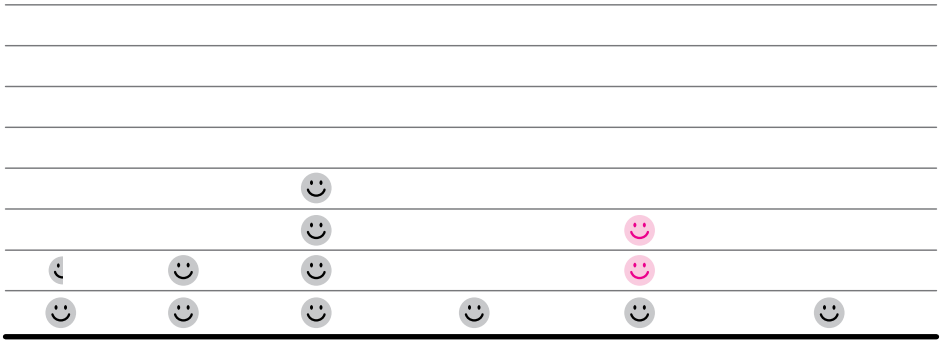
Show What You Know

1.14

A group of students was asked, "How would you like to travel?" Their responses are shown on the picture graph.

4 students were absent when the data was collected. They would all like to travel by plane. Add their data to the graph.

Ways We Would Like to Travel



Each ☺ represents 2 students.

I can . . .

Represent data on a scaled picture graph.

Name _____ Date _____

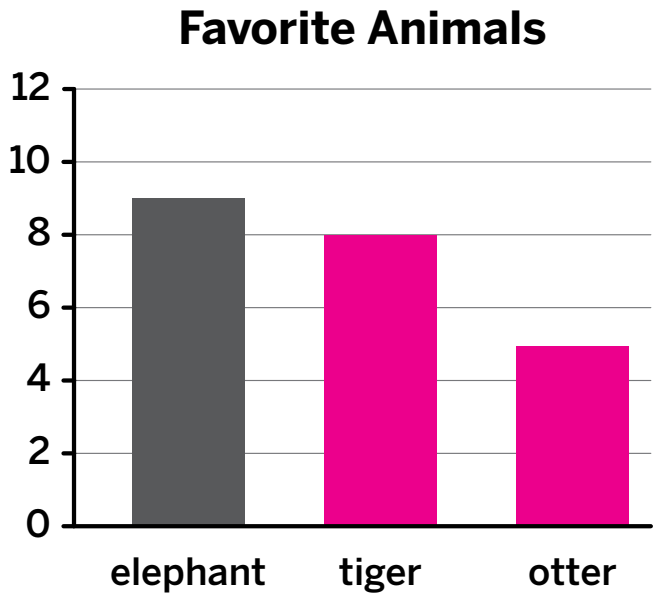
Show What You Know

1.15

Different students were asked, "What is your favorite animal?"

Draw bars on the graph to complete the scaled bar graph using the table.

Animal	Number of students
elephant	9
tiger	8
otter	5



I can . . .

Represent data on a scaled bar graph.

Name _____ Date _____

Show What You Know

1.16

The table shows the number of students in each grade at a school.

Grade	Number of students
Kindergarten	51
Grade 1	69
Grade 2	86
Grade 3	72

If you were going to make a bar graph of this data, which scale would you use? Explain your thinking.

All answers can be considered correct. Sample response shown.

A. 2 **B.** 5 **C.** 10

I would use a scale of 10 because the numbers in the table are large. If I used 2 or 5, I would run out of space or the graph would be too large.

I can . . .

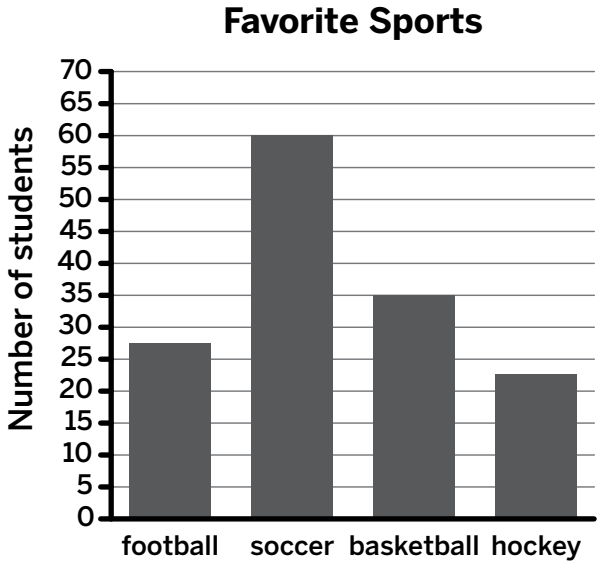
Choose a scale for a scaled bar graph.

Name _____ Date _____

Show What You Know

1.17

A group of students was asked, "What is your favorite sport?" Their responses are shown on the bar graph.



How many *fewer* students chose hockey than basketball?

Show or explain your thinking.

Sample response shown.

35 - 22
30 - 20 = 10
5 - 2 = 3
10 + 3 = 13

answer: 13 students

I can . . .

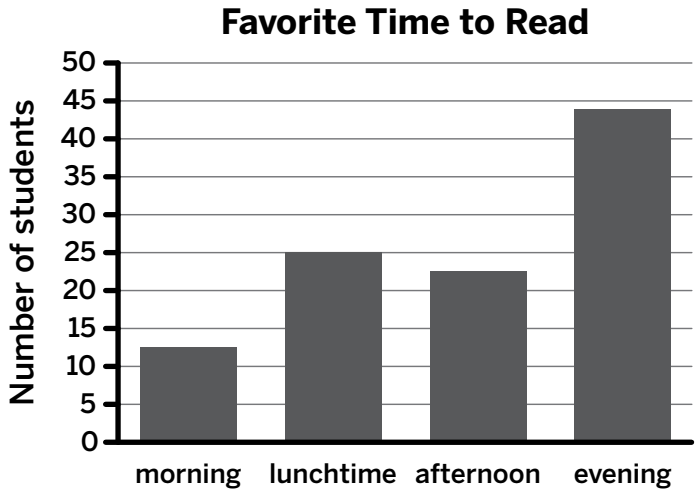
Solve problems using data on bar graphs.

Name _____ Date _____

Show What You Know

1.18

A group of students was asked, "What is your favorite time to read?" Their responses are shown on the bar graph.



How many *more* students said their favorite time to read is in the evening than in the morning or at lunchtime combined?

Show your thinking.

Sample response shown.

12 + 25 = 37
44 - 37 = 7

answer: 7 students

I can . . .

Solve problems using data on bar graphs.

Show What You Know **Lesson 2**

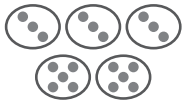
Name _____ Date _____

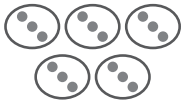
Show What You Know 1.02

Jada has 3 bags. Each bag has 5 bracelets in it.

Which drawing represents the situation?

A. 

B. 

C. 

D. 

I can . . .
Represent a situation with equal groups.

Show What You Know **Lesson 3**

Name _____ Date _____

Show What You Know 1.03

There are 6 envelopes. Each envelope has 2 notes.

Write a multiplication expression to represent the situation. Explain your thinking.

6 × 2

The 6 represents the 6 envelopes, which is the number of groups. The 2 represents the 2 notes in each envelope, which is the number in each group. So, the expression is 6 × 2.

I can . . .
Represent a multiplication situation with an expression.

Show What You Know **Lesson 4**

Name _____ Date _____

Show What You Know 1.04

There are 7 notebooks in a bin. Each notebook has 5 stickers. Sasha wrote the expression 7 × 5 to represent the total number of stickers.

How many stickers are there altogether? Sample work shown.

Show or explain your thinking.

answer: 35 stickers

I can . . .
Represent and solve a multiplication problem.

Show What You Know **Lesson 5**

Name _____ Date _____

Show What You Know 1.05

There are 10 students playing games in groups of 2. How many groups of students are there? Sample work shown.

Show or explain your thinking.

10 = ? × 2

answer: 5 groups

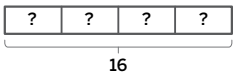
I can . . .
Choose a strategy and use it to solve a multiplication problem.

Show What You Know **Lesson 6**

Name _____ Date _____

Show What You Know 1.06

Use the diagram for Problems 1 and 2.



1. Write an equation to represent the diagram. Use a ? to represent the unknown value. Sample responses shown.

   $4 \times ? = 16$ or $16 = 4 \times ?$

2. Determine the unknown value for your equation in Problem 1.

   Show or explain your thinking. Sample work shown.

   I thought about a number that I could skip count by 4 times to equal 16. 3, 6, 9, 12 did not work. 4, 8, 12, 16 works. $4 \times 4 = 16$

   answer: 4

I can . . .
Write a multiplication equation with a symbol for an unknown value.

Show What You Know **Lesson 7**

Name _____ Date _____

Show What You Know 1.07

For Problems 1 and 2, determine the product.

1. 10×6 60

2. 5×6 30

3. Choose 1 of the expressions and explain your thinking. Sample response shown.

   I know that 5 groups of 5 is 25 and 5 groups of 6 is 1 more group of 5. So, I know that the product of 5×6 is 30.

I can . . .
Multiply numbers to determine products within 100.

Show What You Know **Lesson 8**

Name _____ Date _____

Show What You Know 1.08

Which expression represents the array?

A. 3×3
B. $5 + 5$
C. $3 + 5$
D. 3×5

I can . . .
Describe arrays using the structure of multiplication.

Show What You Know **Lesson 9**

Name _____ Date _____

Show What You Know 1.09

Select 2 expressions with the same product.

A. 6×8
B. 8×5
C. 7×8
D. 8×6

Show or explain your thinking. Sample work shown.

The same number of objects can be put in 6 rows of 8 or 8 rows of 6.

I can . . .
Represent equal amounts with multiplication expressions.

Show What You Know **Lesson 10**

Name _____ Date _____

Show What You Know 1.10

Use the situation for Problems 1 and 2.

Clare has some baseball cards stored in a sheet protector. The sheet protector has 3 rows of slots for cards. Each row has 10 slots. If the sheet protector is full, how many cards are stored in it?

1 Write a multiplication equation that represents the situation. Use a ? for the unknown value. Sample response shown.

$3 \times 10 = ?$

2 Represent the problem with an array and solve the problem. Sample work shown.

Show or explain your thinking.

answer: 30 cards

I can . . .
Represent a problem involving an array with an equation and then solve the problem.

36

Show What You Know **Lesson 11**

Name _____ Date _____

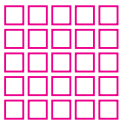
Show What You Know 1.11

Use the situation for Problems 1 and 2.

There are 25 students in a class. They each have a cubby in which they store their backpack. Sample responses shown.

1 How could the cubbies be arranged in an array?

Show your thinking.



2 Write an equation that represents your array in Problem 1.

$5 \times 5 = 25$

I can . . .
Represent real-world equal-groups problems.

37

Show What You Know **Lesson 12**

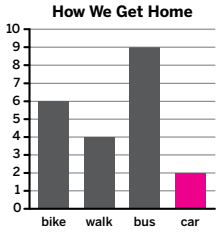
Name _____ Date _____

Show What You Know 1.12

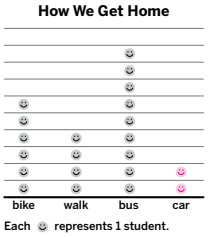
A group of students was asked, "How do you get home from school each day?" Their responses are shown on the graphs.

For Problems 1 and 2, show that 2 students get home by car on the graph.

1



2



Each ☺ represents 1 student.

I can . . .
Represent data on a picture graph and a bar graph.

38

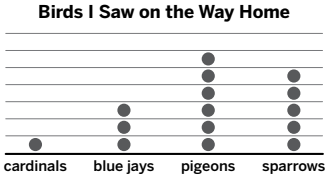
Show What You Know **Lesson 13**

Name _____ Date _____

Show What You Know 1.13

Use the information and graph for Problems 1–3.

Jada made a list of how many birds she saw on her way home. Her data is represented on the picture graph.



Each ● represents 2 birds.

1 How many birds did Jada see? 30

2 How many sparrows did Jada see? 10

3 How many *more* pigeons than blue jays did Jada see? 6

I can . . .
Read a scaled picture graph to answer questions about the data.

39

Show What You Know **Lesson 14**

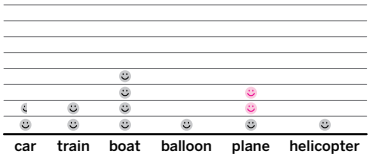
Name _____ Date _____

Show What You Know 1.14

A group of students was asked, "How would you like to travel?" Their responses are shown on the picture graph.

4 students were absent when the data was collected. They would all like to travel by plane. Add their data to the graph.

Ways We Would Like to Travel



Each ☺ represents 2 students.

I can . . .
Represent data on a scaled picture graph.

40

Show What You Know **Lesson 15**

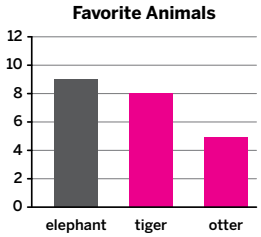
Name _____ Date _____

Show What You Know 1.15

Different students were asked, "What is your favorite animal?"

Draw bars on the graph to complete the scaled bar graph using the table.

Animal	Number of students
elephant	9
tiger	8
otter	5



I can . . .
Represent data on a scaled bar graph.

41

Show What You Know **Lesson 16**

Name _____ Date _____

Show What You Know 1.16

The table shows the number of students in each grade at a school.

Grade	Number of students
Kindergarten	51
Grade 1	69
Grade 2	86
Grade 3	72

If you were going to make a bar graph of this data, which scale would you use? Explain your thinking.

All answers can be considered correct. Sample response shown.

A. 2 **B.** 5 **C.** 10

I would use a scale of 10 because the numbers in the table are large. If I used 2 or 5, I would run out of space or the graph would be too large.

I can . . .
Choose a scale for a scaled bar graph.

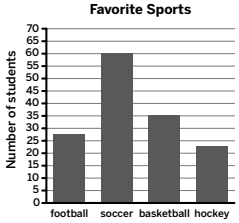
42

Show What You Know **Lesson 17**

Name _____ Date _____

Show What You Know 1.17

A group of students was asked, "What is your favorite sport?" Their responses are shown on the bar graph.



How many *fewer* students chose hockey than basketball?

Show or explain your thinking. Sample response shown.

35 - 22
30 - 20 = 10
5 - 2 = 3
10 + 3 = 13

answer: 13 students

I can . . .
Solve problems using data on bar graphs.

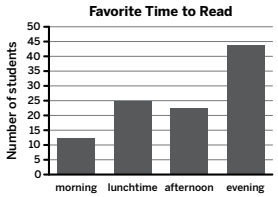
43

Show What You Know **Lesson 18**

Name _____ Date _____

Show What You Know 1.18

A group of students was asked, "What is your favorite time to read?" Their responses are shown on the bar graph.



How many *more* students said their favorite time to read is in the evening than in the morning or at lunchtime combined?

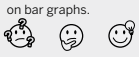
Show your thinking. Sample response shown.

12 + 25 = 37
44 - 37 = 7

answer: 7 students

I can . . .

Solve problems using data on bar graphs.



44

GRADE 3

Mini-Lessons

The following section includes a selection of Mini-Lessons that support core instruction. These 15-minute lessons are aligned to the most critical topics throughout a unit to provide targeted intervention to small groups who need additional support. Mini-Lessons appear as a support activity in the differentiation options supporting each lesson.

Name _____ Date _____

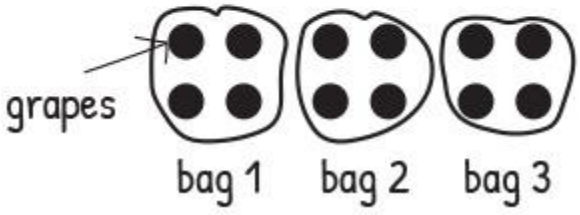
Representing Equal-Groups Situations

ML 1.02.A

Modeled Review

Name: Clare

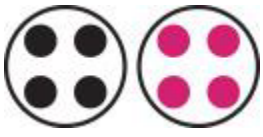
There are 3 bags. Each bag has 4 grapes.
Represent the situation with an equal-groups drawing.



Guided Practice

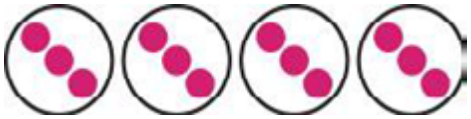
Represent each situation with an equal-groups drawing. Sample response shown for Problem 4.

1. There are 2 cars.
Each car has 4 wheels.



2. Each team has 2 players.
There are 4 teams.

3. Each bag has 3 apples.
There are 4 bags.



4. Each table has 5 students.
There are 3 tables.

Guided Practice

Represent each situation with an equal-groups drawing. Sample responses shown.

5. There are 2 trees. Each tree has 2 squirrels.

6. There are 3 fish tanks. Each tank has 4 fish.

7. Each nest has 2 birds. There are 3 nests.

8. Each dog house has 3 dogs. There are 3 dog houses.

Check

Represent the situation with an equal-groups drawing.

There are 4 plates. Each plate has 2 apples.

Goal

Represent multiplication situations with equal-groups drawings.

Standard

3.OA.A.1

Materials

coloring tools, counters (optional)

Modeled Review

Point to Clare's work and **ask:**

- "How many bags are in this situation? Where do you see 3 represented in the drawing?"
- "How many grapes are in each bag? Where do you see 4 grapes per bag?"

Reinforce Clare's thinking by saying, "Drawings of equal-groups always show the number of groups and the same amount in each group."

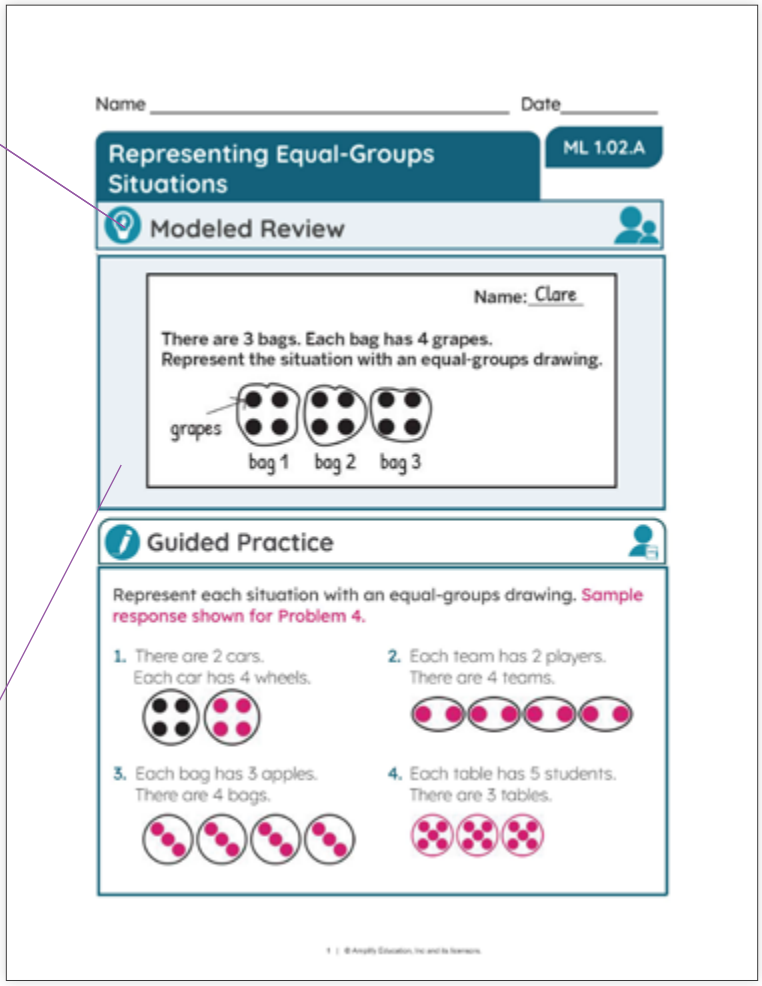
ML/EL Invite students to talk through the situations before solving.

Guided Practice

For each problem, focus students' attention on representing the situations with an equal-groups drawing.

To scaffold their thinking, **ask:**

- "How many groups are there?"
- "How many are in each group?"



Name _____ Date _____

Representing Equal-Groups Situations

ML 1.02.A

Modeled Review

Name: Clare

There are 3 bags. Each bag has 4 grapes.
Represent the situation with an equal-groups drawing.

grapes

bag 1 bag 2 bag 3

Guided Practice

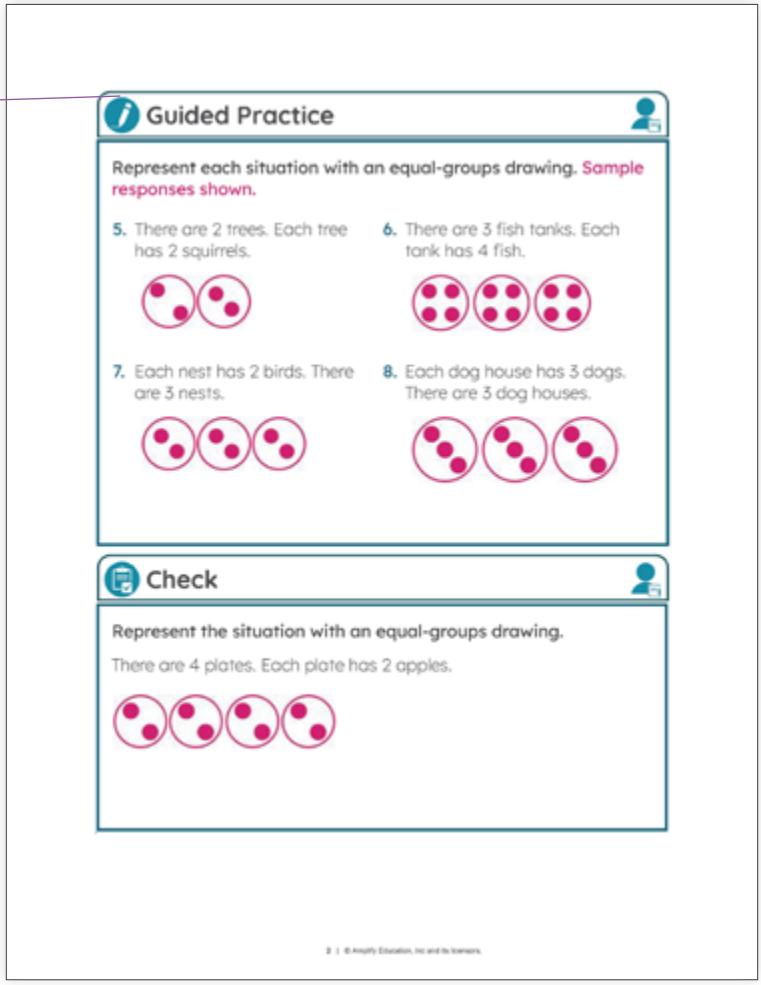
Represent each situation with an equal-groups drawing. Sample response shown for Problem 4.

1. There are 2 cars. Each car has 4 wheels.
2. Each team has 2 players. There are 4 teams.
3. Each bag has 3 apples. There are 4 bags.
4. Each table has 5 students. There are 3 tables.

Guided Practice

A Provide access to coloring tools and invite students to annotate the key pieces of information presented in each situation.

Key Takeaway:
Say, "You can represent equal groups with drawings that show the number of groups, how many in each group, and that there are the same number of objects in each group."



Guided Practice

Represent each situation with an equal-groups drawing. Sample responses shown.

5. There are 2 trees. Each tree has 2 squirrels.

6. There are 3 fish tanks. Each tank has 4 fish.

7. Each nest has 2 birds. There are 3 nests.

8. Each dog house has 3 dogs. There are 3 dog houses.

Check

Represent the situation with an equal-groups drawing.

There are 4 plates. Each plate has 2 apples.

Reflection

Ask:
- "How are objects arranged in an equal-groups drawing?"
- "Reflect on your learning today. What were you most proud of?"

Check: Recommended Next Steps

Almost there	**Got it!**
If students need more support, consider having students represent the problems in the Guided Practice using counters.	If students need more practice, have students represent each situation with an equal-groups drawing. • There are 5 bags. Each bag has 2 bananas. • There are 4 packages of granola bars. Each package has 4 bars.

Name _____ Date_____

Describing Equal-Groups Situations

ML 1.02.B

Modeled Review

Name: Priya

Describe a situation that could be represented by the equal-groups drawing shown.

There are 3 baskets. Each basket has 6 books.

Guided Practice

Draw a line to match the situation with the equal-groups drawing that represents it.

Situation	Equal-Groups Drawing
1. There are 3 baskets. Each basket has 4 apples.	
2. Each pond has 6 ducks. There are 2 ponds.	
3. There are 6 bags. Each bag has 2 toys.	
4. Each car has 4 wheels. There are 5 cars.	

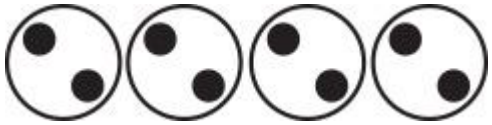
Guided Practice

Describe a situation that could be represented with the equal-groups shown.

5. There are 3 bowls. Each bowl has __5__ strawberries.

6. Each tray has __3__ ice cubes. There are __4__ ice trays.

7. Sample response shown.



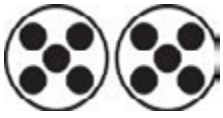
There are 4 baskets. Each basket has 2 apples.

8. Sample response shown.

There are 2 tables. Each table has 6 students.

Check

Describe a situation that could be represented with the equal-groups shown. Sample response shown.



There are 2 bags. Each bag has 5 oranges.

Goal

Describe multiplication situations represented by equal-groups drawings.

Standard	Materials
3.OA.A.1	coloring tools

Modeled Review

Point to Priya's work and **ask:**

- "Why do you think Priya chose 3 as the number of baskets for her description? Why did she choose 6 as the number of books in each basket?"
- "Do you think Priya's description matches the representation? Why or why not?"

Reinforce Priya's thinking by saying, "You can interpret an equal-groups drawing to describe a situation that it could represent."

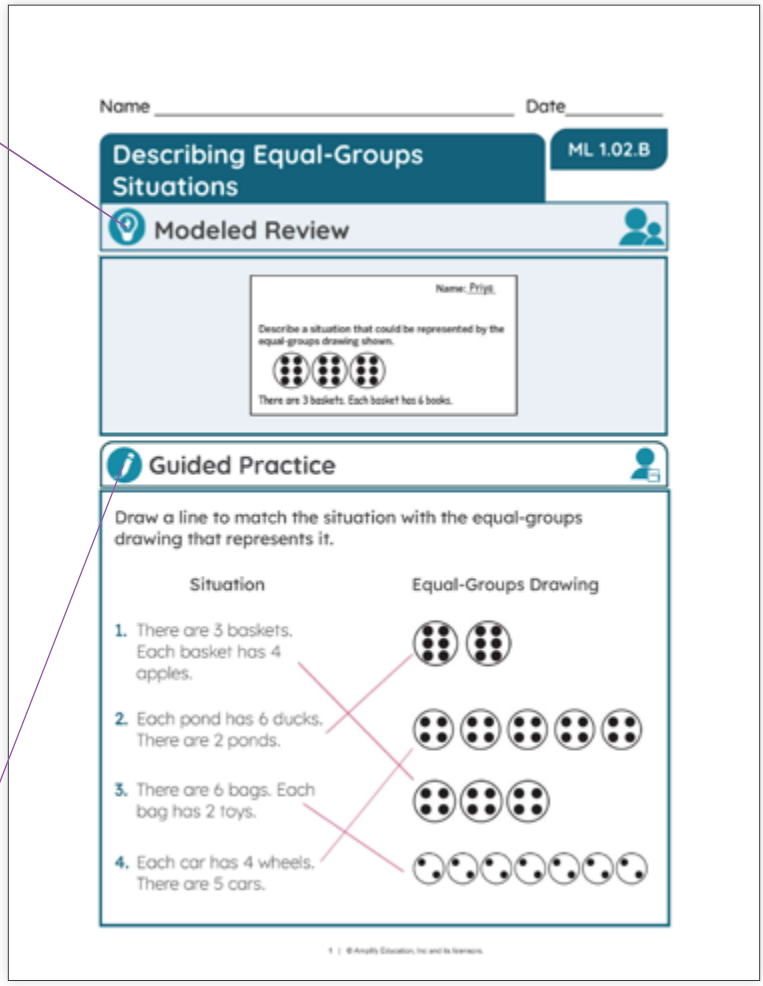
ML/EL Consider providing students with sentence frames to support their written descriptions.

Guided Practice

For each problem, focus students' attention on determining which equal-groups drawing matches each situation.

To scaffold their thinking, **ask:**

- "What do the larger circles represent?"
- "What do the dots in each circle represent?"



Name _____ Date _____

Describing Equal-Groups Situations

ML 1.02.B

Modeled Review

Name: Priya

Describe a situation that could be represented by the equal-groups drawing shown.

There are 3 baskets. Each basket has 6 books.

Guided Practice

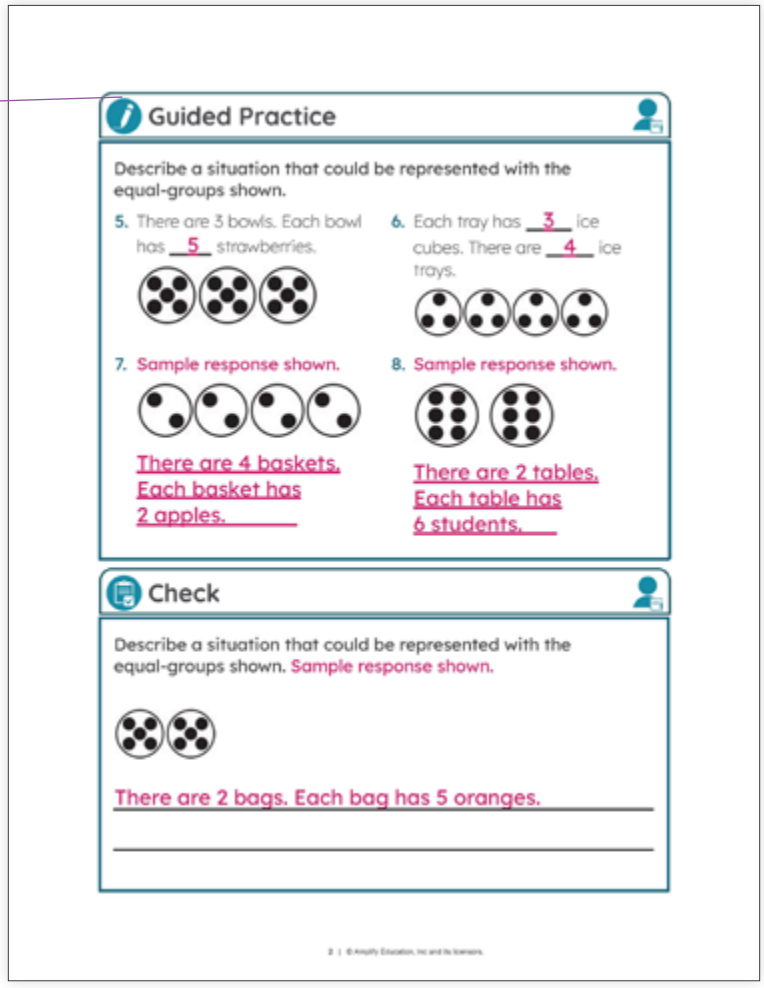
Draw a line to match the situation with the equal-groups drawing that represents it.

Situation	Equal-Groups Drawing
1. There are 3 baskets. Each basket has 4 apples.	
2. Each pond has 6 ducks. There are 2 ponds.	
3. There are 6 bags. Each bag has 2 toys.	
4. Each car has 4 wheels. There are 5 cars.	

Guided Practice

A Provide access to coloring tools and invite students to annotate the key pieces of information presented in each situation.

Key Takeaway:
Say, "You can represent equal groups with drawings that show the number of groups, how many in each group, and that there are the same number of objects in each group."



Guided Practice

Describe a situation that could be represented with the equal-groups shown.

5. There are 3 bowls. Each bowl has 5 strawberries.

6. Each tray has 3 ice cubes. There are 4 ice trays.

7. Sample response shown.

There are 4 baskets. Each basket has 2 apples.

8. Sample response shown.

There are 2 tables. Each table has 6 students.

Check

Describe a situation that could be represented with the equal-groups shown. Sample response shown.

There are 2 bags. Each bag has 5 oranges.

Reflection

Ask:
- "How are equal-groups drawings and multiplication situations related?"
- "Reflect on today's learning. What questions do you still have?"

Check: Recommended Next Steps

Almost there	**Got it!**
If students need more support, consider using Mini-Lesson 1.02.A: *Representing Equal Groups Situations*.	If students need more practice, sketch an equal-groups drawing with 3 groups and 4 in each group. Ask students to describe a situation that could be represented by the equal-groups drawing.

Name _____ Date_____

Drawing Diagrams to Represent Expressions

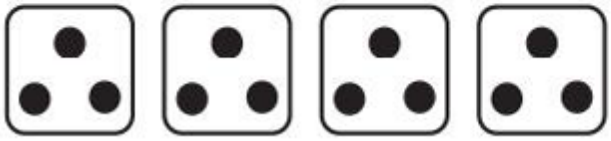
ML 1.03.A

Modeled Review

Create a drawing or diagram to represent the multiplication expression.

4×3

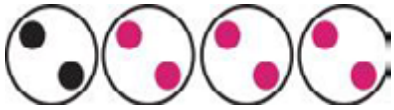
Clare's Diagram



Guided Practice

Create a drawing or diagram to represent each multiplication expression. Sample responses shown for Problems 3-4.

1. 4×2



2. 3×5

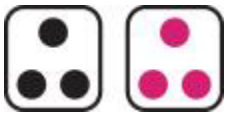
3. 2×6

4. 6×3

Guided Practice

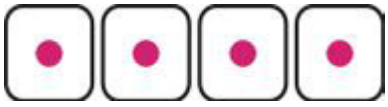
Create a drawing or diagram to represent each multiplication expression. Sample responses shown for Problems 8-10.

5. 2 × 3



6. 4 × 4

7. 4 × 1



8. 5 × 3

9. 4 × 5

10. 3 × 6

Check

Create a drawing or diagram to represent the multiplication expression. Sample response shown.

6 × 2

Goal

Draw diagrams to represent multiplication expressions.

Standard

3.OA.A.1

Materials

highlighters, counters, cubes (optional),

Modeled Review

Point to the problem in the Modeled Review and **ask:**

- "How many groups do you see in Clare's diagram? How many are in each group?"
- "Where do you see the 4 from the expression represented in the diagram? Where do you see the 3?"

Reinforce the goal by saying, "The first number in the expression represents the number of groups and the second number represents the amount in each group."

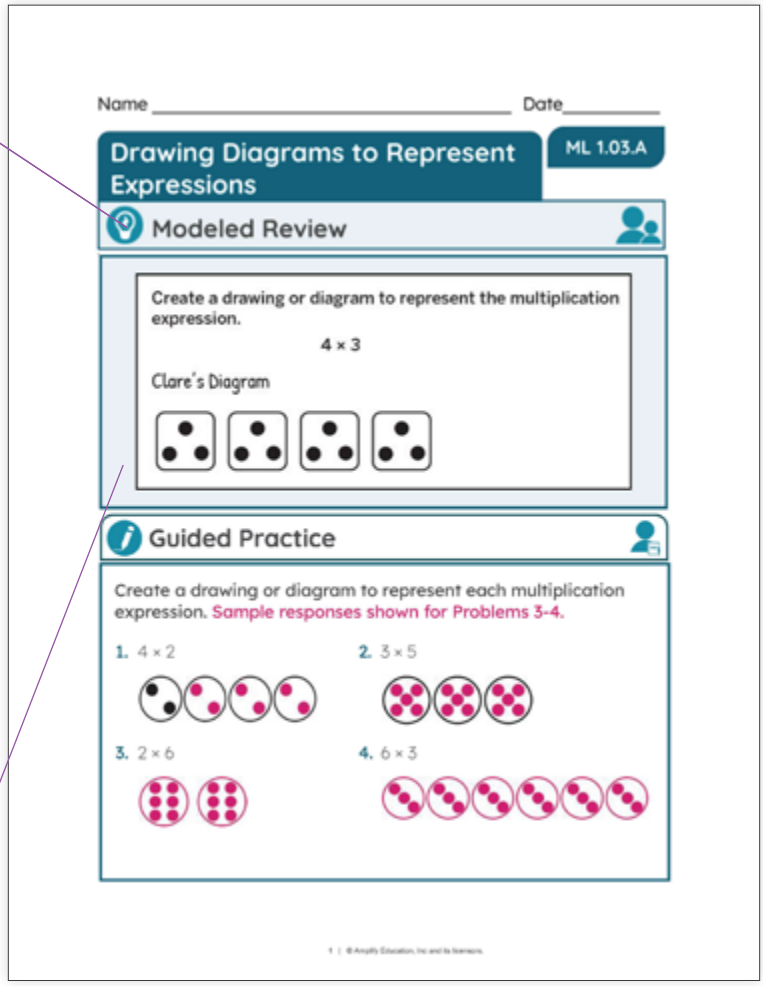
ML/EL Point to the factors in the expression and the drawing. Highlight where each factor is represented.

Guided Practice

For each problem, focus students' attention on representing each expression.

To scaffold their thinking, **ask:**

- "How many groups should you draw?"
- "How many are in each group?


Name _____ Date _____

Drawing Diagrams to Represent Expressions ML 1.03.A

Modeled Review

Create a drawing or diagram to represent the multiplication expression.

4 × 3

Clare's Diagram

Guided Practice

Create a drawing or diagram to represent each multiplication expression. Sample responses shown for Problems 3–4.

1. 4 × 2
2. 3 × 5
3. 2 × 6
4. 6 × 3

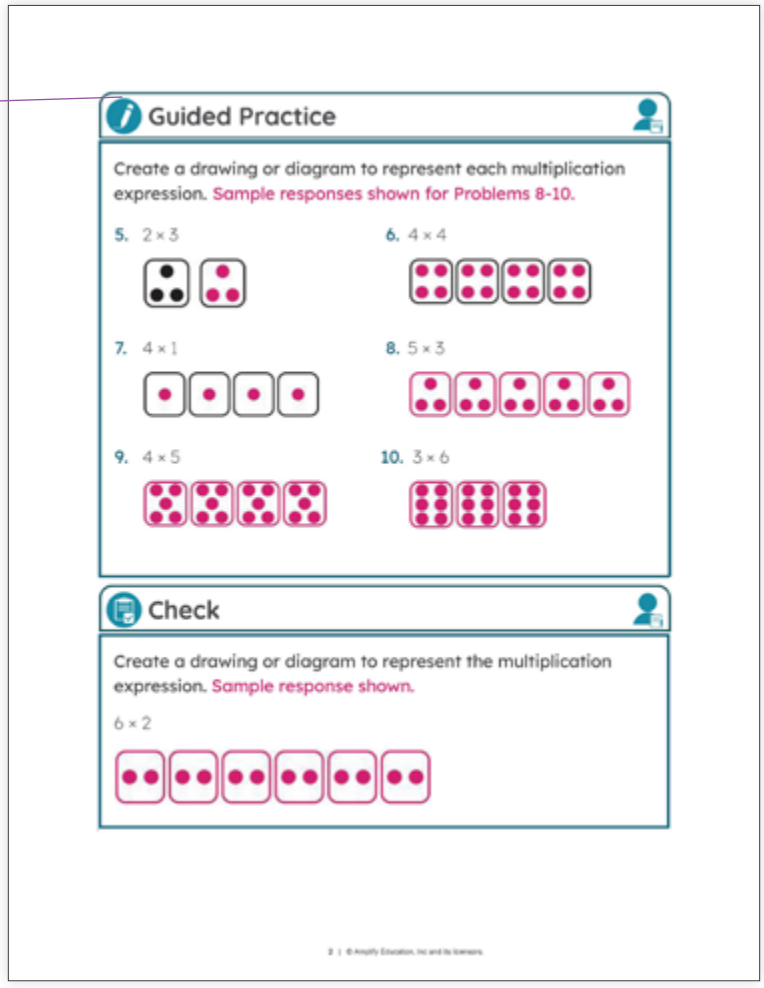
Vocabulary

If needed, share the meaning of the word with students.
expression: A mathematical phrase made up of numbers and math operations, such as addition, subtraction, multiplication, and division.

Guided Practice

A Guide visualization by providing students with counters or cubes to represent the expression before drawing a representation.

Key Takeaway:
Say, "When writing a multiplication expression, the structure of the expression can be used to show the equal groups. When you read a multiplication expression from left to right, the first number represents the number of groups and the second number represents the size of each group."



Guided Practice

Create a drawing or diagram to represent each multiplication expression. Sample responses shown for Problems 8-10.

5. 2 × 3

6. 4 × 4

7. 4 × 1

8. 5 × 3

9. 4 × 5

10. 3 × 6

Check

Create a drawing or diagram to represent the multiplication expression. Sample response shown.

6 × 2

Reflection

Ask:
- "What do all multiplication expressions have in common?"
- "What strategy was the most helpful today?"

Check: Recommended Next Steps

Almost there	**Got it!**
If students need more support, consider using Mini-Lesson 1.02.A: *Representing Equal Groups Situations*.	If students need more practice, have students create diagrams to represent the following expressions. 5 × 2 4 × 6

Name _____ Date _____

Writing Expressions That Represent Equal-Groups Drawings and Situations

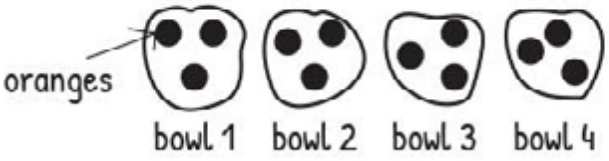
ML 1.03.B

Modeled Review

Name: Han

Write a multiplication expression to represent the situation or drawing.

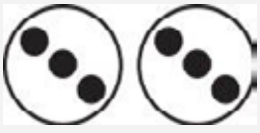
There are 4 bowls. Each bowl has 3 oranges.



Expression: 4 x 3

Guided Practice

1. Write a multiplication expression to represent the situation or drawing. **Sample expression shown for Row 3.**

Situation or drawing	Expression
	2 × 3
There are 3 boxes. Each box has 6 crayons.	3 × 6
	5 × 3

Guided Practice

Write a multiplication expression to represent the situation or drawing. Sample expressions shown for Problems 3–5.

2. 

2 groups

4 in each group

expression: 2 × 4

3. 

6 groups

4 in each group

expression: 6 × 4

4. There are 5 fish tanks. Each tank has 4 fish.

5 groups

4 in each group

expression: 5 × 4

5. Each bicycle has 2 wheels. There are 7 bicycles.

expression: 7 × 2

Check

Write a multiplication expression to represent the situation or drawing. Sample expressions shown.

1. There are 3 tables. Each table has 8 people.

expression: 3 × 8

2. 

expression: 5 × 2

Goal

Make connections between multiplication situations, drawings, and expressions.

Standard

3.OA.A.1

Materials

counters, cubes (optional)

Modeled Review

Point to Han's work and **ask:**

- "How does the expression Han wrote match the situation?"
- "What do each of the factors in Han's expression represent?"

Reinforce Han's thinking by saying, "There are many ways to represent multiplication situations. In each representation, the number of groups and the amount in each group is shown."

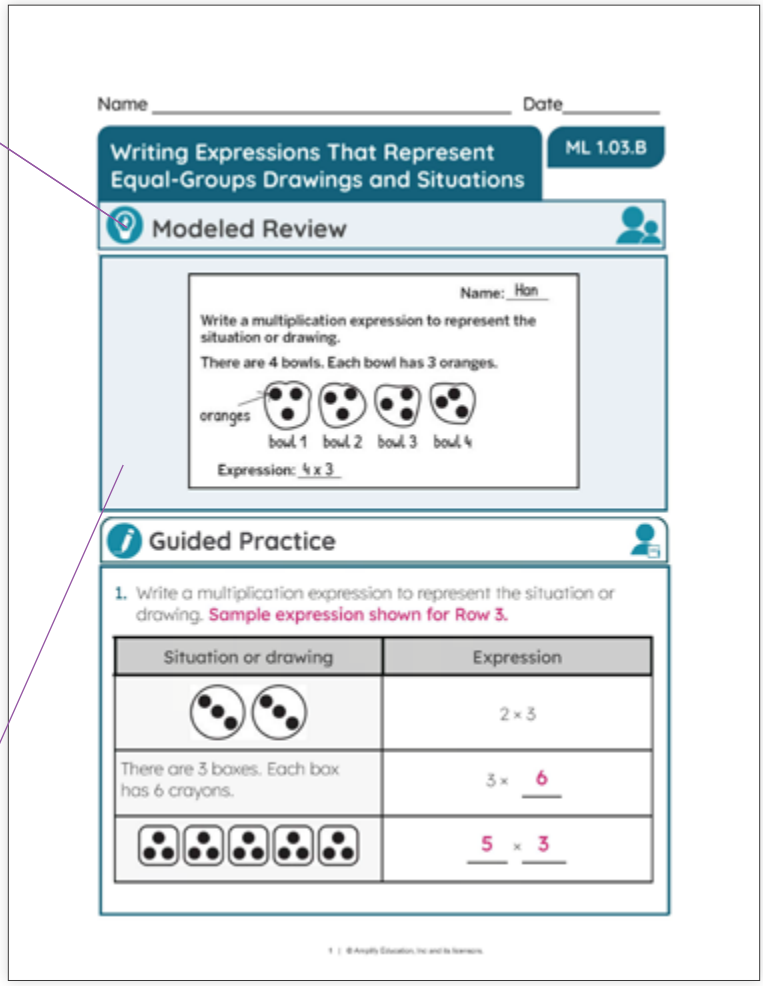
ML/EL Invite students to explain to a partner how many groups there are and how many are in each group.

Guided Practice

For each problem, focus students' attention on writing multiplication expressions.

To scaffold their thinking, **ask:**

- "How do you know the number of groups?"
- "How do you know the amount in each group?"



Name _____ Date _____

Writing Expressions That Represent Equal-Groups Drawings and Situations — ML 1.03.B

Modeled Review

Name: Han

Write a multiplication expression to represent the situation or drawing.

There are 4 bowls. Each bowl has 3 oranges.

oranges

bowl 1 bowl 2 bowl 3 bowl 4

Expression: 4 x 3

Guided Practice

1. Write a multiplication expression to represent the situation or drawing. Sample expression shown for Row 3.

Situation or drawing	Expression
	2 × 3
There are 3 boxes. Each box has 6 crayons.	3 × 6
	5 × 3

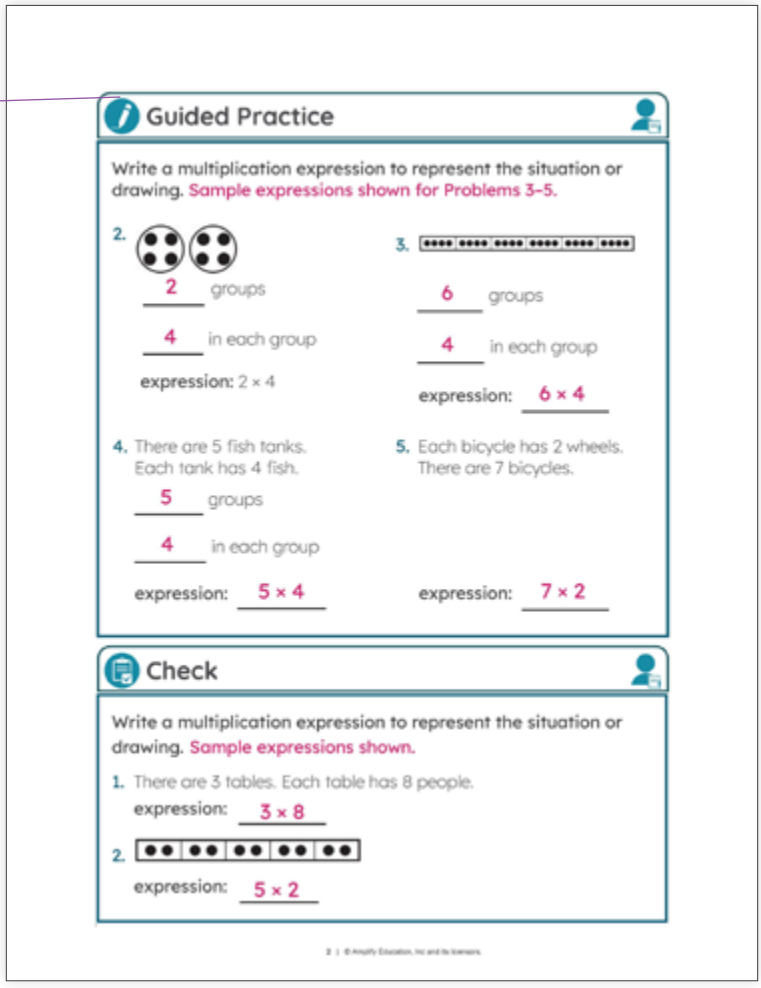
Vocabulary

If needed, share the meaning of the word with students.
expression: A mathematical phrase made up of numbers and math operations, such as addition, subtraction, multiplication, and division.

Guided Practice

A Guide visualization by providing students with counters or cubes to represent the expression before drawing a representation.

Key Takeaway:
Say, "When writing a multiplication expression, the structure of the expression can be used to show the equal groups. When you read a multiplication expression from left to right, the first number represents the number of groups and the second number represents the size of each group."



Guided Practice

Write a multiplication expression to represent the situation or drawing. Sample expressions shown for Problems 3–5.

2. 2 groups; 4 in each group; expression: 2 × 4

3. 6 groups; 4 in each group; expression: 6 × 4

4. There are 5 fish tanks. Each tank has 4 fish.
5 groups; 4 in each group; expression: 5 × 4

5. Each bicycle has 2 wheels. There are 7 bicycles.
expression: 7 × 2

Check

Write a multiplication expression to represent the situation or drawing. Sample expressions shown.

1. There are 3 tables. Each table has 8 people.
expression: 3 × 8

2. expression: 5 × 2

Reflection

Ask:
- "What do multiplication expressions represent?"
- "Reflect on today's learning. What are you most proud of?"

Check: Recommended Next Steps

Almost there	**Got it!**
If students need more support, consider using Mini-Lesson 1.02.B: *Describing Equal-Groups Situations*.	If students need more practice, have students write an expression to represent the situation. • There are 3 teams. Each team has 8 players.

Name _____ Date_____

Making Sense of Multiplication Problems

ML 1.04

Modeled Review

Name: Jada

Solve the problem and write an expression that represents the situation.

4 students went to the library. They each borrowed 3 books. How many books did they borrow altogether?

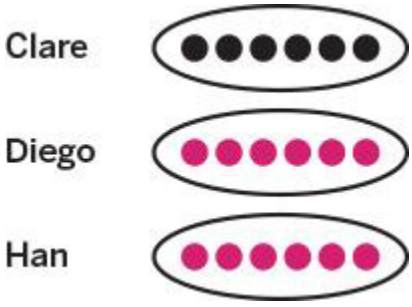
expression: 4 x 3

answer: 12 books

Guided Practice

Represent the situation with a drawing.

1. Clare, Diego, and Han each borrowed 6 books about snakes. How many books were borrowed altogether?



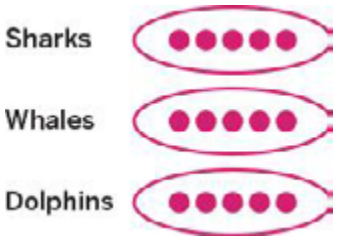
expression: 3 × 6

answer: 18 books

Guided Practice

For Problems 2 and 3, solve the problem. Represent the situation with a drawing and an expression.

2. There are 5 books each about sharks, whales, and dolphins. How many books are there in all? **Sample drawings shown.**



expression: 3×5

answer: 15 books

3. 10 students in the class borrowed 2 books each for the weekend. How many books did the students in the class borrow? **Sample drawing and expression shown.**

expression: 10×2

answer: 20 books

Check

Solve the problem. Represent the situation with a drawing and an expression. Sample drawing and expression shown.

2 students helped put away 8 books each. How many books did they put away altogether?

expression: 2×8

answer: 16 books

Goal

Solve and write expressions for multiplication situations.

Standard	Materials
3.OA.A.1	counters

Modeled Review

Point to Jada's work and **ask:**

- "What is this situation about?"
- "Why did Jada create 4 groups in her drawing? Why did she draw 3 dots in each group?"
- "How does the expression match Jada's drawing?"

Reinforce Jada's thinking by saying, "When making sense of multiplication situations, it can be helpful to determine what the situation is about and the number of groups and number of objects in each group."

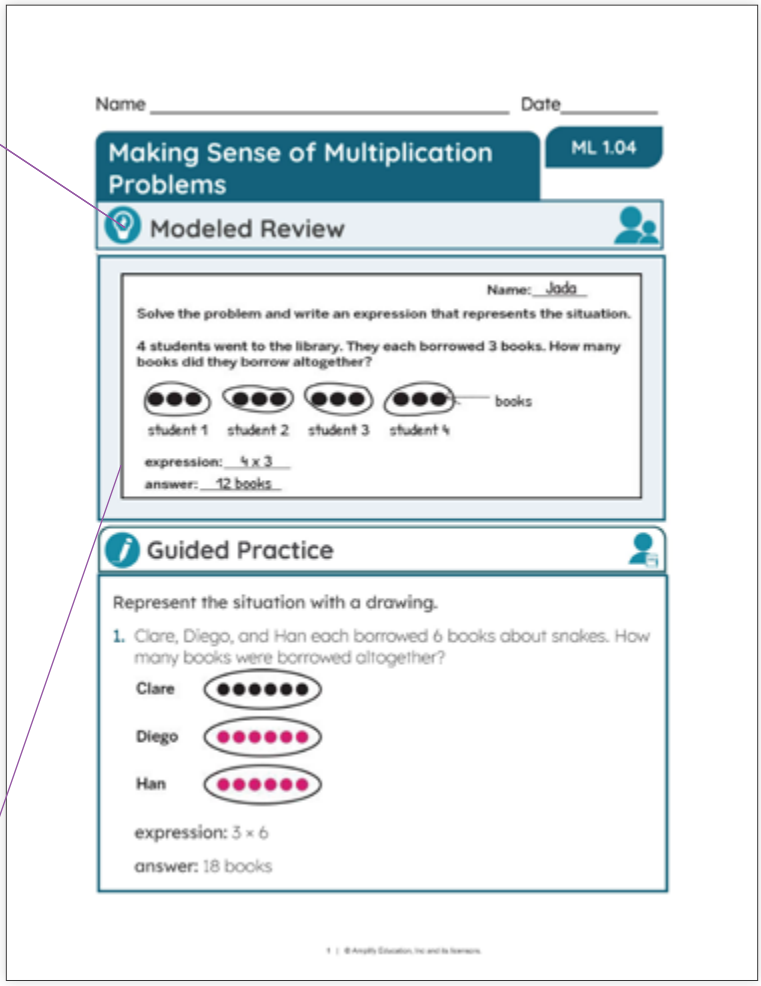
ML/EL Invite students to talk through the situation before representing the situation with drawings and expressions.

Guided Practice

For each problem, focus students' attention on determining what the situation is about.

To scaffold their thinking, **ask:**

- "What is the situation about?"
- "How many groups are there? How many objects are in each group?"



Name _____ Date _____

Making Sense of Multiplication Problems ML 1.04

Modeled Review

Name: Jada

Solve the problem and write an expression that represents the situation.

4 students went to the library. They each borrowed 3 books. How many books did they borrow altogether?

student 1 student 2 student 3 student 4 books

expression: 4 x 3

answer: 12 books

Guided Practice

Represent the situation with a drawing.

1. Clare, Diego, and Han each borrowed 6 books about snakes. How many books were borrowed altogether?

Clare

Diego

Han

expression: 3 × 6

answer: 18 books

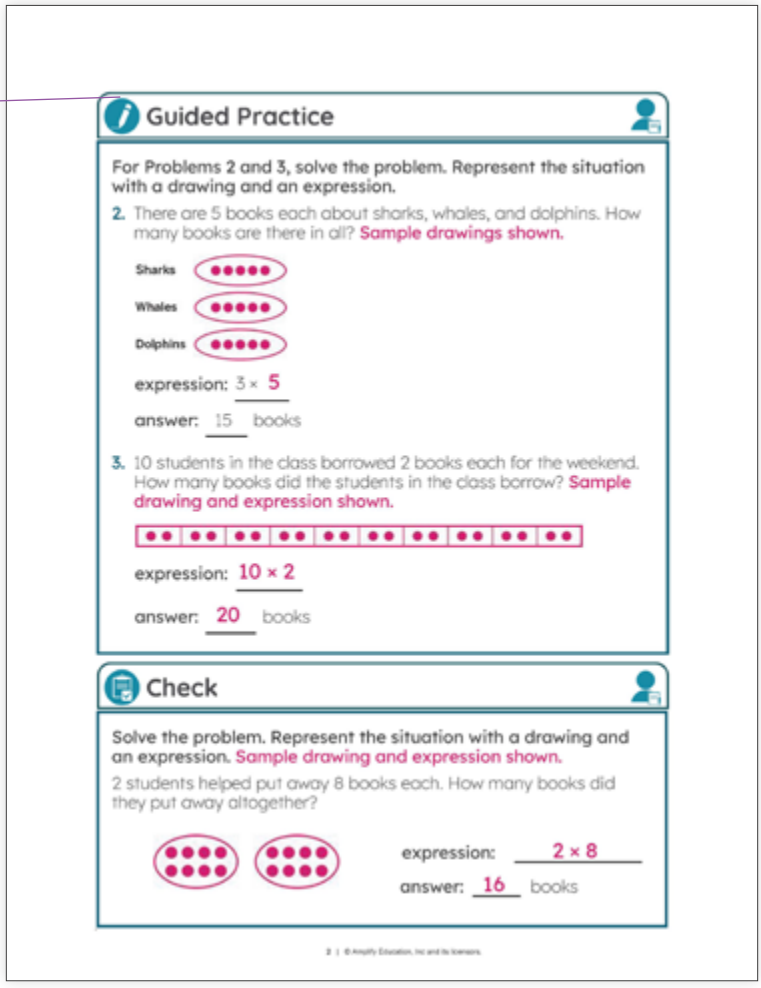
Vocabulary

If needed, share the meaning of the words with students.
multiply: Determining the total amount in equal groups.
product: The result of multiplying two numbers.

Guided Practice

A Provide counters students can use while solving the problem. Identify connections between the concrete and visual representations used.

Key Takeaway:
Say, "When you multiply, you are determining the total amount in equal groups. This total amount is called the product."



Guided Practice

For Problems 2 and 3, solve the problem. Represent the situation with a drawing and an expression.

2. There are 5 books each about sharks, whales, and dolphins. How many books are there in all? Sample drawings shown.

Sharks
Whales
Dolphins

expression: 3 × 5

answer: 15 books

3. 10 students in the class borrowed 2 books each for the weekend. How many books did the students in the class borrow? Sample drawing and expression shown.

expression: 10 × 2

answer: 20 books

Check

Solve the problem. Represent the situation with a drawing and an expression. Sample drawing and expression shown.

2 students helped put away 8 books each. How many books did they put away altogether?

expression: 2 × 8

answer: 16 books

Reflection

Ask:
- "What strategies do you find most helpful for representing and solving problems?"
- "What made the most sense from today's learning?"

Check: Recommended Next Steps

Almost there	**Got it!**
If students need more support, consider using Mini-Lesson 1.03.B: *Writing Expressions That Represent Equal-Groups Drawings and Situations*.	If students need more practice, have students write an expression that represents the situation. • There are 6 books at five different tables. How many books are there?

Name _____ Date _____

Writing Equations That Represent Equal-Groups Situations

ML 1.05

Modeled Review

Name: Diego

Represent the situation with a multiplication equation using a ? for the unknown amount.

There are 40 people in the cafeteria. There are 8 tables with the same number of people seated at them. How many people are sitting at each table?

equation: 8 × ? = 40

Guided Practice

1. Represent the situation with a multiplication equation, using a ? to represent the unknown amount. **Sample response shown for Row 3.**

Situation	Equation
There are 2 fish tanks. Each tank has 5 fish. How many fish are there?	2 × 5 = ?
Jada picked 8 apples. She put 4 in each basket. How many baskets did she have?	? × 4 = 8
There are 3 equal-sized teams. 12 students are playing altogether. How many students are on each team?	3 × ? = 12

Guided Practice

2. Represent the situation with a multiplication equation, using a ? to represent the unknown amount. **Sample responses shown.**

Situation	Equation
8 students borrowed 2 books each from the library. How many books were borrowed?	8 × 2 = ?
There are 18 books about animals. They are placed in 6 bins with the same number of books in each bin. How many books are in each bin?	6 × ? = 18
Each table has 5 chairs. There are 30 chairs altogether. How many tables are there?	? × 5 = 30

Check

Represent the situation with a multiplication equation, using a ? to represent the unknown amount. Sample response shown.

There are 4 plates with the same number of bananas on each plate. There are 20 bananas altogether. How many bananas are on each plate?

equation: 4 × ? = 20

Goal

Write equations for multiplication situations using a ? for the unknown number.

Standard

3.OA.A.3

Materials

highlighters

Modeled Review

Point to Diego's work and **ask:**

- "What is this situation about?"
- "What is the unknown in this situation?"
- "How did Diego show which factor was missing?"

Reinforce Diego's thinking by saying, "The factors are the number of groups and the number of objects in each group."

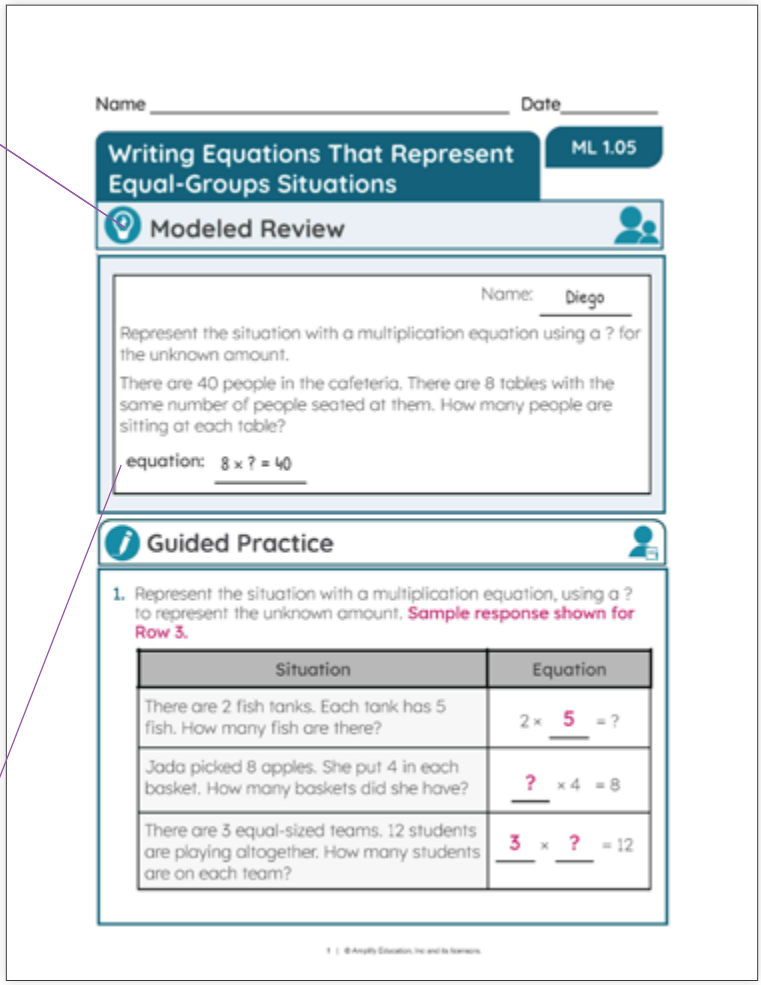
ML/EL Monitor and clarify any questions about the various contexts. As students look over the problems, ask, "Are there any words you have not seen before or have questions about?"

Guided Practice

For each problem, focus students' attention on writing multiplication equations using a ? to represent the unknown.

To scaffold their thinking, **ask:**

- "What is the unknown amount in this situation – the number of groups, the amount in each group, or the product?"
- "How could you represent this situation as an equation?"



Name _____ Date _____

Writing Equations That Represent Equal-Groups Situations — ML 1.05

Modeled Review

Name: Diego

Represent the situation with a multiplication equation using a ? for the unknown amount.

There are 40 people in the cafeteria. There are 8 tables with the same number of people seated at them. How many people are sitting at each table?

equation: 8 × ? = 40

Guided Practice

1. Represent the situation with a multiplication equation, using a ? to represent the unknown amount. Sample response shown for Row 3.

Situation	Equation
There are 2 fish tanks. Each tank has 5 fish. How many fish are there?	2 × 5 = ?
Jada picked 8 apples. She put 4 in each basket. How many baskets did she have?	? × 4 = 8
There are 3 equal-sized teams. 12 students are playing altogether. How many students are on each team?	3 × ? = 12

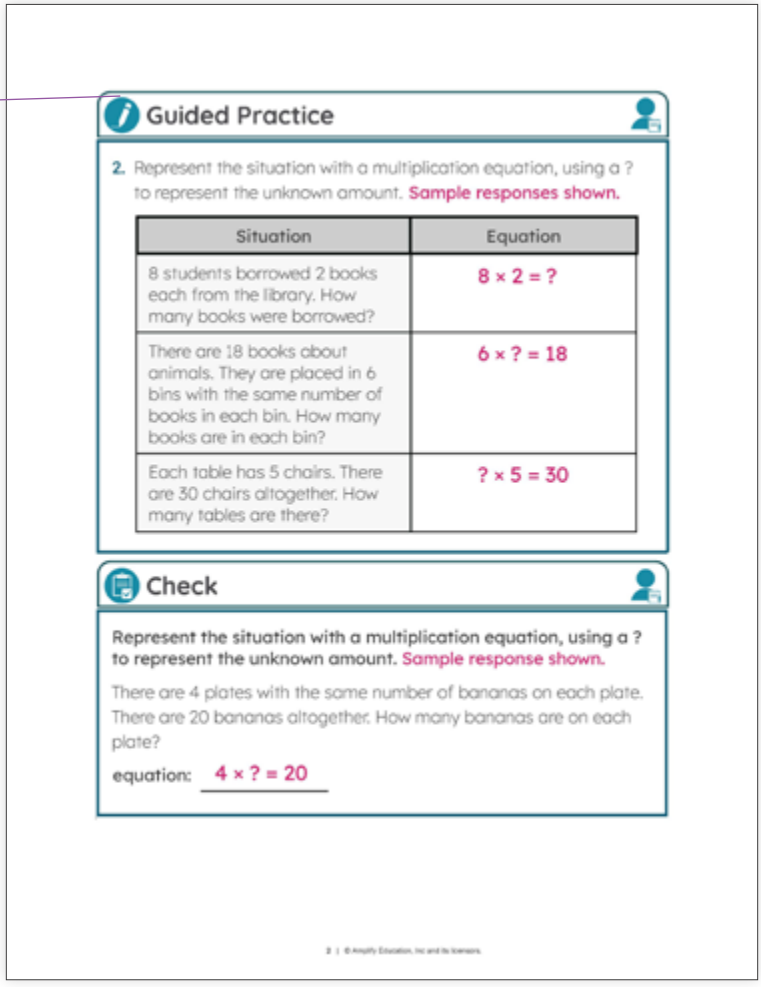
Vocabulary

If needed, share the meaning of the words with students.
factor: The number being multiplied.
equation: A statement that includes an equal sign. It tells us that what is on one side of the sign is equal to what is on the other side.
product: The result of multiplying two numbers.

Guided Practice

A Model highlighting important details in the word problem to help students see which information is known and what needs to be solved for.

Key Takeaway:
Say, "You can write an equation with a symbol for the unknown to represent a multiplication situation. Multiplication problems can have an unknown product or an unknown factor."



Guided Practice

2. Represent the situation with a multiplication equation, using a ? to represent the unknown amount. Sample responses shown.

Situation	Equation
8 students borrowed 2 books each from the library. How many books were borrowed?	8 × 2 = ?
There are 18 books about animals. They are placed in 6 bins with the same number of books in each bin. How many books are in each bin?	6 × ? = 18
Each table has 5 chairs. There are 30 chairs altogether. How many tables are there?	? × 5 = 30

Check

Represent the situation with a multiplication equation, using a ? to represent the unknown amount. Sample response shown.

There are 4 plates with the same number of bananas on each plate. There are 20 bananas altogether. How many bananas are on each plate?

equation: 4 × ? = 20

Reflection

Ask:
- "Why do some equations have symbols in place of numbers?"
- "What made sense after today's learning?"

Check: Recommended Next Steps

Almost there	**Got it!**
If students need more support, consider using Mini-Lesson 1.04: *Making Sense of Multiplication Problems*.	If students need more practice, have students represent the situation with an equation. • There are 35 lemons for sale. There are 7 lemons in each bag. How many bags of lemons are there?

Name _____ Date _____

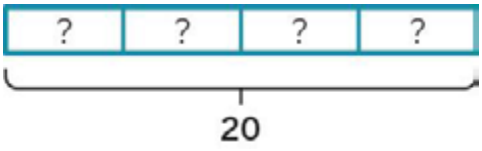
Writing Equations With Unknown Numbers

ML 1.06

Modeled Review

Name: Clare

Write an equation to represent the diagram. Use a ? symbol to represent the unknown value. Determine the unknown value.

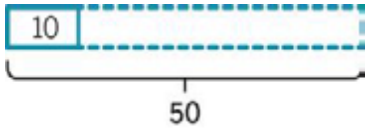
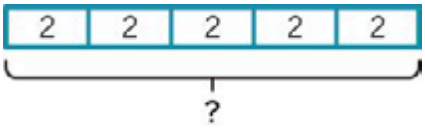


equation: $4 \times ? = 20$

unknown value: 5

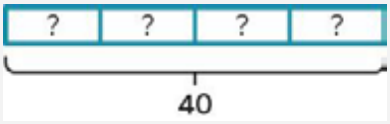
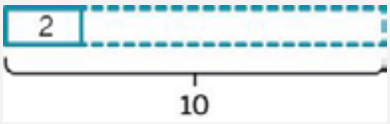
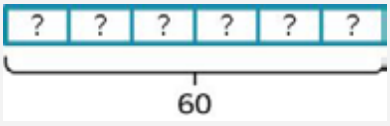
Guided Practice

1. Draw a line to match each diagram or situation with an equation that represents it.

Situation or Diagram	Equation
	$5 \times 2 = ?$
Clare has 3 bags of apples. Each bag has the same number of apples. She has 6 apples altogether.	$? \times 10 = 50$
	$3 \times ? = 6$

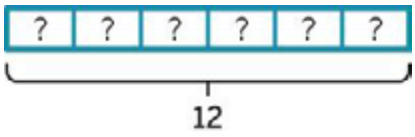
Guided Practice

2. Write an equation to represent the diagram or situation. Use a ? symbol to represent the unknown value. Determine the unknown value. **Sample equations shown.**

Diagram or situation	Equation	Unknown value
	4 × ? = 40	10
There are 5 tables. Each table has 5 students.	5 × 5 = ?	25
	? × 2 = 10	5
	6 × ? = 60	10

Check

Write an equation to represent the diagram. Use a ? symbol to represent the unknown value. Determine the unknown value.



equation: 6 × ? = 12

unknown value: 2

Goal

Write equations to match multiplication situations and diagrams using a ? symbol for the unknown value.

Standard

3.OA.A.4

Modeled Review

Point to Clare's work and **ask:**

- "Where do you see the number of groups in the diagram? In the equation?"
- "Where do you see the product in the diagram? In the equation?"
- "What is the unknown value in the diagram and the equation?"

Reinforce Clare's thinking by saying, "The number of groups is represented by the first factor and the amount in each group is represented by the second factor."

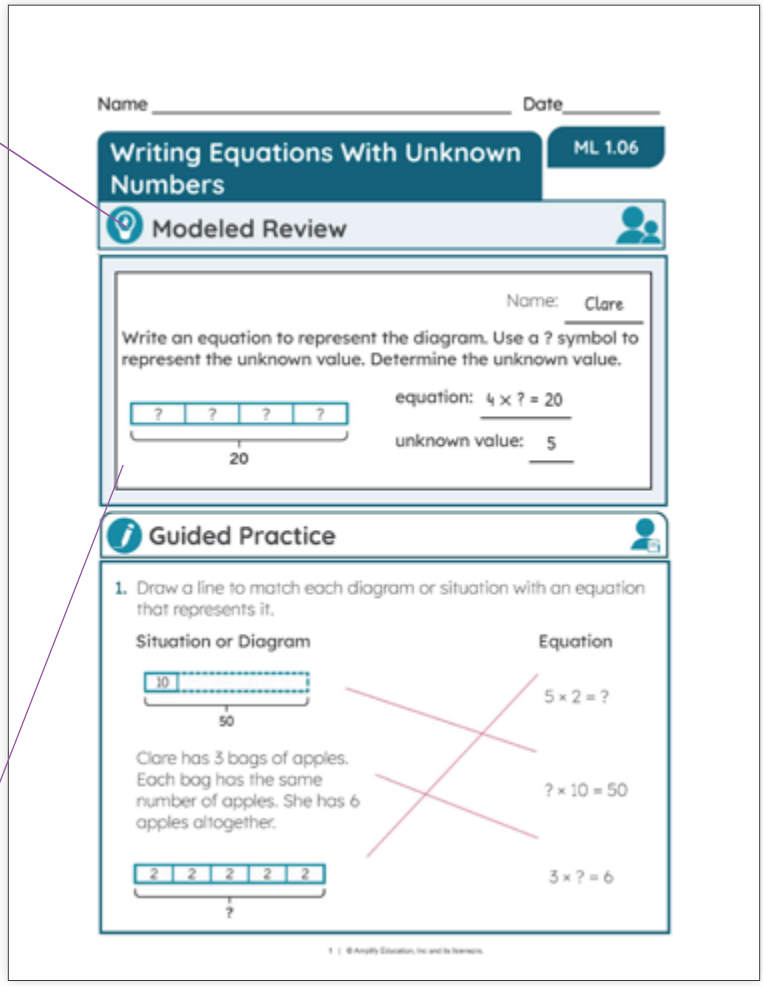
ML/EL Model finding the known and unknown information in a situation or diagram.

Guided Practice

For each problem, focus students' attention on writing equations with unknown numbers.

To scaffold their thinking, **ask:**

- "How many groups are there?"
- "How many are in each group?"


Name _____ Date _____

Writing Equations With Unknown Numbers ML 1.06

Modeled Review

Name: Clare

Write an equation to represent the diagram. Use a ? symbol to represent the unknown value. Determine the unknown value.

? ? ? ?

20

equation: 4 × ? = 20

unknown value: 5

Guided Practice

1. Draw a line to match each diagram or situation with an equation that represents it.

Situation or Diagram

10

50

Clare has 3 bags of apples. Each bag has the same number of apples. She has 6 apples altogether.

2 2 2 2 2

?

Equation

5 × 2 = ?

? × 10 = 50

3 × ? = 6

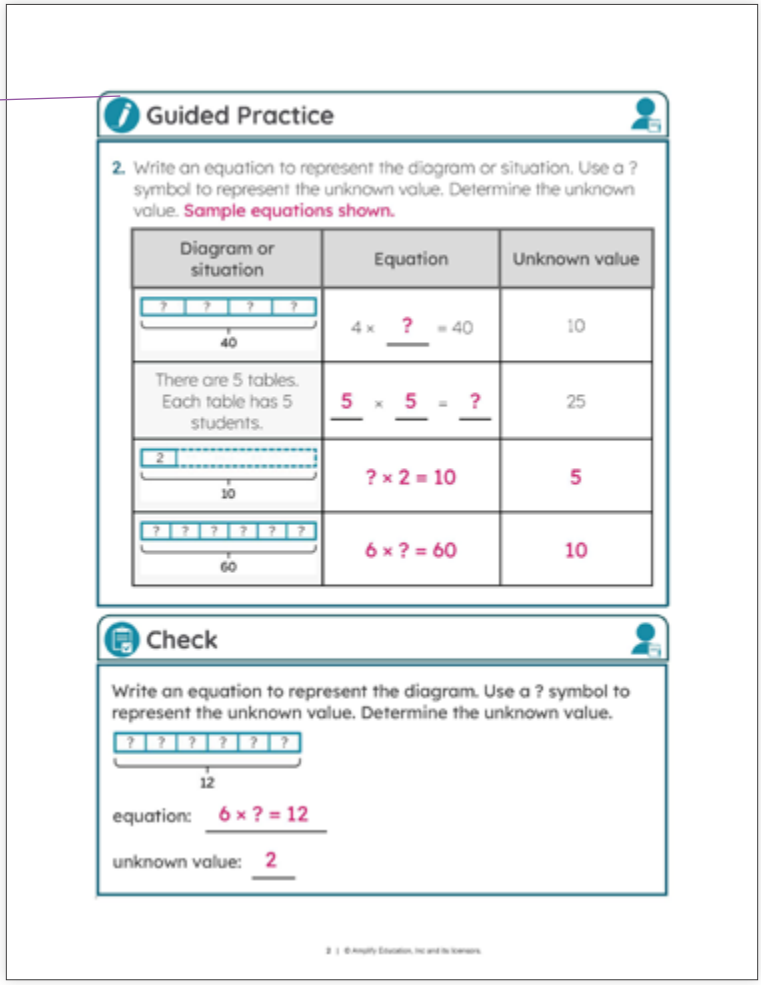
Vocabulary

If needed, share the meaning of the words with students.
factor: The number being multiplied.
equation: A statement that includes an equal sign. It tells us that what is on one side of the sign is equal to what is on the other side.
product: The result of multiplying two numbers.

Guided Practice

A Guide processing by inviting students to identify which details were important or most useful to pay attention to.

Key Takeaway:
Say, "Equations and tape diagrams can represent situations where the product is unknown or where one of the factors is unknown. Each representation shows the known and unknown amounts."



Guided Practice

2. Write an equation to represent the diagram or situation. Use a ? symbol to represent the unknown value. Determine the unknown value. Sample equations shown.

Diagram or situation	Equation	Unknown value
? ? ? ? 40	4 × ? = 40	10
There are 5 tables. Each table has 5 students.	5 × 5 = ?	25
2 10	? × 2 = 10	5
? ? ? ? ? ? 60	6 × ? = 60	10

Check

Write an equation to represent the diagram. Use a ? symbol to represent the unknown value. Determine the unknown value.

? ? ? ? ? ? 12

equation: 6 × ? = 12

unknown value: 2

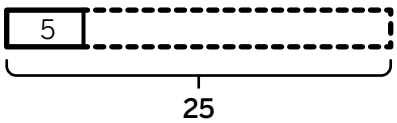
Reflection

Ask:
- "How can representations be helpful when making sense of multiplication problems?"
- "What questions do you still have after today's learning?"

Check: Recommended Next Steps

Almost there
If students need more support, consider using Mini-Lesson 1.05: *Writing Equations That Represent Equal-Groups Situations*.

Got it!
If students need more practice, sketch the following diagram. Have students write an equation with a ? symbol for the unknown value and determine the unknown value.



Name _____ Date_____

Drawing Arrays

ML 1.08.A

Modeled Review

Name: Clare

Show one way the set of dots could be rearranged into an array.

There are 3 groups so I drew 3 rows. There are 5 dots in each group so I drew 5 columns.

Guided Practice

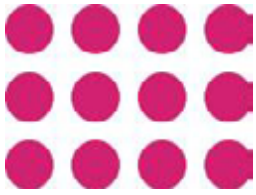
1. Show one way the set of dots could be rearranged into an array. The first array has been started for you. Use counters if it is helpful. **Sample responses shown.**

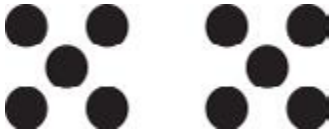
Dot arrangement	Array
	
	

Guided Practice

Show two ways the set of dots could be rearranged into an array. In problem 2 the array has been started for you. Use counters if it is helpful. Sample responses shown.

2. 

3. 



4. 

5. 

Check

Show one way the set of dots could be rearranged into an array. Sample response shown.

Drawing Arrays

Teacher's Guide **ML 1.08.A**

Goal

Connecting equal groups and arrays.

Standard

3.OA.A.1

Materials

counters (optional), coloring tools

Modeled Review

Point to Clare's work and **ask:**

- "How did Clare decide how many rows and how many columns to draw?"
- "Where do you see the number of groups in the array?"
- "Where do you see the amount in each group in the array?"

Reinforce "An array is an arrangement of objects in rows and columns. Multiplication can help you find the total number of dots or objects in an array."

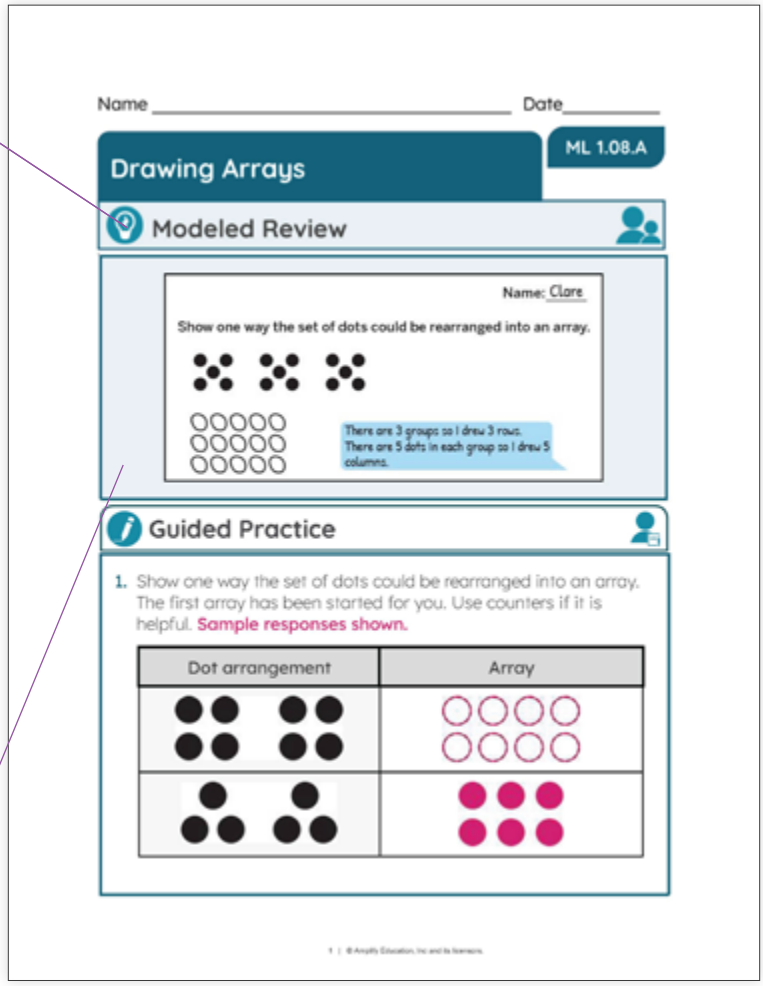
ML/EL Consider having students use counters during the lesson to build arrays as needed.

Guided Practice

For each problem, focus students' attention on drawing arrays.

To scaffold their thinking, **ask:**

- "How many groups of dots do you see?"
- "How many are in each group?"


Name _____ Date_____

Drawing Arrays ML 1.08.A

Modeled Review

Name: Clare

Show one way the set of dots could be rearranged into an array.

There are 3 groups so I drew 3 rows. There are 5 dots in each group so I drew 5 columns.

Guided Practice

1. Show one way the set of dots could be rearranged into an array. The first array has been started for you. Use counters if it is helpful. Sample responses shown.

Dot arrangement	Array

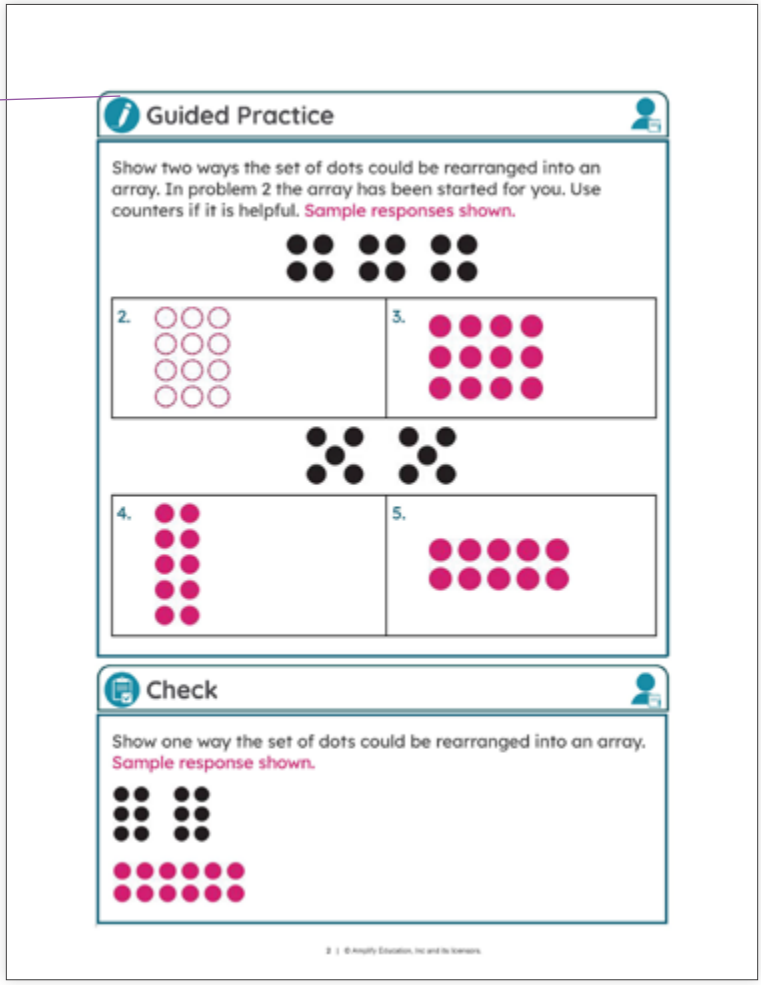
Vocabulary

If needed, share the meaning of the word with students.
array: An arrangement of objects in rows and columns. Each column contains the same number of objects as the other columns, and each row must have the same number of objects as the other rows.

Guided Practice

A Guide visualizations by having students trace or color code the rows and columns they see in each array they find.

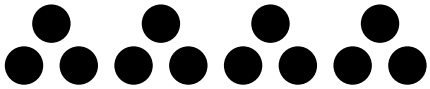
Key Takeaway:
Say, "Arrays can be used to represent multiplication because they show equal groups. There is an equal number of objects in each row, and there is also an equal number of objects in each column."



Reflection

Ask:
- "What do you know about arrays?"
- "What is something you weren't sure about at the start of the lesson but understand now?"

Check: Recommended Next Steps

Almost there	**Got it!**
If students need more support, consider using Grade 2 Mini-Lesson 8.09: *Creating Arrays*.	If students need more practice, sketch the following dots and have students create two arrays that match. 

Name _____ Date_____

Writing Expressions for Arrays

ML 1.08.B

Modeled Review

Name: Priya

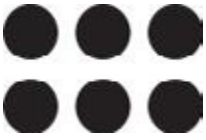
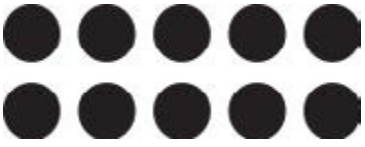
Write an expression that represents the array.

2 rows of 10

Expression: 2 x 10

Guided Practice

1. Draw lines from the array to its matching expression.

Array		Expression
A.		2 × 5
B.		2 × 3
C.		6 × 2

Guided Practice

2. Write an expression that represents each array.

Array	Expression
	$3 \times$ 5
	2 $\times 8$
	3×10 or 10×3
	5×4 or 4×5

Check

Write an expression that represents the array.

Expression: 5×6 or 6×5

Goal

Write multiplication expressions to represent the total number of dots in an array.

Standard

3.OA.A.1

Materials

coloring tools

Modeled Review

Point to Priya's work and **ask:**

- "How does the expression match the array?"
- "What does the 2 represent? What does the 10 represent?"
- "Why do you think Priya wrote 2 rows of 10 under the array?"

Reinforce Priya's thinking by saying, "An array is an arrangement of objects in rows and columns. Each column has the same number of objects and each row has the same number of objects."

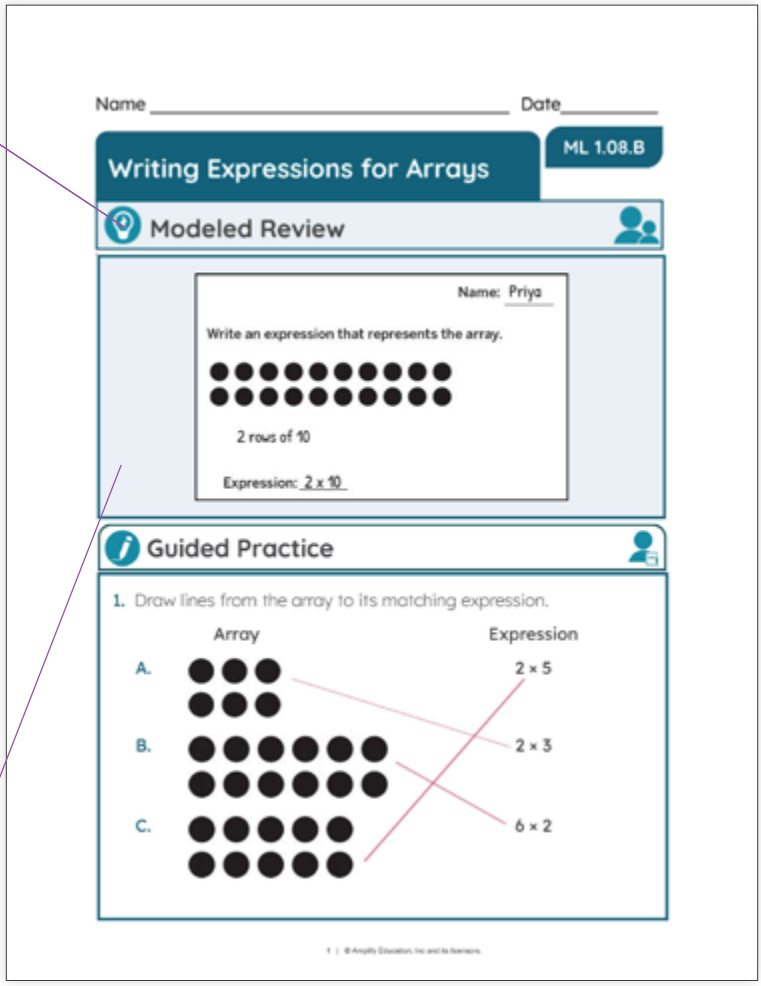
ML/EL Review the meaning of the words row and column while pointing to them on the diagram.

Guided Practice

For each problem, focus students' attention on writing expressions to represent the arrays.

To scaffold their thinking, **say:**

- "When writing expressions to match arrays, the factors in the expression are the number of rows and the numbers of columns separated by the multiplication symbol."
- "The order of the factors doesn't matter."


Name _____ Date _____

Writing Expressions for Arrays ML 1.08.B

Modeled Review

Name: Priya

Write an expression that represents the array.

2 rows of 10

Expression: 2 x 10

Guided Practice

1. Draw lines from the array to its matching expression.

Array Expression

A. 2 × 5

B. 2 × 3

C. 6 × 2

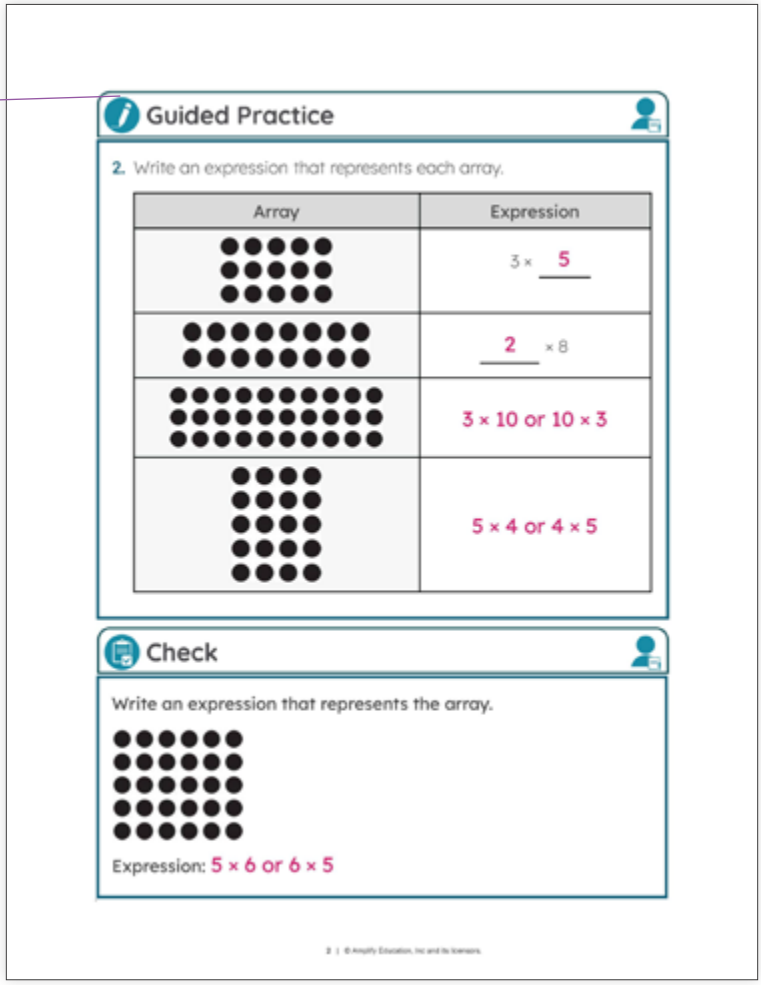
Vocabulary

If needed, share the meaning of the words with students.
column: In an array, a column goes up and down.
row: In an array, a row goes side to side.

Guided Practice

A Guide visualization by having students trace or color code the rows and columns they see in each array.

Key Takeaway:
Say, "Arrays can be used to represent multiplication because they show equal groups. There is an equal number of objects in each row, and there is also an equal number of objects in each column."



Guided Practice

2. Write an expression that represents each array.

Array	Expression
	3 × 5
	2 × 8
	3 × 10 or 10 × 3
	5 × 4 or 4 × 5

Check

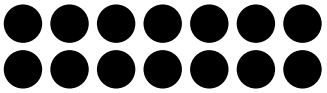
Write an expression that represents the array.

Expression: 5 × 6 or 6 × 5

Reflection

Ask:
- "What does each array represent?"
- "How did today's lesson build upon your previous learning?"

Check: Recommended Next Steps

Almost there	**Got it!**
If students need more support, consider using Mini-Lesson 1.03.B: *Writing Expressions That Represent Equal-Groups Drawings and Situations*.	If students need more practice, sketch the following array and ask students to write an expression to match. 

Name _____ Date _____

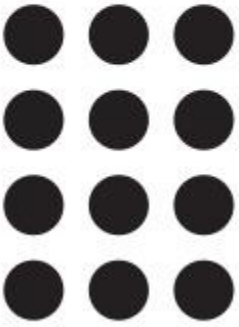
Writing Two Expressions That Represent an Array

ML 1.09

Modeled Review

Name: Eva

Write two expressions that match the array.



Expression 1: 4 x 3

Expression 2: 3 x 4

Guided Practice

Circle all expressions that represent the array.

1. 

   (A.) 4 × 5 B. 4 × 2

   C. 5 × 5 (D.) 5 × 4

2. 

   A. 2 × 5 (B.) 6 × 2

   (C.) 2 × 6 D. 3 × 5

Guided Practice

Write two expressions that represent each array.

3. 

expression 1: 2 × 5

expression 2: 5 × 2

4. 

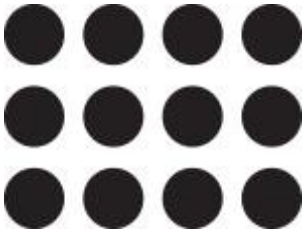
expression 1: 5 × 3

expression 2: 3 × 5

5. 

expression 1: 4 × 6

expression 2: 6 × 4

6. 

expression 1: 3 × 4

expression 2: 4 × 3

Check

Write two expressions that represent the array.

expression 1: 3 × 7

expression 2: 7 × 3

Goal

Write two multiplication expressions that represent the total dots in the same array.

Standard

3.OA.A.1

Materials

coloring tools

Modeled Review

Point to Eva's work and **ask:**

- "What do you notice about the two expressions?"
- "Where do you see 4 × 3 in the array? Where do you see 3 × 4?"
- "Does the order of the factors change the number of dots in the array?"

Reinforce Eva's thinking by saying, "The expressions and array show that you can multiply numbers in any order and get the same product. This is called the Commutative Property of Multiplication."

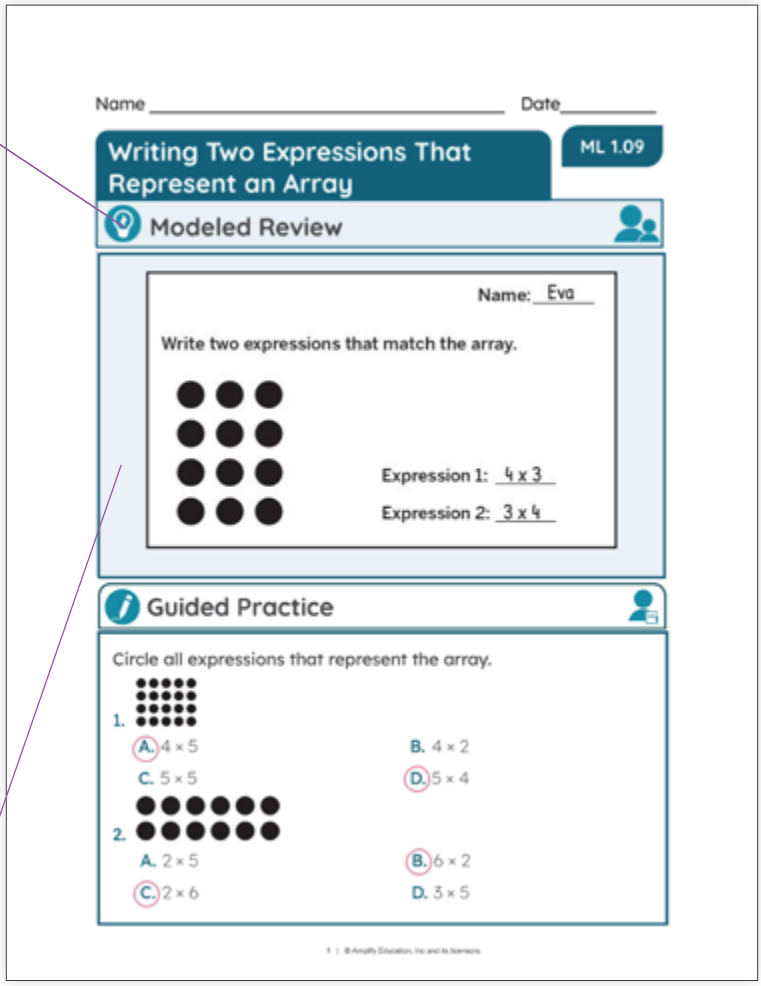
ML/EL Model counting the rows and columns for each array, then finding the matching expression.

Guided Practice

For each problem, focus students' attention on representing the arrays with multiple expressions.

To scaffold their thinking, **ask:**

- "How many rows do you see? How many columns?"
- "How can you use the numbers in the first expression to write your second expression?"



Name _____ Date _____

Writing Two Expressions That Represent an Array — ML 1.09

Modeled Review

Name: Eva

Write two expressions that match the array.

Expression 1: 4 x 3

Expression 2: 3 x 4

Guided Practice

Circle all expressions that represent the array.

1. A. 4 × 5 B. 4 × 2 C. 5 × 5 D. 5 × 4

2. A. 2 × 5 B. 6 × 2 C. 2 × 6 D. 3 × 5

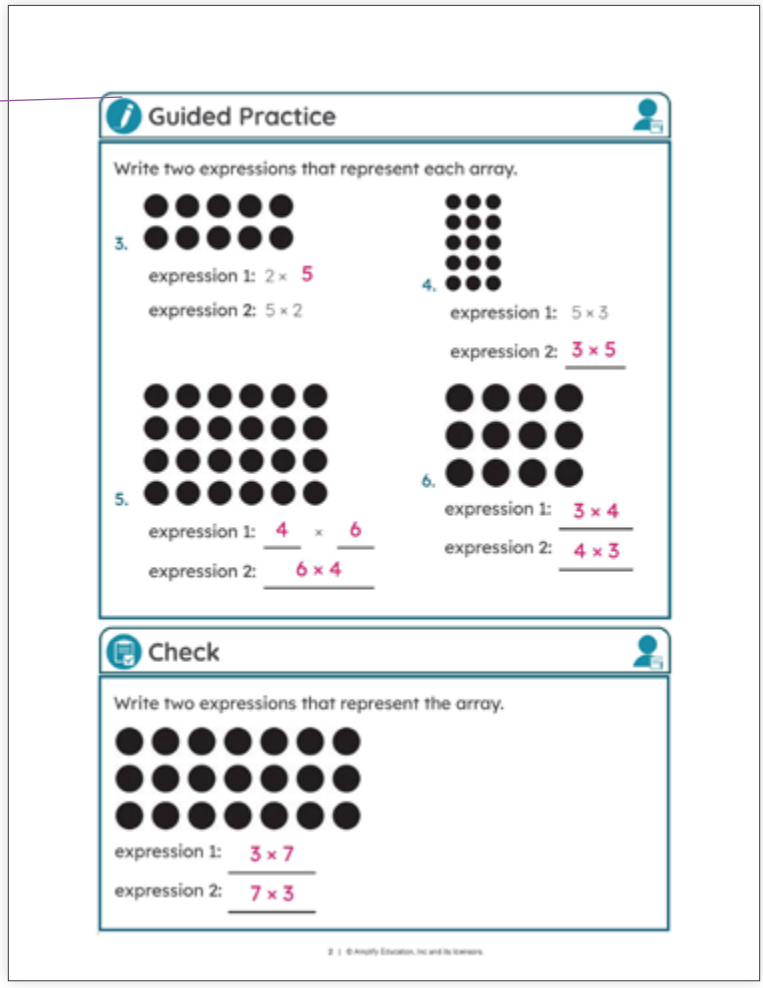
Vocabulary

If needed, share the meaning of the word with students.
Commutative Property of Multiplication: The order in which two numbers are multiplied does not change the product.

Guided Practice

A Guide visualization by using annotations and color coding to highlight the connections between the arrays and the expressions.

Key Takeaway:
Say, "Arrays help show that factors can be multiplied in any order and the product will be the same. Arrays help show the Commutative Property of Multiplication."



Reflection

Ask:
- "How are arrays related to multiplication equations?"
- "How did you overcome a hard problem today?"

Check: Recommended Next Steps

Almost there	**Got it!**
If students need more support, consider using Mini-Lesson 1.08.B: *Writing Expressions for Arrays*.	If students need more practice, have students add another column to the array in the Check. Have students write two expressions to represent the array.

Name _____ Date _____

Relating Array Situations to Equations

ML 1.10

Modeled Review

Name: shawn

Han has a collection of 40 baseball cards set up in an array. There are 4 rows. How many baseball cards are in each row?

Equation: 4 x ? = 40

Unknown: 10 cards

Guided Practice

Circle the equation that matches the situation.

1. A box has 8 rows of crayons with 5 crayons in each row. How many crayons are in the box?

A. 8 × ? = 40

B. ? × 5 = 40

C. 8 × ? = 5

D. 8 × 5 = ?

2. There are 20 erasers set up in 5 equal rows. How many erasers are in each row?

A. 4 × 20 = ?

B. 5 × ? = 4

C. 5 × ? = 20

D. 20 × 5 = ?

Guided Practice

Write an equation that represents each situation, using a ? symbol for the unknown number. Sample responses shown.

3. A box of pencils are arranged into 4 rows and 5 columns. How many pencils are there in the box?

4 × 5 = ?

4. There are 16 paint buckets arranged in an array. There are 8 paint buckets in each row. How many rows are there?

? × 8 = 16

Write an equation using a ? symbol for the unknown. Represent the problem with an array and solve the problem. Sample responses shown.

5. There are 2 rows of markers in a box with 7 markers in each row. How many markers are in the box?

equation: 2 × 7 = ?

unknown: 14 markers

6. There are 15 glue sticks arranged in an array. There are 3 rows of glue sticks. How many glue sticks are in each row?

equation: 3 × ? = 15

unknown: 5 glue sticks

Check

Write an equation using a ? symbol for the unknown. Represent the problem with an array and solve the problem. Sample equation shown.

The class's paintings are displayed in an array. There are 2 rows with 10 paintings in each row. How many paintings are there altogether?

equation: 2 × 10 = ?

unknown: 20 paintings

Goal

Use arrays and equations with a ? symbol for the unknown number to represent multiplication situations.

Standard

3.OA.A.3

Materials

connecting cubes, counters (optional)

Modeled Review

Point to Shawn's work and **ask:**

- "What is known in the problem? What is unknown?"
- "How does Shawn's array help you solve the problem?"
- "Where do you see the unknown in the array?"

Reinforce Shawn's thinking by saying, "You can represent problems involving arrays with multiplication equations, using a symbol for the unknown. Then you can choose a strategy to find the value of the unknown number."

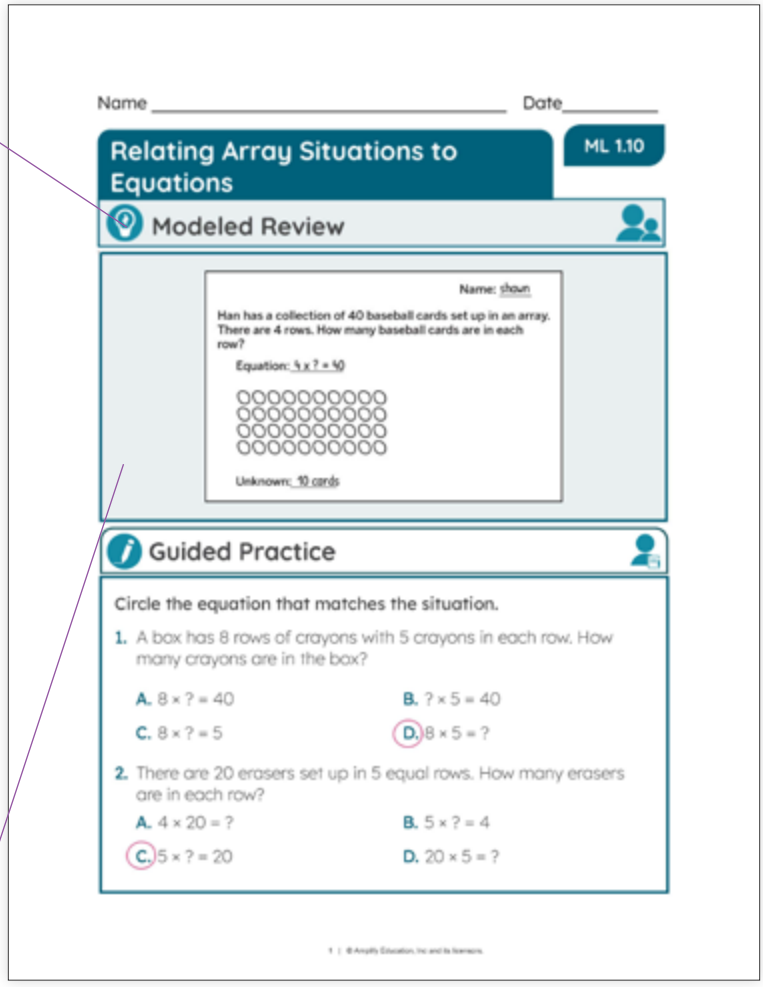
ML/EL Invite students to read each problem aloud and determine what can be counted and what information is unknown.

Guided Practice

For each problem, focus students' attention on representing multiplication situations with an unknown.

To scaffold their thinking, **ask:**

- "What do you know about the situation?"
- "What is unknown?"



Name _____ Date_____

Relating Array Situations to Equations

ML 1.10

Modeled Review

Name: shawn

Han has a collection of 40 baseball cards set up in an array. There are 4 rows. How many baseball cards are in each row?

Equation: 4 x ? = 40

Unknown: 10 cards

Guided Practice

Circle the equation that matches the situation.

1. A box has 8 rows of crayons with 5 crayons in each row. How many crayons are in the box?

A. 8 × ? = 40 B. ? × 5 = 40

C. 8 × ? = 5 D. 8 × 5 = ?

2. There are 20 erasers set up in 5 equal rows. How many erasers are in each row?

A. 4 × 20 = ? B. 5 × ? = 4

C. 5 × ? = 20 D. 20 × 5 = ?

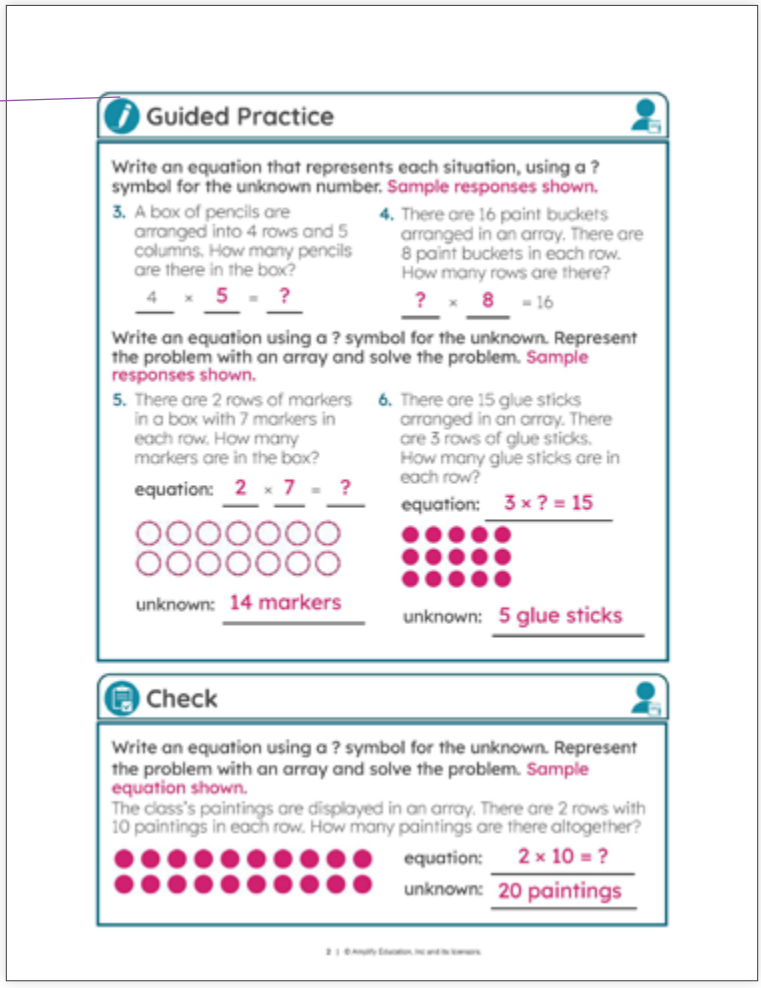
Vocabulary

If needed, share the meaning of the word with students.
array: An arrangement of objects in rows and columns. Each column must contain the same number of objects as the other columns, and each row must have the same number of objects as the other rows.

Guided Practice

A Provide connecting cubes or counters for students to use while solving the problems.

Key Takeaway:
Say, "When given a multiplication situation involving arrays, sometimes you will determine an unknown number of rows or an unknown number of objects in each row."



Guided Practice

Write an equation that represents each situation, using a ? symbol for the unknown number. Sample responses shown.

3. A box of pencils are arranged into 4 rows and 5 columns. How many pencils are there in the box?
4 × 5 = ?

4. There are 16 paint buckets arranged in an array. There are 8 paint buckets in each row. How many rows are there?
? × 8 = 16

Write an equation using a ? symbol for the unknown. Represent the problem with an array and solve the problem. Sample responses shown.

5. There are 2 rows of markers in a box with 7 markers in each row. How many markers are in the box?
equation: 2 × 7 = ?
unknown: 14 markers

6. There are 15 glue sticks arranged in an array. There are 3 rows of glue sticks. How many glue sticks are in each row?
equation: 3 × ? = 15
unknown: 5 glue sticks

Check

Write an equation using a ? symbol for the unknown. Represent the problem with an array and solve the problem. Sample equation shown.
The class's paintings are displayed in an array. There are 2 rows with 10 paintings in each row. How many paintings are there altogether?
equation: 2 × 10 = ?
unknown: 20 paintings

Reflection

Ask:
- "How can you use arrays to help you solve multiplication problems?"
- "How does what you learned today connect to your prior learning?"

Check: Recommended Next Steps

Almost there	**Got it!**
If students need more support, consider using Mini-Lesson 1.06: *Writing Equations With Unknown Numbers*.	If students need more practice, present students with the following scenario. Ask students to write an equation, draw an array, and solve the problem. • There are 30 books arranged into an array with 6 rows. How many books are in each row?.

Name _____ Date _____

Solving Multiplication Problems Using Arrays

ML 1.11

Modeled Review

Name: Jada

There are 25 books on display.
1. Show how the books can be lined up in an array?

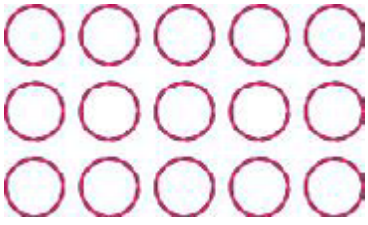
2. Write an equation that represents your array in Problem 1.

Equation: 5 x 5 = 25

Guided Practice

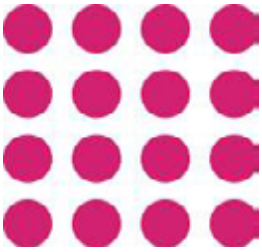
Complete the array for each situation. Use counters if it is helpful.

1. Clare has room for 3 rows and needs to seat 15 people.



equation: 3 × 5 = 15

2. Han has 4 rows of baseball cards. There are 16 cards.



equation: 4 × 4 = 16

Guided Practice

Help the librarian arrange each set of books in an array. Use counters if it is helpful. Sample responses shown.

Situation	Array	Equation
There are 6 books about bears in 2 rows.		2 × 3 = 6
There are 16 books about snakes in 2 rows.		2 × 8 = 16
There are 10 books about holidays.		5 × 2 = 10
There are 20 sports books.		4 × 5 = 20

Check

1. There are 12 cards on the table. Show how the cards could be lined up in an array. Use counters if it is helpful. Sample response shown.

2. Write an equation to represent your array.

equation: 2 × 6 = 12

Goal

Solve real-world problems involving arrays.

Standard

3.OA.A.3

Materials

counters

Modeled Review

Point to Jada's work and **ask:**

- "How do the array and equation match the situation?"
- "Why do you think Jada chose to make her factors 5 and 5?"

Reinforce Jada's thinking by saying, "You can apply what you know about the Commutative Property of Multiplication while reasoning through different configurations."

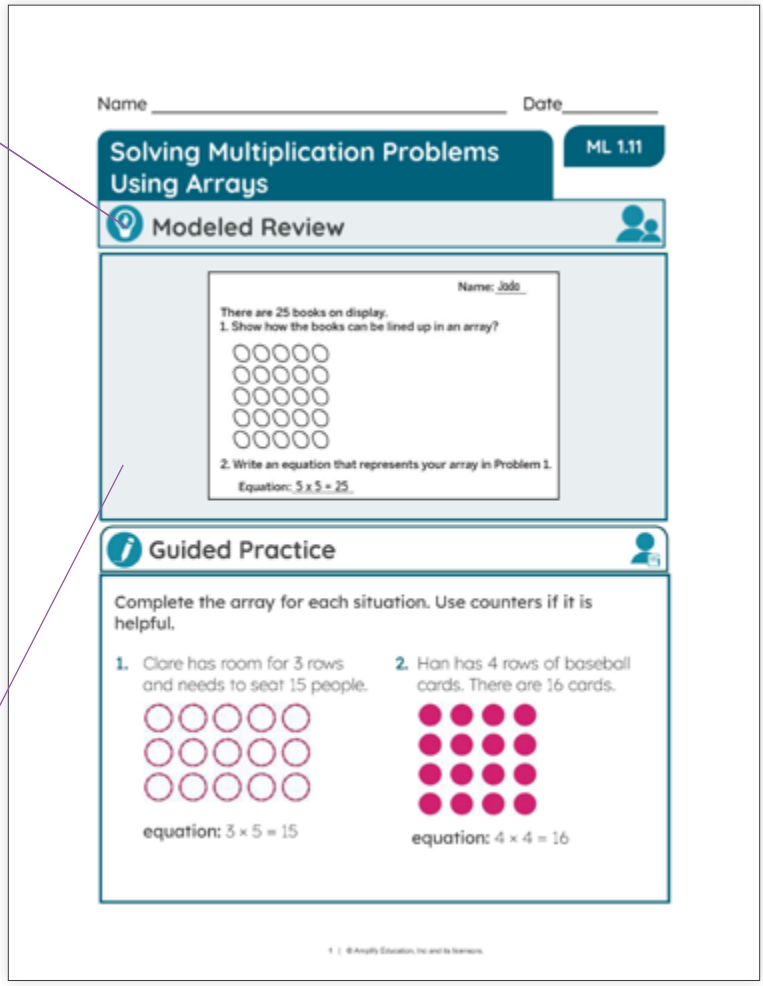
ML/EL Model thinking-aloud to determine the factors and product.

Guided Practice

For each problem, focus students' attention on representing situations with arrays and equations.

To scaffold their thinking, **ask:**

- "What is known? What is unknown?"
- "What connection can you make between the equations and the arrays?"


Name _____ Date _____

Solving Multiplication Problems Using Arrays

ML 1.11

Modeled Review

Name: Jada

There are 25 books on display.
1. Show how the books can be lined up in an array?

2. Write an equation that represents your array in Problem 1.

Equation: 5 x 5 = 25

Guided Practice

Complete the array for each situation. Use counters if it is helpful.

1. Clare has room for 3 rows and needs to seat 15 people.

equation: 3 × 5 = 15

2. Han has 4 rows of baseball cards. There are 16 cards.

equation: 4 × 4 = 16

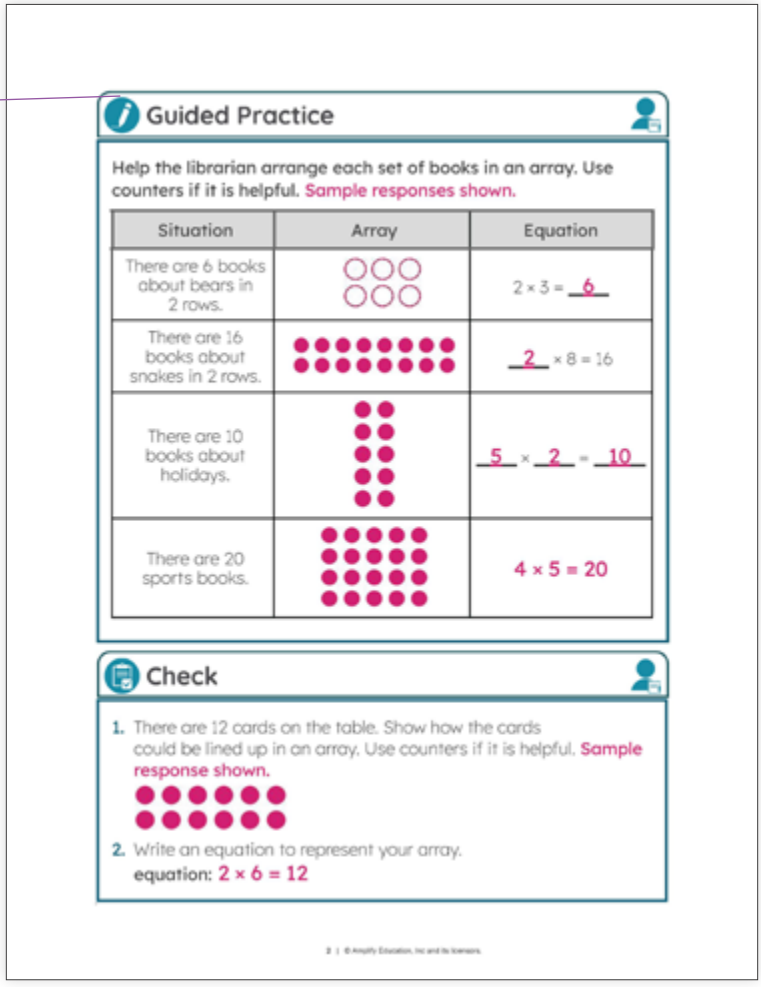
Vocabulary

If needed, share the meaning of the word with students.
Commutative Property of Multiplication: The order in which two numbers are multiplied does not change the product.

Guided Practice

A Provide students with counters they can use to represent the arrays.

Key Takeaway:
Say, "You can calculate the product of two numbers using strategies, such as representing the equal groups and counting all, skip counting, repeated addition, or using other known products."



Guided Practice

Help the librarian arrange each set of books in an array. Use counters if it is helpful. Sample responses shown.

Situation	Array	Equation
There are 6 books about bears in 2 rows.	○○○ ○○○	2 × 3 = 6
There are 16 books about snakes in 2 rows.	●●●●●●●● ●●●●●●●●	2 × 8 = 16
There are 10 books about holidays.	●● ●● ●● ●● ●●	5 × 2 = 10
There are 20 sports books.	●●●●● ●●●●● ●●●●● ●●●●●	4 × 5 = 20

Check

1. There are 12 cards on the table. Show how the cards could be lined up in an array. Use counters if it is helpful. Sample response shown.

●●●●●●
●●●●●●

2. Write an equation to represent your array.
equation: 2 × 6 = 12

Reflection

Ask:
- "When might you use multiplication outside of math class?"
- "How did you overcome a hard problem today?"

Check: Recommended Next Steps

Almost there	**Got it!**
If students need more support, consider using Mini-Lesson 1.04: *Making Sense of Multiplication Problems*.	If students need more practice, have students represent the following situations with an array and multiplication equation. • There are 14 books about ocean animals. • There are 24 books about cars.

Name _____ Date _____

Drawing Picture Graphs

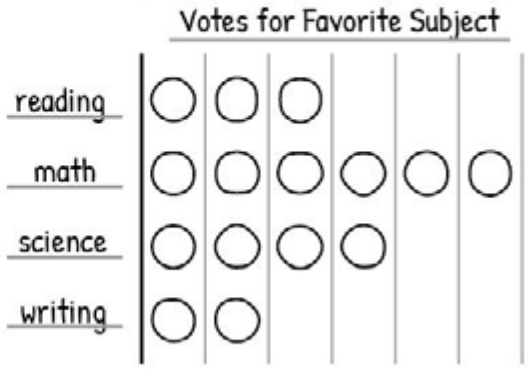
ML 1.12.A

Modeled Review

Name: Dylan

Use the data from the table to complete the picture graph.

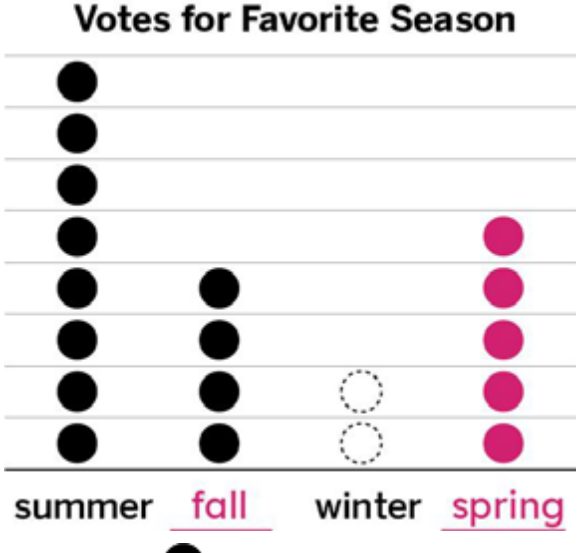
Favorite Subject	
reading	3
math	6
science	4
writing	2



Guided Practice

1. Use the data from the table to complete the picture graph.

Favorite Season	
summer	8
fall	4
winter	2
spring	5

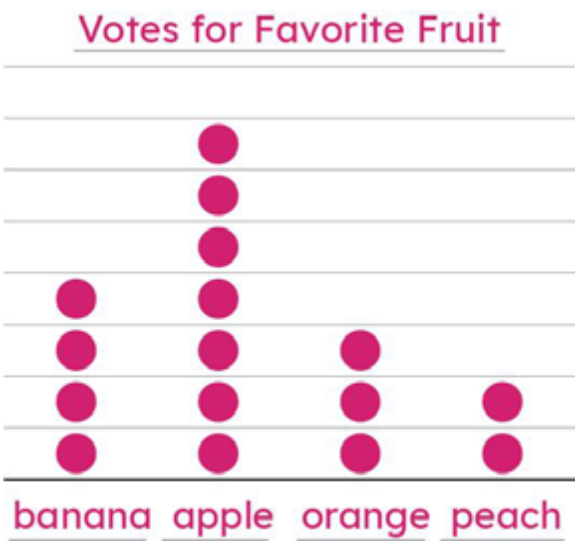


Each ● represents 1 vote.

Guided Practice

2. Create a picture graph to represent the data in the table.

Favorite Fruit	
banana	4
apple	7
orange	3
peach	2

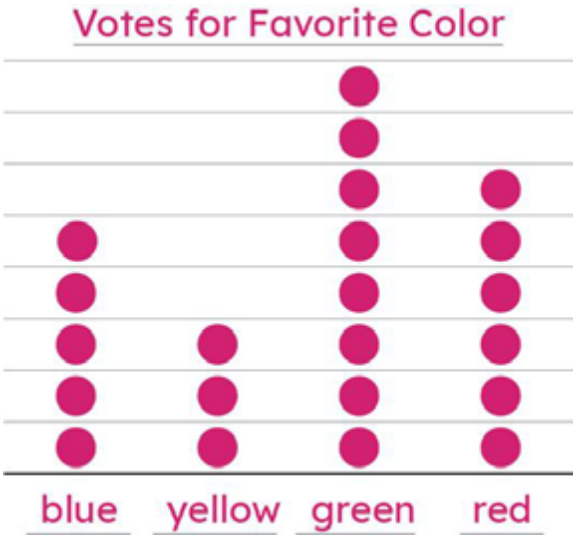


Each ● represents 1 vote.

Check

Create a picture graph to represent the data in the table.

Favorite Color	
blue	5
yellow	3
green	8
red	6



Each ● represents 1 vote.

Goal	Standard
Represent data using a picture graph.	3.MD.B.3

Modeled Review

Point to Dylan's work and **ask:**

- "How did Dylan represent the data in the picture graph?"
- "How many votes does each circle represent?"

Reinforce Dylan's thinking by saying, "A picture graph has a title that indicates what data it shows. It also has labels to show what each category represents."

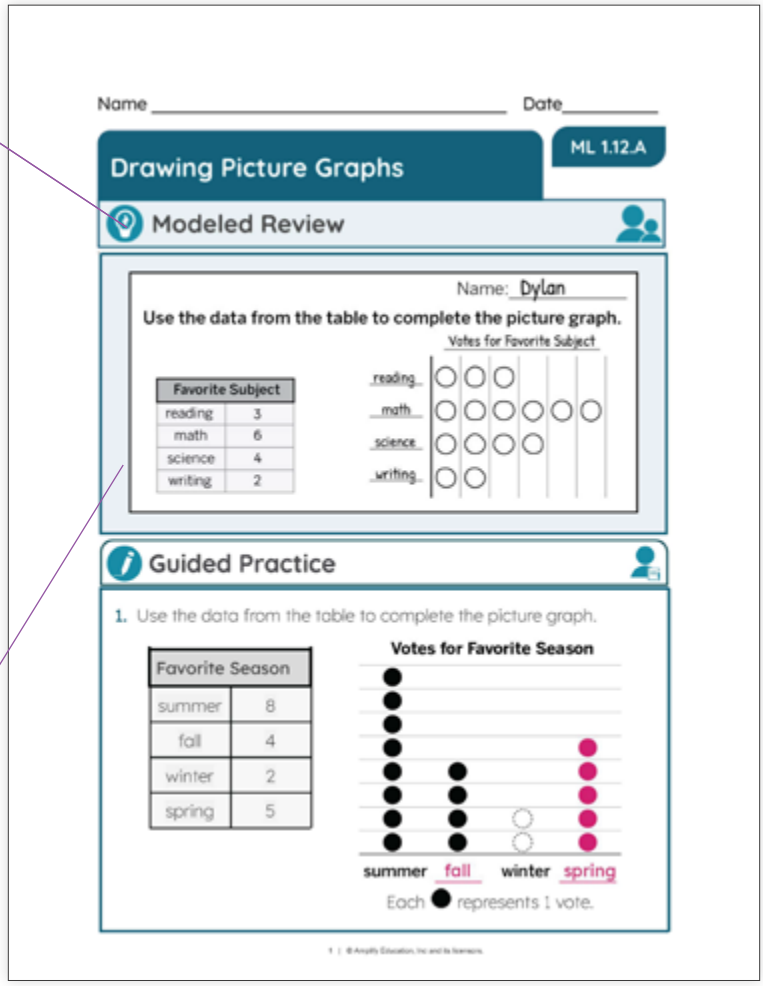
ML/EL Model drawing simple images to represent the data.

Guided Practice

For each problem, focus students' attention on using the data to complete the picture graphs.

To scaffold their thinking, **ask:**

- "What would be appropriate labels for the graph?"
- "How will you determine the number of dots to use for each category?"



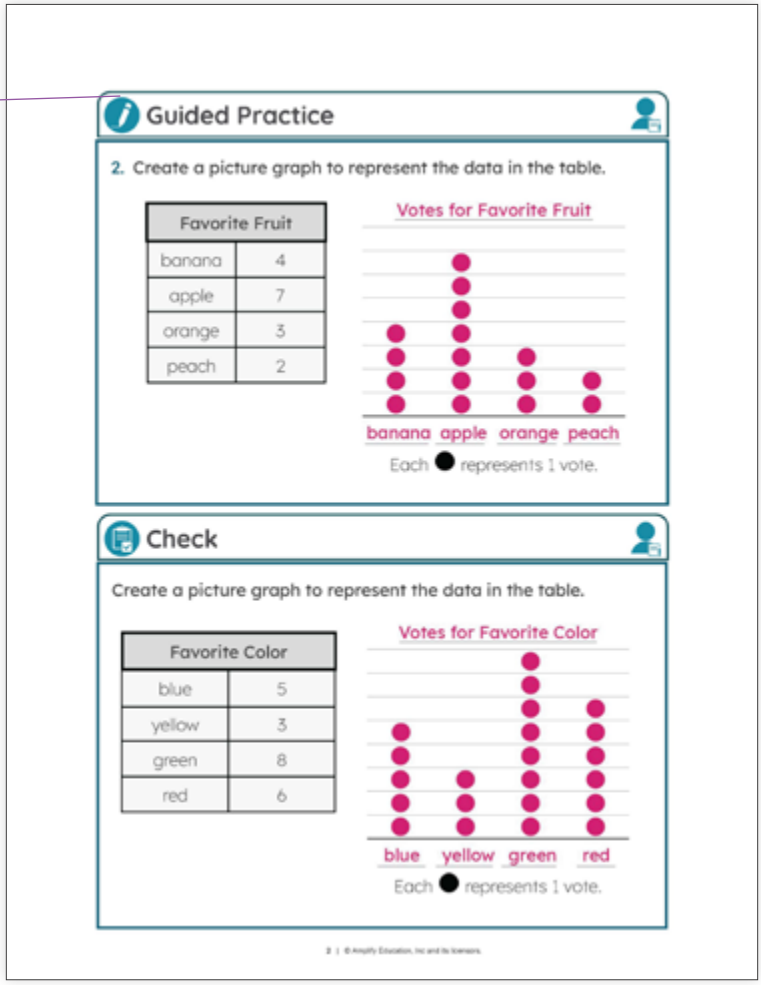
Vocabulary

If needed, share the meaning of the words with students.
data: Information about things or people in a group.
picture graph: A way to show how many in each group or category using pictures to represent the objects.

Guided Practice

A Provide students with a partially created picture graph with which to work.

Key Takeaway:
Say, "Picture graphs are helpful for organizing and representing data in categories. Picture graphs show the amount in each category using pictures and a key that tells the amount each picture represents."



Guided Practice

2. Create a picture graph to represent the data in the table.

Favorite Fruit	
banana	4
apple	7
orange	3
peach	2

Votes for Favorite Fruit

banana apple orange peach

Each ● represents 1 vote.

Check

Create a picture graph to represent the data in the table.

Favorite Color	
blue	5
yellow	3
green	8
red	6

Votes for Favorite Color

blue yellow green red

Each ● represents 1 vote.

Reflection

Ask:
- "What information can you gather from a picture graph?"
- "What made sense after today's learning? What is still confusing?"

Check: Recommended Next Steps

Almost there
If students need more support, provide students with a picture graph template and ask them to represent the data in the Check.

Got it!
If students need more practice, have students create a picture graph to represent the following data:

Best Pet	
dog	8
cat	5
fish	2
hamster	3

Name _____ Date _____

Drawing Bar Graphs

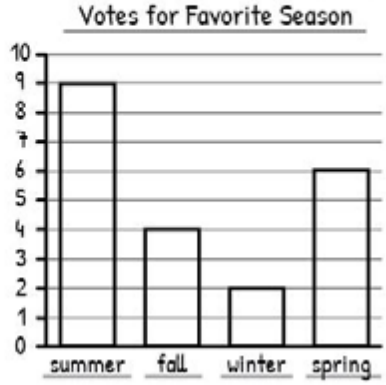
ML 1.12.B

Modeled Review

Name: Santiago

Use the data from the table to complete the bar graph.

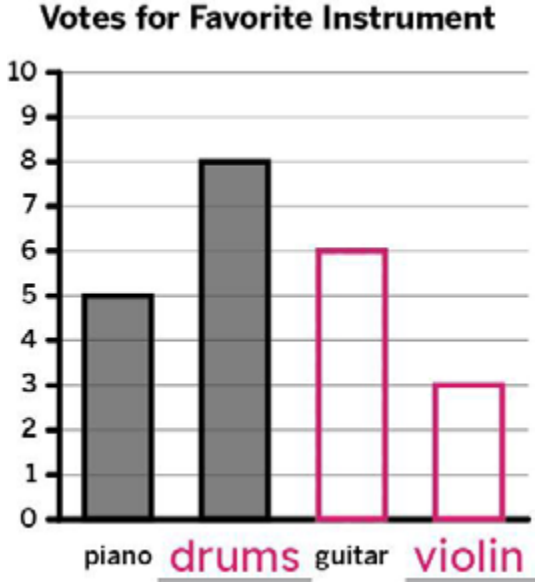
Favorite Season	
summer	9
fall	4
winter	2
spring	6



Guided Practice

1. Use the data from the table to complete the bar graph.

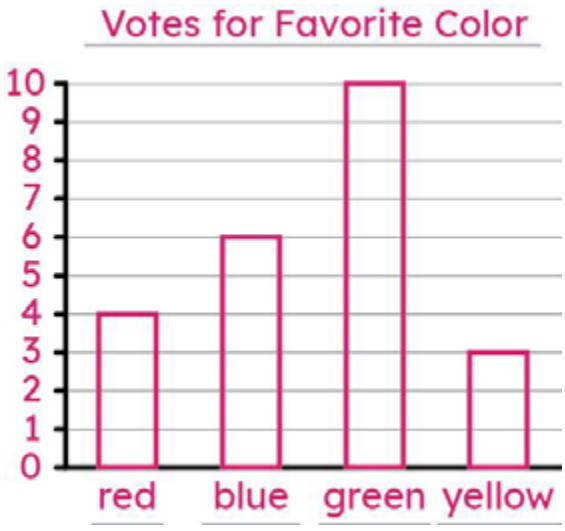
Favorite Instrument	
piano	5
drums	8
guitar	6
violin	3



Guided Practice

2. Create a bar graph to represent the data in the table.

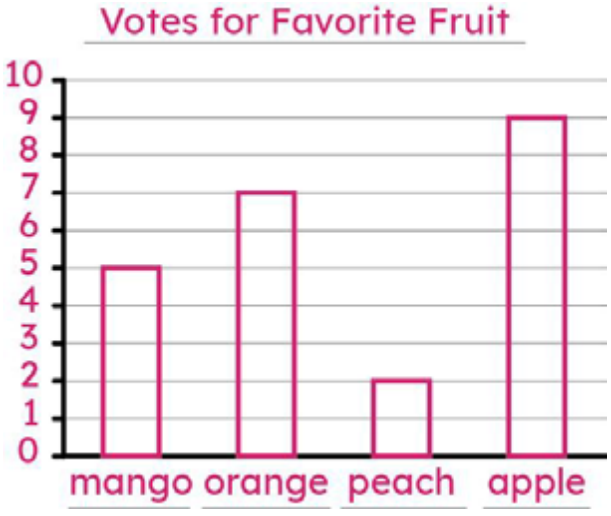
Favorite Color	
red	4
blue	6
green	10
yellow	3



Check

Create a bar graph to represent the data in the table.

Favorite Fruit	
mango	5
orange	7
peach	2
apple	9



Goal	Standard
Represent data using a bar graph.	3.MD.B.3

Modeled Review

Point to Santiago's work and **ask:**

- "How does Santiago represent the data in the bar graph?"
- "How many votes does each line represent?"

Reinforce Santiago's thinking by saying, "A bar graph has a title that indicates what data it shows. It also has number labels and category labels, which show what each bar represents."

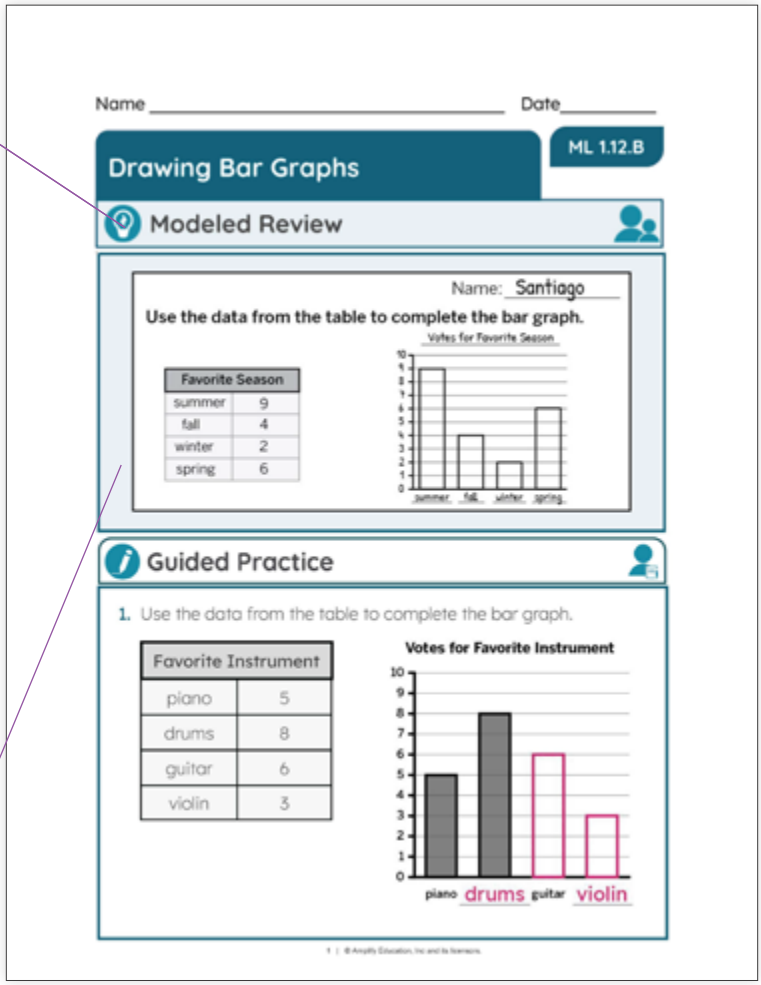
ML/EL Model touching the number label and tracing your finger along the line to determine what height to make each bar.

Guided Practice

For each problem, focus students' attention on using the data to complete the bar graph.

To scaffold their thinking, **ask:**

- "What will be appropriate labels for the bar graph?"
- "How will you determine the heights of the bars?"



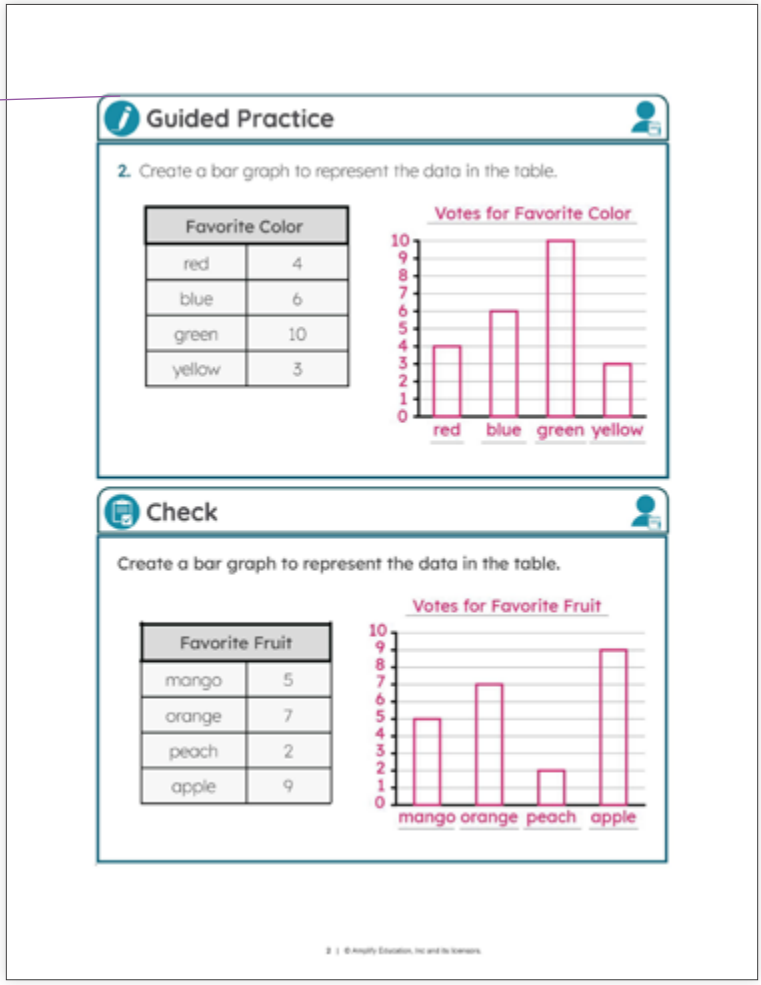
Vocabulary

If needed, share the meaning of the words with students.
data: Information about things or people in a group.
bar graph: A way to show how many in each group or category using the length of the rectangles.

Guided Practice

A Provide students with a partially created bar graph with which to work.

Key Takeaway:
Say, "Bar graphs are helpful for organizing and representing data in categories. Bar graphs show the amount in each category using bars and number labels.



Reflection

Ask:
- "What type of graph do you prefer? Why?"
- "How does what you learned today connect to your prior learning?"

Check: Recommended Next Steps

Almost there
If students need more support, provide students with a bar graph template and ask them to represent the data in the Check.

Got it!
If students need more practice, have students create a picture graph to represent the following data:

Favorite Farm Animal	
goat	2
sheep	4
pig	7
cow	5

Name _____ Date _____

Reading Scaled Picture Graphs

ML 1.13

Modeled Review

Name: Jada

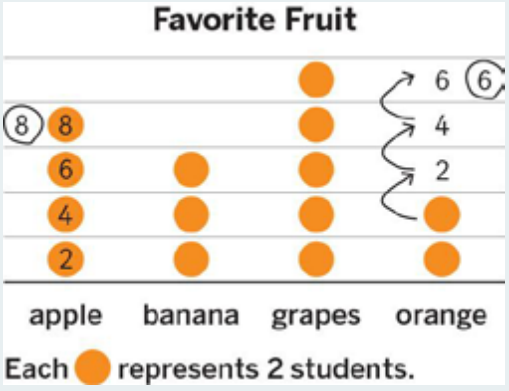
For Problems 1 and 2, use the picture graph that shows the favorite types of fruit of students.

1. How many students voted for apple?

   8 students

2. How many *more* students voted for grapes than oranges?

   6 students



Guided Practice

For Problem 1, use the picture graph about instruments students want to try.

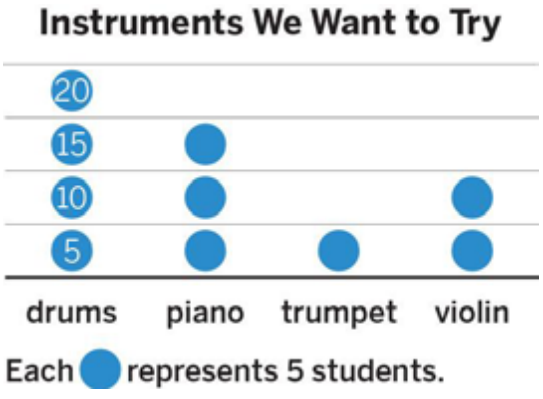
1. How many students want to try each instrument?

   drums: 20 students

   piano: 15 students

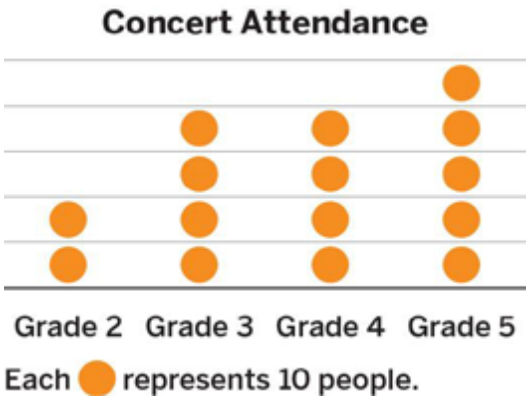
   trumpet: 5 students

   violin: 10 students



Guided Practice

For Problems 2–4, use the picture graph about the number of people that attended each concert.



2. How many people attended the Grade 3 concert?

   40 people

3. How many *more* people attended the Grade 5 concert than the Grade 2 concert?

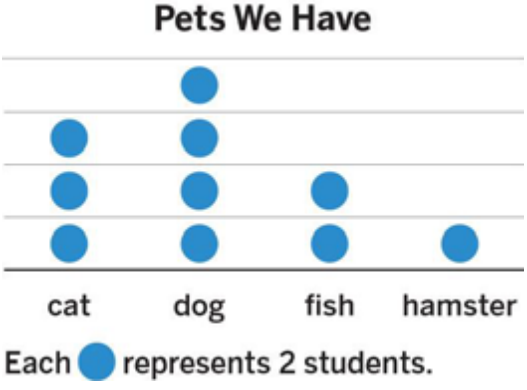
   30 people

4. How many total people are represented by the graph?

   150 people

Check

For Problems 1–3, use the picture graph about the pets students have.



1. How many students have a fish?

   4 students

2. How many *more* students have a dog than a hamster?

   6 students

3. How many total students are represented by the graph?

   20 students

Goal

Interpret data presented in scaled picture graphs.

Standard

3.MD.B.3

Materials

counters (optional)

Modeled Review

Point to Jada's work and **ask:**

- "What does each dot represent in this graph?"
- "How many students voted for banana?"
- "What steps did Jada use to solve Problem 1? Problem 2?"

Reinforce Jada's thinking by saying, "The key tells us the scale, which is how many each picture represents."

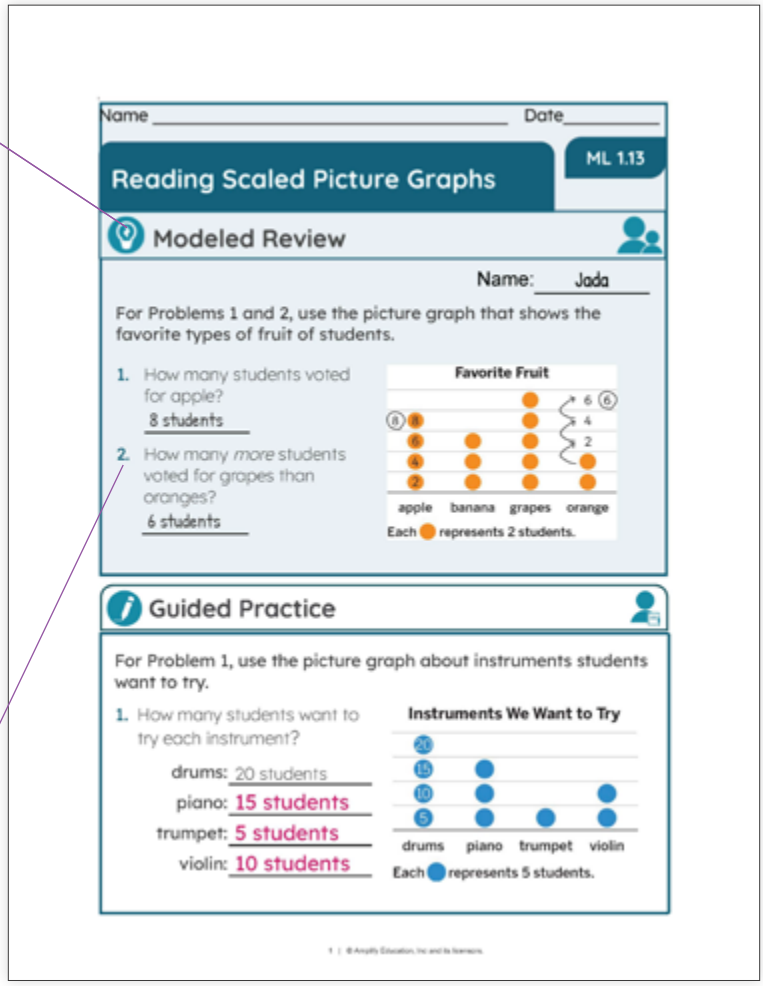
ML/EL Use verbal descriptions, along with gestures, drawings, or concrete objects, to show what each scale represents.

Guided Practice

For each problem, focus students' attention on reading scaled picture graphs.

To scaffold their thinking, **ask:**

- "What is the scale on the picture graph?"
- "How could you determine the number of students who want to try each instrument?"



Name _____ Date _____

Reading Scaled Picture Graphs — ML 1.13

Modeled Review

Name: Jada

For Problems 1 and 2, use the picture graph that shows the favorite types of fruit of students.

1. How many students voted for apple?
   8 students
2. How many *more* students voted for grapes than oranges?
   6 students

Favorite Fruit

Guided Practice

For Problem 1, use the picture graph about instruments students want to try.

1. How many students want to try each instrument?
   drums: 20 students
   piano: 15 students
   trumpet: 5 students
   violin: 10 students

Instruments We Want to Try

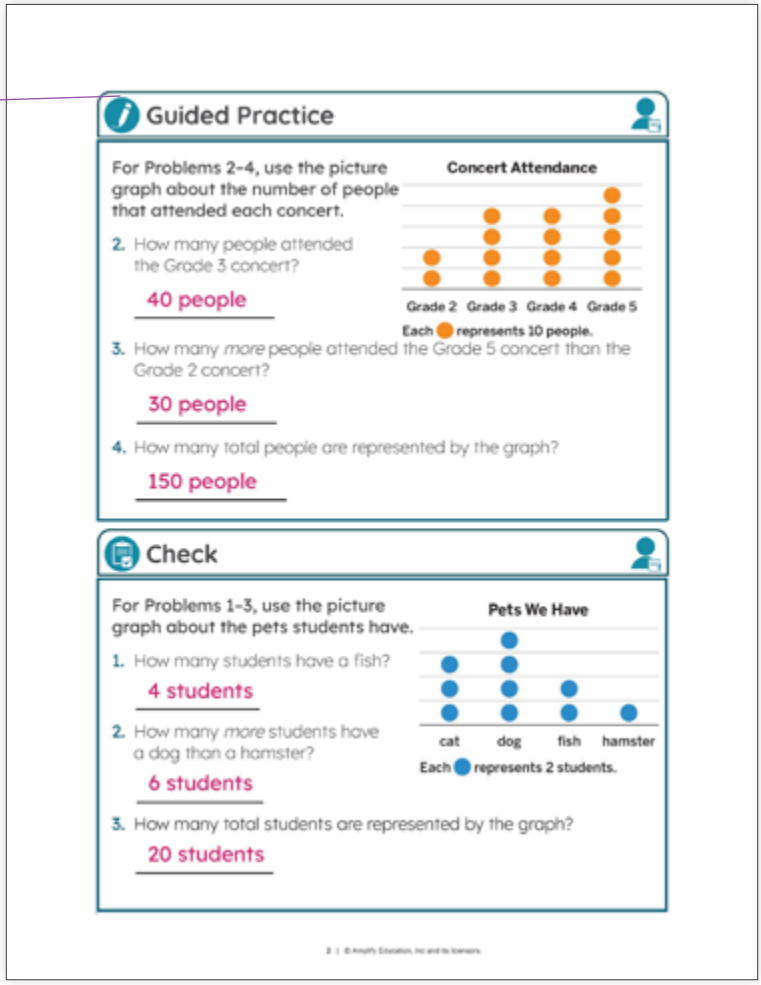
Vocabulary

If needed, share the meaning of the words with students.
scaled picture graph: A picture graph where each picture represents an amount other than 1.
key: The part of a picture graph that shows what each picture represents.

Guided Practice

A Guide processing by inviting students to identify which details were needed to solve a problem. Display the sentence frame, "When I read a scaled picture graph I will pay attention to...".

Key Takeaway:
Say, "The data represented on a scaled picture graph can be interpreted using a variety of strategies, one of which is multiplication."



Guided Practice

For Problems 2–4, use the picture graph about the number of people that attended each concert.

Concert Attendance

Grade 2 Grade 3 Grade 4 Grade 5

Each ● represents 10 people.

2. How many people attended the Grade 3 concert?
40 people

3. How many *more* people attended the Grade 5 concert than the Grade 2 concert?
30 people

4. How many total people are represented by the graph?
150 people

Check

For Problems 1–3, use the picture graph about the pets students have.

Pets We Have

cat dog fish hamster

Each ● represents 2 students.

1. How many students have a fish?
4 students

2. How many *more* students have a dog than a hamster?
6 students

3. How many total students are represented by the graph?
20 students

Reflection

Ask:
- "How is a scaled picture graph different from a picture graph with a scale of 1?"
- "Reflect on today's learning. What is confusing?"

Check: Recommended Next Steps

Almost there	**Got it!**
If students need more support, have them label each circle on the graph in the Check with the number 2. Have students answer the questions again.	If students need more practice, have students change the scale in one of the guided practice problems to 5. Have students answer the questions again. Then ask them what they notice or wonder when the scale is greater or lesser.

Name _____ Date_____

Creating Scaled Picture Graphs

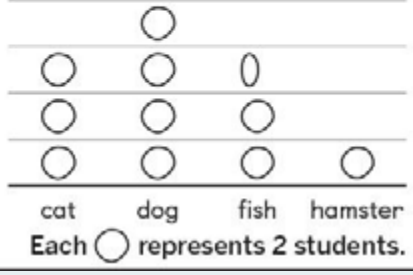
ML 1.14

Modeled Review

Name: Shawn

Use the data in the table to complete the scaled picture graph.

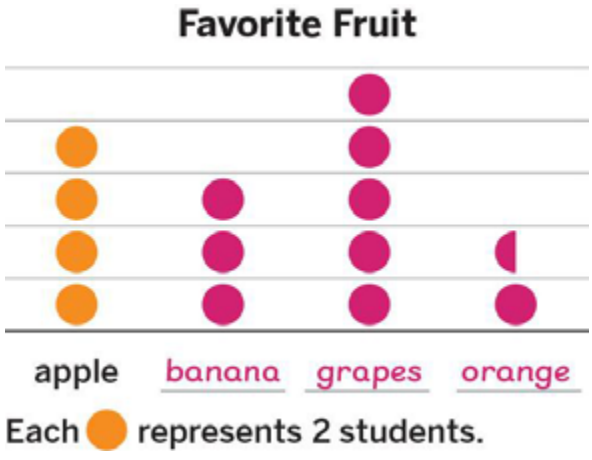
Pet	Number
cat	6
dog	8
fish	5
hamster	2



Guided Practice

1. The table shows students' favorite types of fruit. Use the table to complete the scaled picture graph.

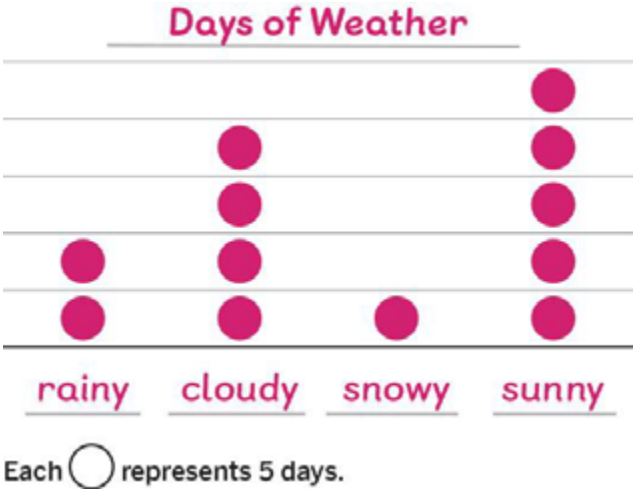
Fruit	Number
apple	8
banana	6
grapes	10
orange	3



Guided Practice

2. Use the data in the table to complete the scaled picture graph.

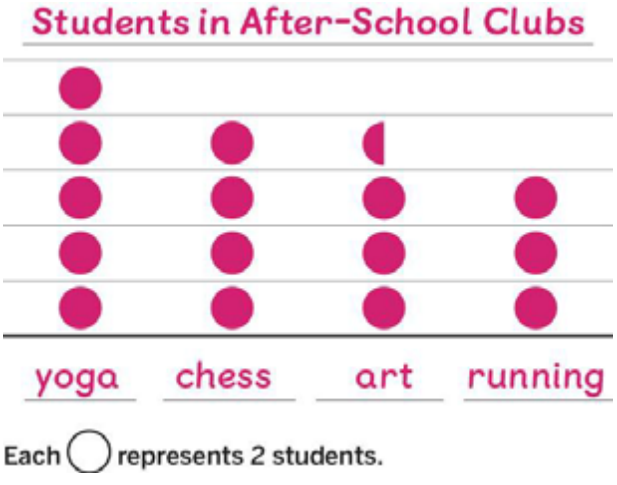
Weather	Number of Days
rainy	10
cloudy	20
snowy	5
sunny	25



Check

The table shows the after-school clubs students attend. Use the data in the table to complete the scaled picture graph.

Club	Number
yoga	10
chess	8
art	7
running	6



Goal

Draw a scaled picture graph to represent a data set.

Standard

3.MD.B.3

Materials

connecting cubes

Modeled Review

Point to Shawn's work and **ask:**

- "How did Shawn know how many circles to draw for the cat category?"
- "Why did Shawn put a half circle in the fish category?"

Reinforce Shawn's thinking by saying, "When creating a data representation, it is important to consider how to make the representation clear for others to interpret."

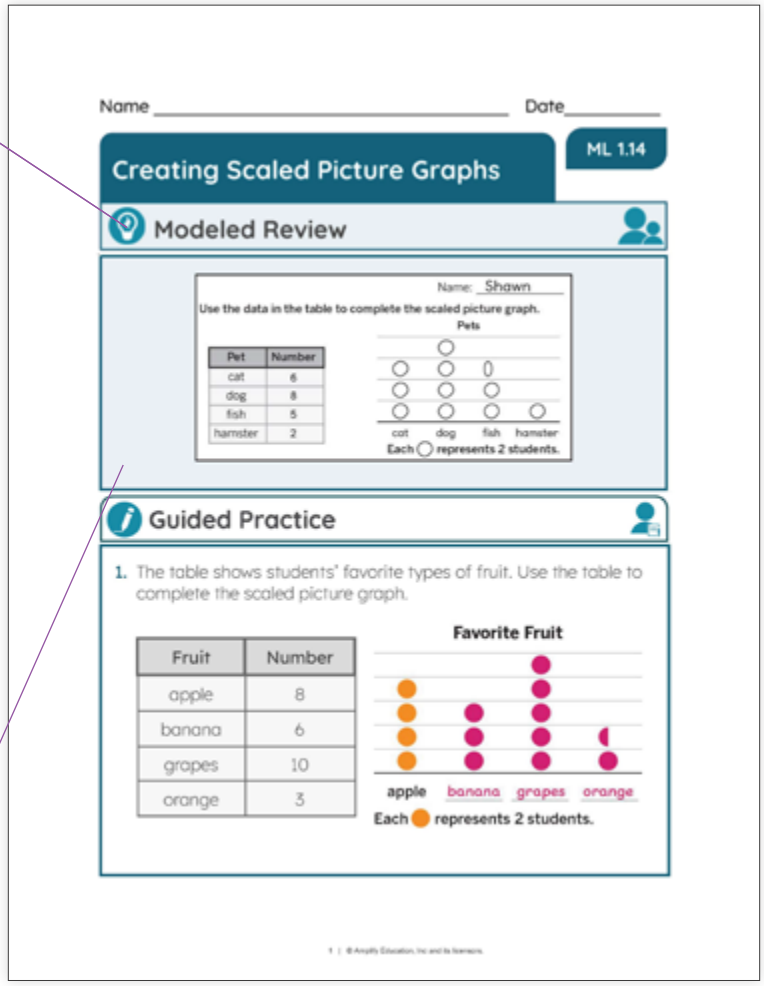
ML/EL Invite students to talk through their thinking with a partner before completing a scaled picture graph.

Guided Practice

For each problem, focus students' attention on creating scaled picture graphs to represent the data.

To scaffold their thinking, **ask:**

- "What is the scale of the picture graph?"
- "How could you determine the number of dots to use for each category?"


Name _____ Date _____

Creating Scaled Picture Graphs ML 1.14

Modeled Review

Name: Shawn

Use the data in the table to complete the scaled picture graph.

Pets

Pet	Number
cat	6
dog	8
fish	5
hamster	2

cat dog fish hamster

Each ○ represents 2 students.

Guided Practice

1. The table shows students' favorite types of fruit. Use the table to complete the scaled picture graph.

Fruit	Number
apple	8
banana	6
grapes	10
orange	3

Favorite Fruit

apple banana grapes orange

Each ● represents 2 students.

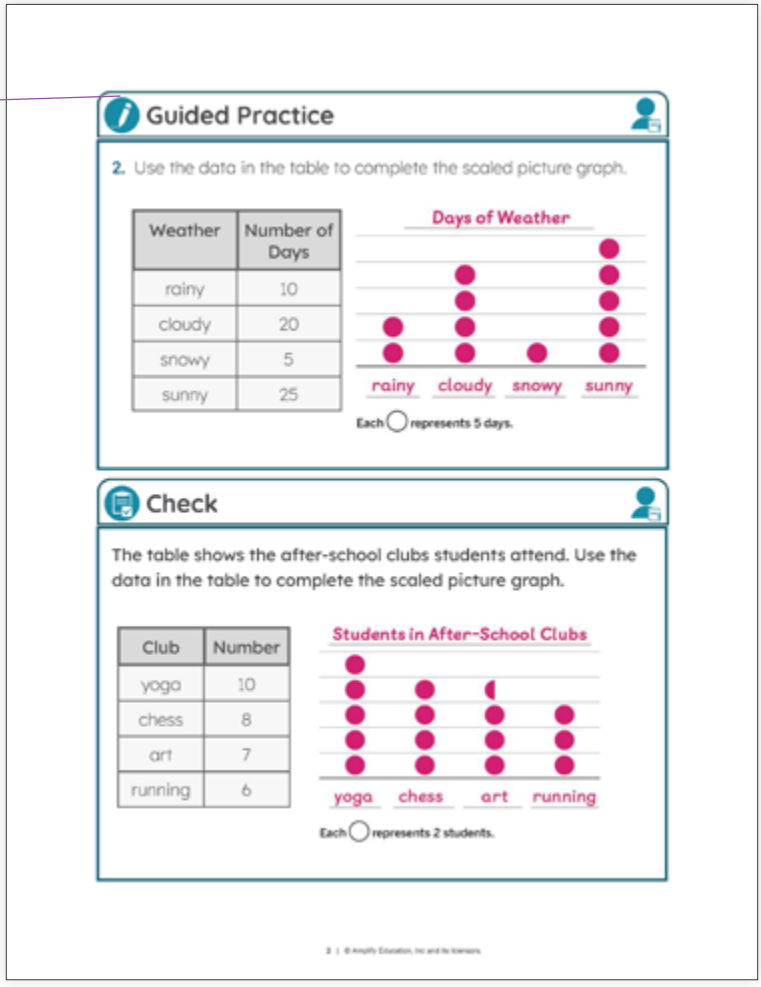
Vocabulary

If needed, share the meaning of the word with students.
scaled picture graph: A picture graph where each picture represents an amount other than 1.

Guided Practice

A Guide visualization by inviting students to create a physical model of the picture graph. Provide access to physical objects, such as connecting cubes, that students could use to represent the data.

Key Takeaway:
Say, "When creating scaled picture graphs, one picture represents more than 1 person or thing. The scale is used to determine how many pictures to make to represent each category."



Guided Practice

2. Use the data in the table to complete the scaled picture graph.

Weather	Number of Days
rainy	10
cloudy	20
snowy	5
sunny	25

Check

The table shows the after-school clubs students attend. Use the data in the table to complete the scaled picture graph.

Club	Number
yoga	10
chess	8
art	7
running	6

Reflection

Ask:
- "How does the key help you understand the data on a scaled picture graph?"
- "How does what you learned today connect to your prior learning?"

Check: Recommended Next Steps

Almost there	**Got it!**
If students need more support, have students refer to the picture graph in the Modeled Review and ask them how the graph would change if there were 7 people with cats.	If students need more practice, ask students to use the data in Problem 2 to draw a picture graph with a scale of 10.

Name _____ Date_____

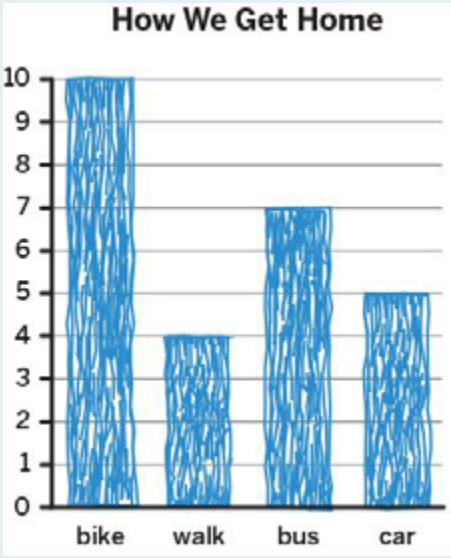
Interpreting Scaled Bar Graphs

ML 1.15.A

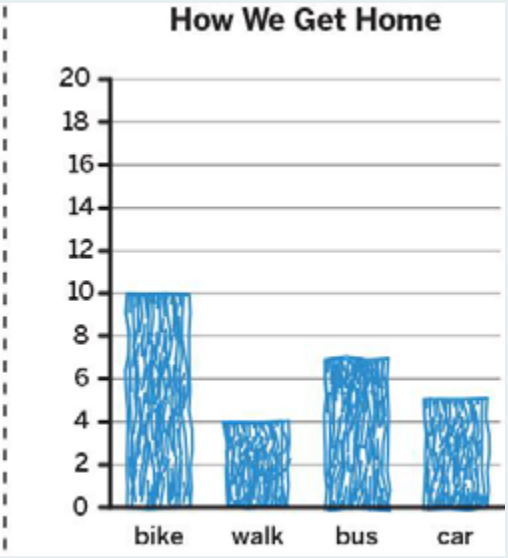
Modeled Review

Two students represented the same data in different ways.

Clare's graph



Diego's graph



Guided Practice

Use the information in the graph to answer the questions.

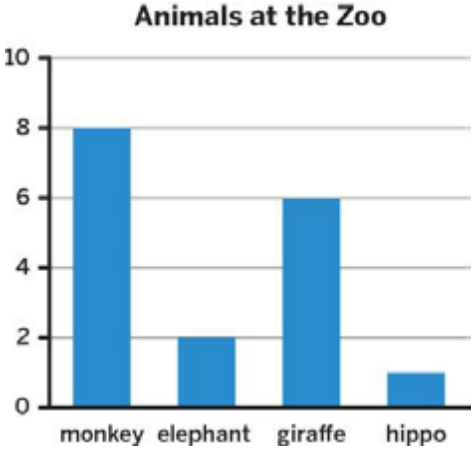
1. How many of each animal are at the zoo?

monkey: 8

elephant: 2

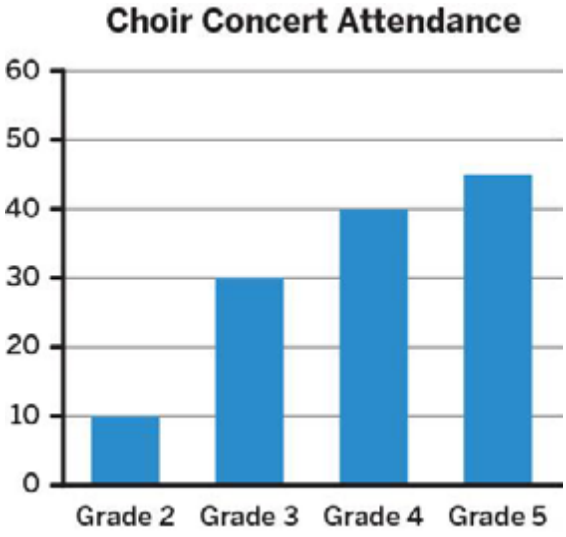
giraffe: 6

hippo: 1



Guided Practice

Use the information in the graph to answer the questions.



2. Which grade had the most people attend?

   Grade 5

3. Which grade had 30 people attend?

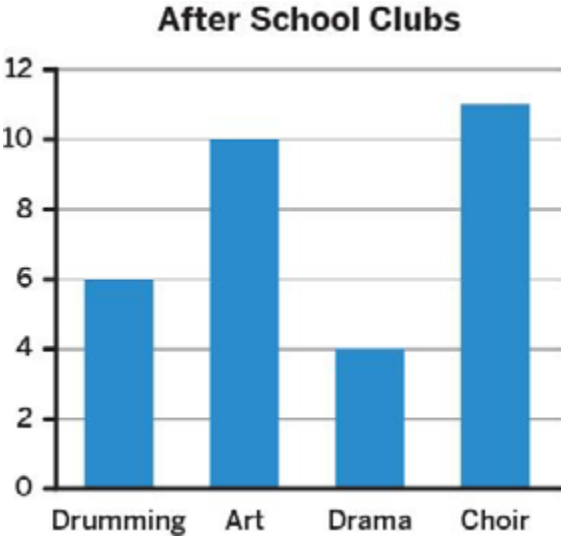
   Grade 3

4. How many people attended the Grade 4 choir concert?

   40 people

Check

Use the information in the graph to answer the questions.



1. Which club had the least number of students attend?

   Drama

2. Which club did 11 students attend?

   Choir

3. How many students attended Drumming club?

   6 students

Goal	Standard
Interpret data represented on a scaled bar graph.	3.MD.B.3

Modeled Review

Point to Clare's and Diego's work and **ask:**

- "How are the two graphs similar? How are they different?"
- "What is the scale on each graph? How do you know?"
- "What could be a reason that Diego used a scale of 2 instead of 1?"

Reinforce Clare's and Diego's thinking by saying, "Sometimes, the top of the bar will be between two numbers, like they are for the bus and car categories in Diego's graph. The bar for bus is between 6 and 8, so there must be 7 students who ride the bus."

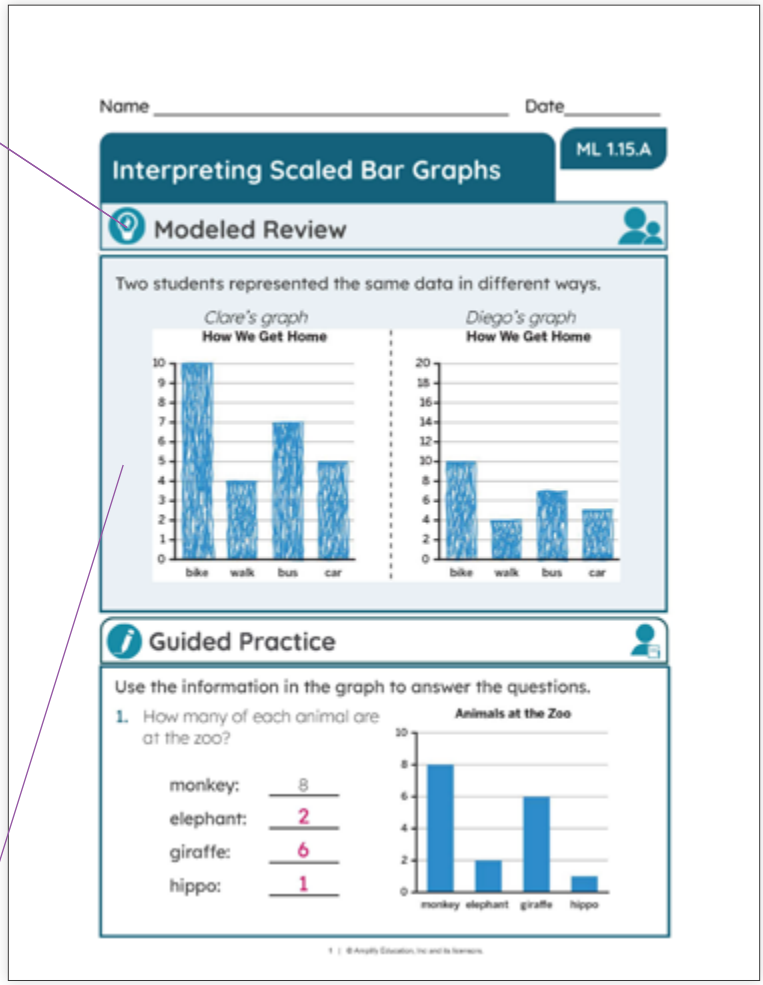
ML/EL Invite students to draw a line from the top of each bar to the vertical axis and annotate.

Guided Practice

For each problem, focus students' attention on interpreting the bar graphs.

To scaffold their thinking, **ask:**

- "What data does the bar graph show?"
- "What is the scale on the bar graph?"


Name _____ Date _____

Interpreting Scaled Bar Graphs ML 1.15.A

Modeled Review

Two students represented the same data in different ways.

Clare's graph
How We Get Home

Diego's graph
How We Get Home

Guided Practice

Use the information in the graph to answer the questions.

1. How many of each animal are at the zoo?

monkey: 8
elephant: 2
giraffe: 6
hippo: 1

Animals at the Zoo

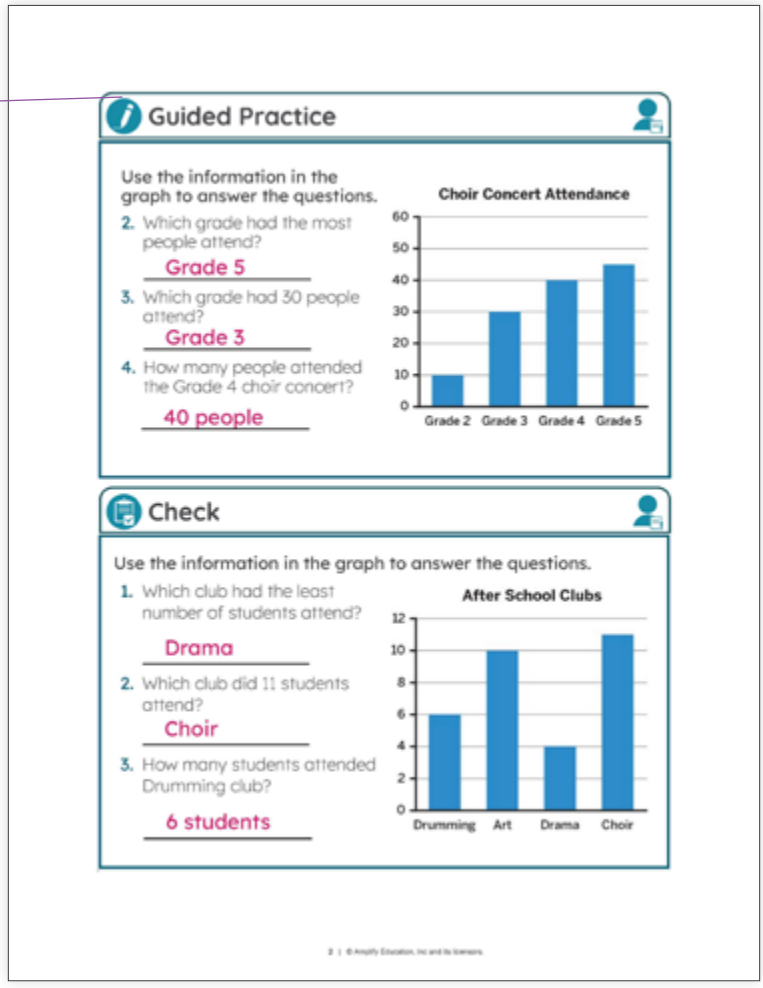
Vocabulary

If needed, share the meaning of the words with students.
scale: On a bar graph, the scale is the amount represented by the space between the lines.
scaled bar graph: A bar graph where the scale is marked in units other than 1.

Guided Practice

A Guide processing by inviting students to identify which details were needed to solve a problem. Display the sentence frame, "When I read a scaled bar graph I will pay attention to...".

Key Takeaway:
Say, "Scaled bar graphs have a scale other than 1. The same data can look different on bar graphs with different scales."



Guided Practice

Use the information in the graph to answer the questions.

2. Which grade had the most people attend?
Grade 5
3. Which grade had 30 people attend?
Grade 3
4. How many people attended the Grade 4 choir concert?
40 people

Choir Concert Attendance

Check

Use the information in the graph to answer the questions.

1. Which club had the least number of students attend?
Drama
2. Which club did 11 students attend?
Choir
3. How many students attended Drumming club?
6 students

After School Clubs

Reflection

Ask:
- "How is a scaled bar graph different from a scaled picture graph?"
- "What questions do you still have?"

Check: Recommended Next Steps

Almost there	**Got it!**
If students need more support, ask students to draw a line from the top of each bar on the graph in the Check to the labels on the vertical axis and annotate.	If students need more practice, have students use the graphs in the Modeled Review to answer the questions: • Which method of getting home is used the most by students? • How many students ride the bus to get home?

Name _____ Date_____

Creating Scaled Bar Graphs

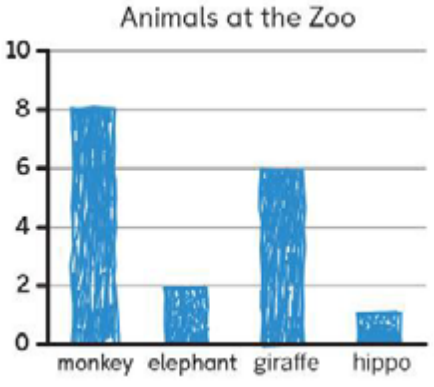
ML 1.15.B

Modeled Review

Name: Jada

Use the data in the table about animals at the zoo to complete the scaled bar graph.

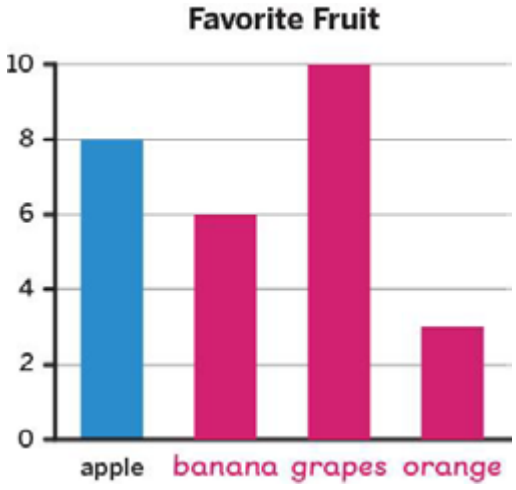
Animals	Number
monkey	8
elephant	2
giraffe	6
hippo	1



Guided Practice

1. Use the data in the table about favorite types of fruit to complete the scaled bar graph.

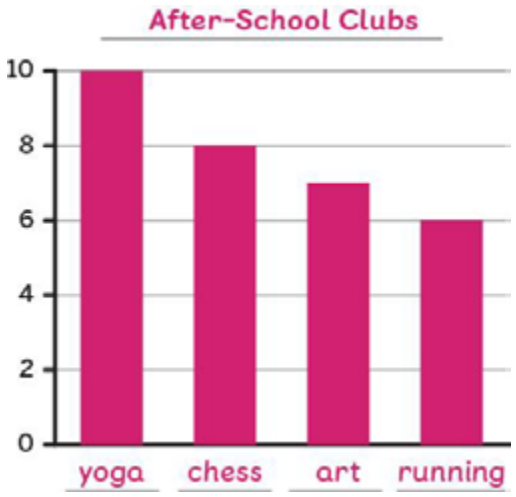
Fruit	Number
apple	8
banana	6
grapes	10
orange	3



Guided Practice

2. Use the data in the table about third graders in after-school clubs to complete the scaled bar graph.

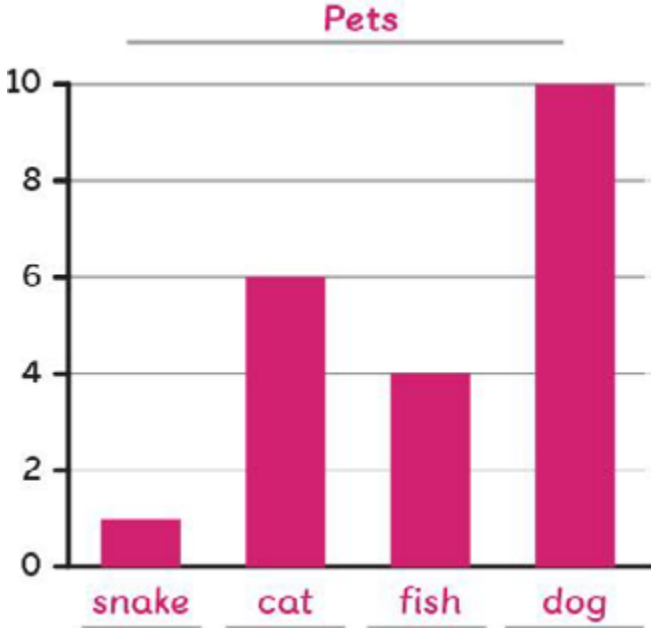
Club	Number
yoga	10
chess	8
art	7
running	6



Check

Use the data in the table about pets to complete the scaled bar graph.

Pet	Number
snake	1
cat	6
fish	4
dog	10



Goal	Standard
Represent data using scaled bar graphs.	3.MD.B.3

Modeled Review

Point to Jada's work and **ask:**

- "What is the scale for the graph?"
- "Why does the bar for hippo not come up all the way to a line?"

Reinforce Jada's thinking by saying, "A bar graph has a title that indicates what data it shows and labeled categories to show what each bar represents. The space between the horizontal lines on a bar graph can represent different amounts."

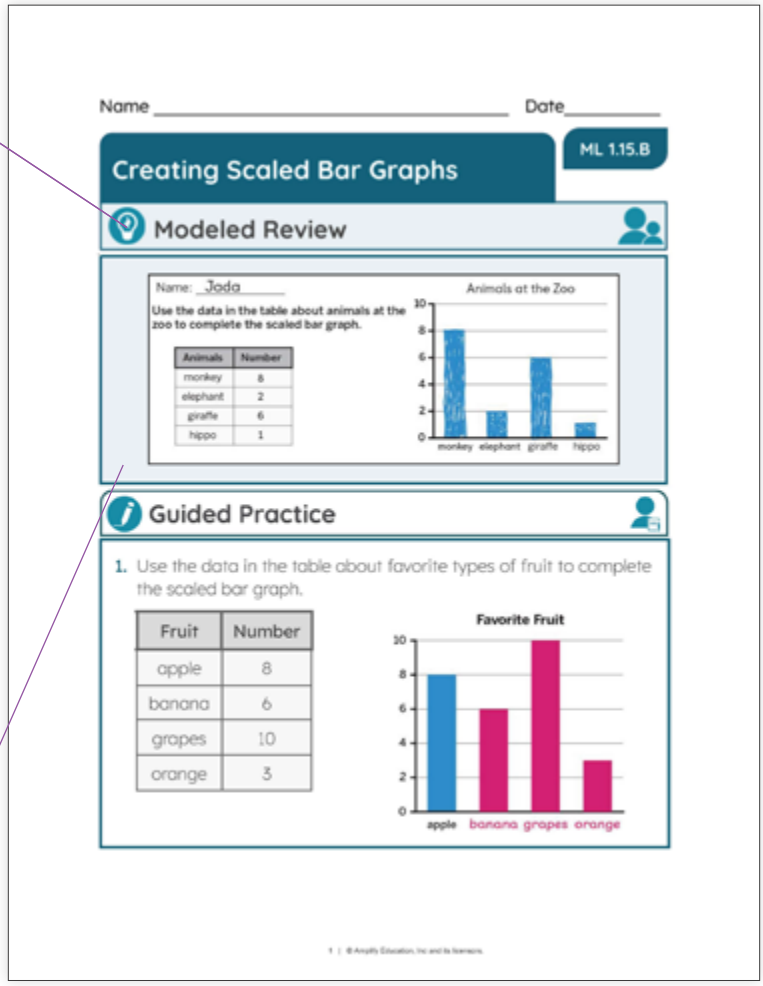
ML/EL Model determining where to stop the bar to represent the data accurately.

Guided Practice

For each problem, focus students' attention on using the data to create a scaled bar graph.

To scaffold their thinking, **ask:**

- "What might you title this graph?"
- "What labeled categories will you add to the graph?"
- "How will you decide where the top of each bar will end?"


Name _____ Date _____

Creating Scaled Bar Graphs

ML 1.15.B

Modeled Review

Name: Jada

Use the data in the table about animals at the zoo to complete the scaled bar graph.

Animals	Number
monkey	8
elephant	2
giraffe	6
hippo	1

Animals at the Zoo

monkey elephant giraffe hippo

Guided Practice

1. Use the data in the table about favorite types of fruit to complete the scaled bar graph.

Fruit	Number
apple	8
banana	6
grapes	10
orange	3

Favorite Fruit

apple banana grapes orange

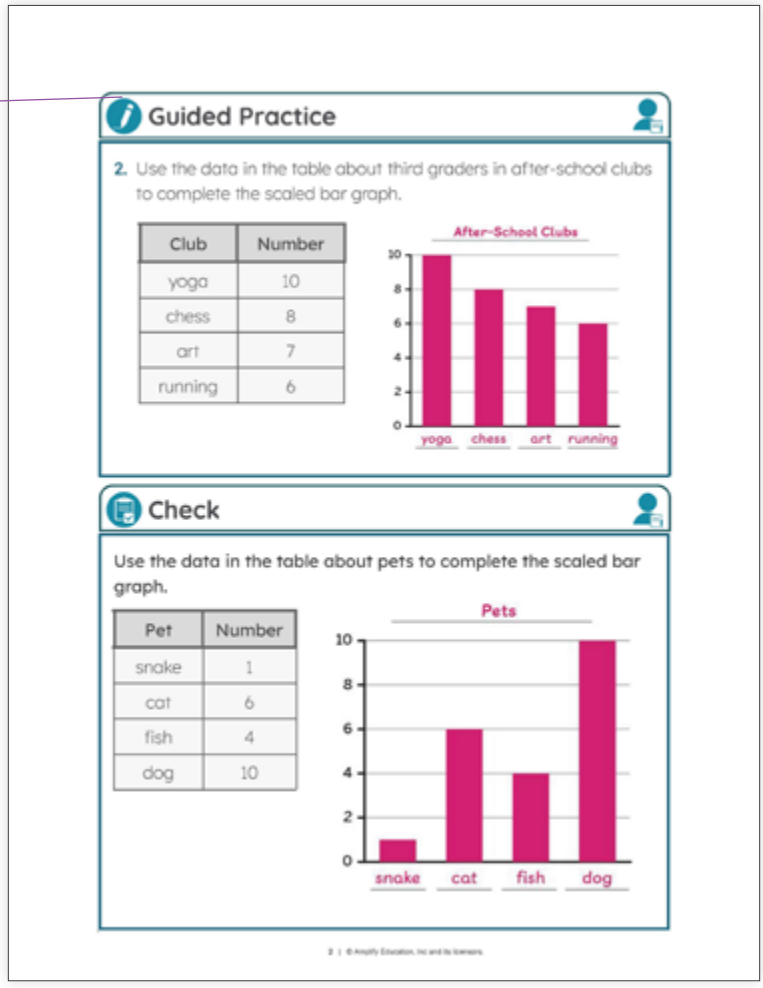
Vocabulary

If needed, share the meaning of the words with students.
scale: On a bar graph, the scale is the amount represented by the space between the lines.
scaled bar graph: A bar graph where the scale is marked in units other than 1.

Guided Practice

A Guide processing by inviting students to identify which details were needed to create a scaled bar graph. Display the sentence frame, "When I create a scaled bar graph I will pay attention to...".

Key Takeaway:
Say, "Sometimes, in order to represent all values on a scaled bar graph, the heights of bars will be between 2 numbers."



Guided Practice

2. Use the data in the table about third graders in after-school clubs to complete the scaled bar graph.

Club	Number
yoga	10
chess	8
art	7
running	6

Check

Use the data in the table about pets to complete the scaled bar graph.

Pet	Number
snake	1
cat	6
fish	4
dog	10

Reflection

Ask:
- "Why might you use different scales to represent data on a bar graph?"
- "What makes sense? What is still confusing?"

Check: Recommended Next Steps

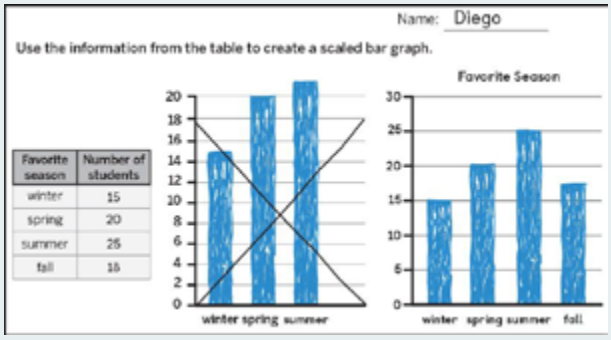
Almost there	**Got it!**
If students need more support, consider using Mini-Lesson 1.15.A: *Interpreting Scaled Bar Graphs*.	If students need more practice, have students add an additional bar to the graph in Problem 2 showing 5 students in the drama club.

Name _____ Date_____

Choosing a Scale

ML 1.16

Modeled Review



Guided Practice

1. Jada, Shawn, and Priya want to make a bar graph to represent the data in the table. **Sample response shown.**

Favorite fruit	Number of students
apple	24
banana	22
grapes	40
orange	13

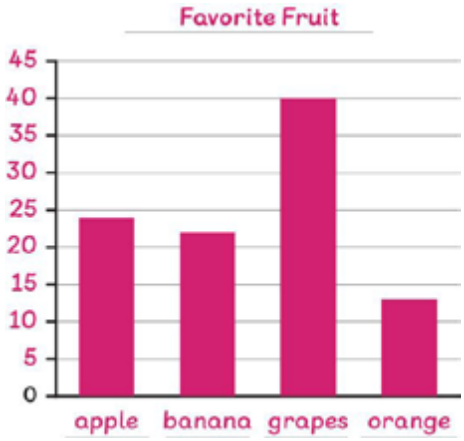
- Jada says the scale of the bar graph should be 2.
- Shawn says the scale of the bar graph should be 5.
- Priya says the scale of the bar graph should be 10.

Discuss: Do you agree with Jada, Shawn, or Priya?

Oral activity: No writing expected. I agree with Shawn because if I use 2 the graph might be too large and if I use 10 it might be too small.

Guided Practice

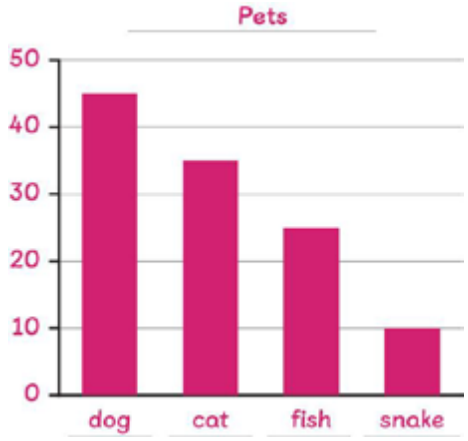
2. Use the scale you chose in Problem 1 to create a scaled bar graph to represent students' favorite types of fruit. **Graph with a scale of 5 shown.**



Check

1. Use the information in the table to create a scaled bar graph. Choose a scale of 2, 5, or 10.

Pets	Number
dog	45
cat	35
fish	25
snake	10



2. Why did you choose the scale that you did? **Sample response shown.**

I used a scale of 10 because each bar could go up to a line or halfway between the lines.

Choosing a Scale

Teacher's Guide **ML 1.16**

Goal	Standard
Choose an appropriate scale to create bar graphs.	3.MD.B.3

Modeled Review

Point to Diego's work and **ask:**

- "Why do you think Diego crossed off his first graph and started again?"
- "What would the graph look like if he chose a scale of 10?"

Reinforce Diego's thinking by saying, "It is important to choose a scale that represents the data clearly so that others can read the graph accurately."

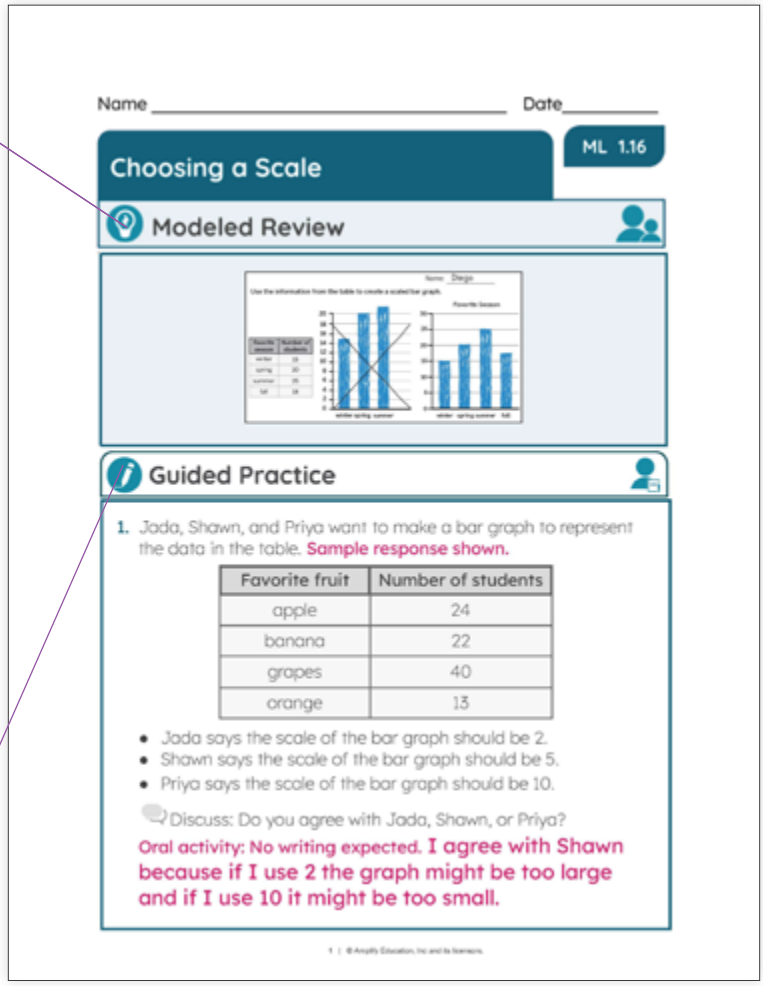
ML/EL Invite students to discuss their ideas with a partner before deciding which scale to use.

Guided Practice

For each problem, focus students' attention on choosing a scale.

To scaffold their thinking, **say:**

- "Using a larger scale, like 5 or 10, makes it possible to represent larger numbers."
- "Sometimes a smaller scale makes it clearer to interpret each data point precisely."



Name _____ Date _____

Choosing a Scale — ML 1.16

Modeled Review

Guided Practice

1. Jada, Shawn, and Priya want to make a bar graph to represent the data in the table. Sample response shown.

Favorite fruit	Number of students
apple	24
banana	22
grapes	40
orange	13

- Jada says the scale of the bar graph should be 2.
- Shawn says the scale of the bar graph should be 5.
- Priya says the scale of the bar graph should be 10.

Discuss: Do you agree with Jada, Shawn, or Priya?

Oral activity: No writing expected. I agree with Shawn because if I use 2 the graph might be too large and if I use 10 it might be too small.

Vocabulary

If needed, share the meaning of the word with students.
scaled bar graph: A bar graph where the scale is marked in units other than 1.

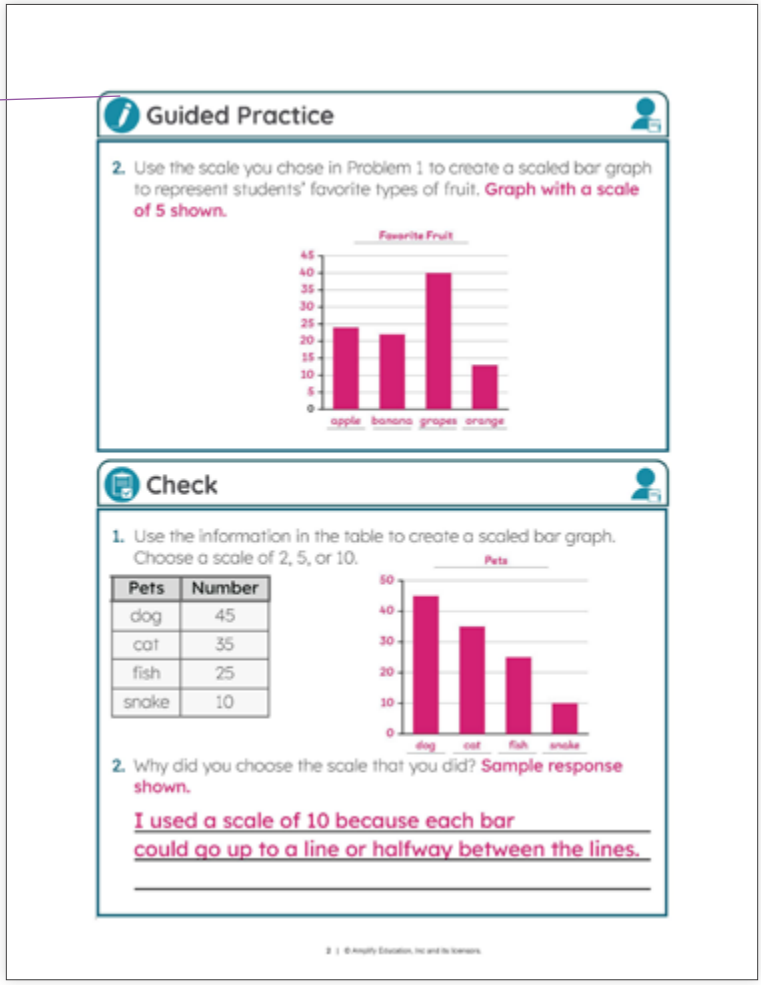
Choosing a Scale

Teacher's Guide | ML 1.16

Guided Practice

A Provide students with a pre-created or partially created bar graph to help them decide which scale to use.

Key Takeaway:
Say, "Different scales can be used to represent the same data. When choosing a scale, consider the data you need to represent and what scale will make it clearer to interpret that data."



Guided Practice

2. Use the scale you chose in Problem 1 to create a scaled bar graph to represent students' favorite types of fruit. Graph with a scale of 5 shown.

Favorite Fruit

45
40
35
30
25
20
15
10
5
0

apple banana grapes orange

Check

1. Use the information in the table to create a scaled bar graph. Choose a scale of 2, 5, or 10.

Pets	Number
dog	45
cat	35
fish	25
snake	10

Pets

50
40
30
20
10
0

dog cat fish snake

2. Why did you choose the scale that you did? Sample response shown.

I used a scale of 10 because each bar could go up to a line or halfway between the lines.

Reflection

Ask:
- "What connections can you make between scales and multiplication?"
- "How did you overcome a hard problem today?"

Check: Recommended Next Steps

Almost there
If students need more support, have students represent the data in Problem 1 using a different scale than they did in Problem 2. Ask them to explain which scale represents the data more clearly.

Got it!
If students need more practice, have students choose a scale and complete a bar graph for the following data.

Flowers	Number
rose	16
tulip	8
lily	5
daisy	10

Name _____ Date _____

Solving One-Step Interpretation Questions

ML 1.17

Modeled Review

Name: Clare

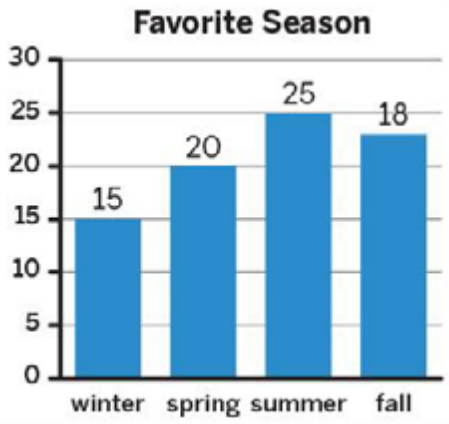
Use the bar graph to answer the questions.

1. How many students chose winter or spring as their favorite season?

   15 + 20 = 35 students

2. How many *fewer* students chose fall than summer?

   25 - 18 = 7 students



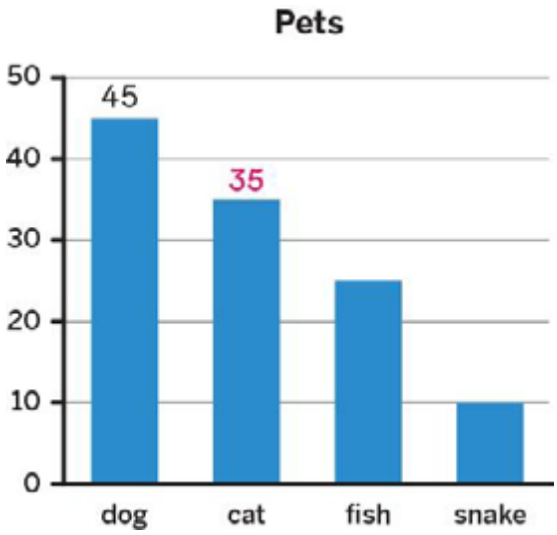
Guided Practice

Use the bar graph to answer the question.

1. How many dogs and cats are there?

   45 + 35 = 80

answer: 80 dogs and cats



Guided Practice

Use the bar graph to answer the questions.

2. How many *more* cats are there than snakes?

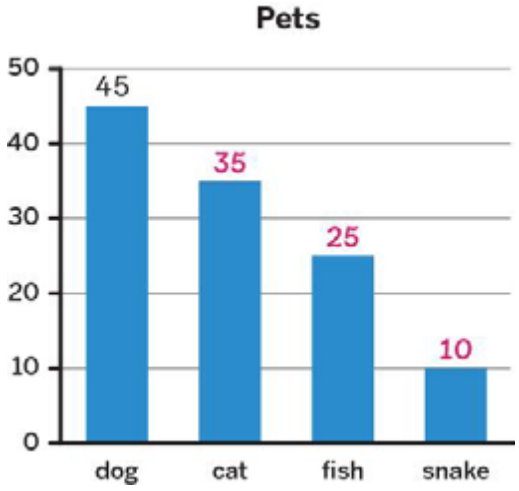
35 - 10 = 25

answer: 25 cats

3. How many *fewer* fish are there than dogs? Sample work shown.

45 - 25 = 20

answer: 20 fish



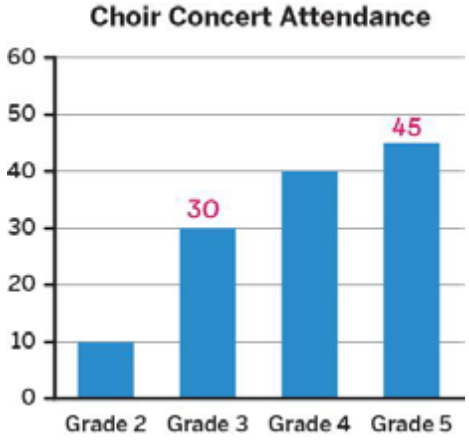
Check

Use the bar graph to answer the question. Sample work shown.

How many *fewer* people attended the Grade 3 concert than the Grade 5 concert?

45 - 30 = 15

answer: 15 people



Goal	Standard
Solve one-step problems about data represented in a scaled bar graph.	3.MD.B.3

Modeled Review

Point to Clare's work and **ask:**

- "What information do you know?"
- "What are you trying to find?"
- "Why did Clare add or subtract?"

Reinforce Clare's thinking by saying, "When solving problems, you should always identify the information you know and the information you are solving for."

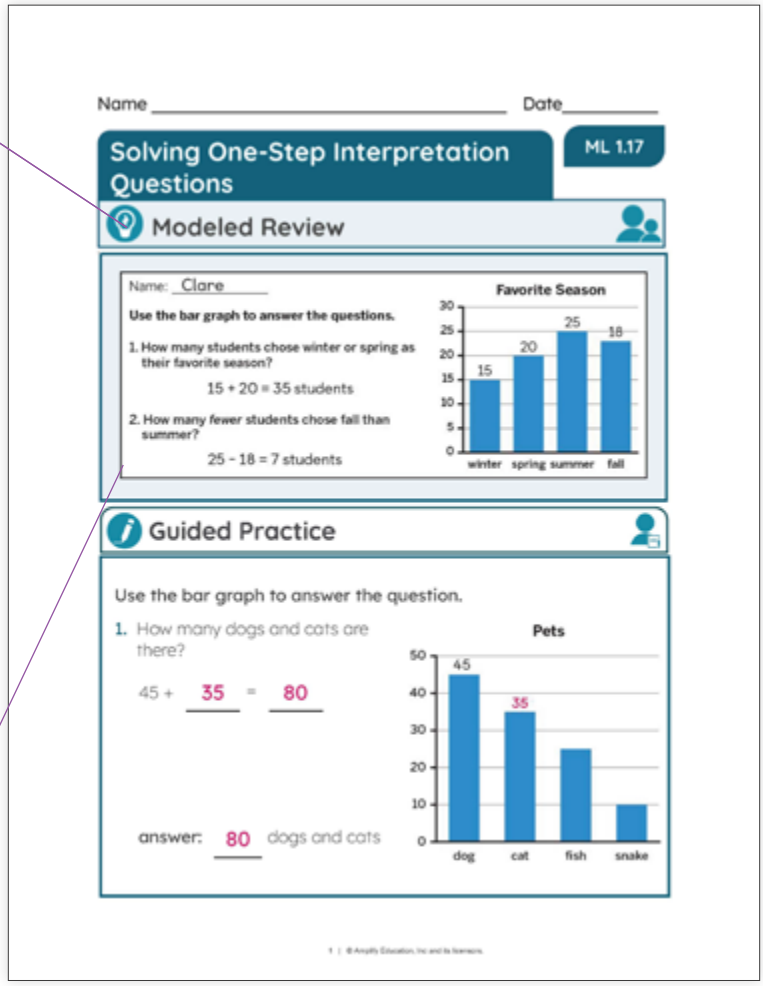
ML/EL Invite students to read each problem aloud and paraphrase what it means. Clarify any words they do not know.

Guided Practice

For each problem, focus students' attention on using the scaled bar graphs to answer the questions.

To scaffold their thinking, **ask:**

- "What is the scale on the graph?"
- "How could you use the scale to determine the value of each bar?"


Name _____ Date _____

Solving One-Step Interpretation Questions

ML 1.17

Modeled Review

Name: Clare

Use the bar graph to answer the questions.

1. How many students chose winter or spring as their favorite season?

15 + 20 = 35 students

2. How many fewer students chose fall than summer?

25 - 18 = 7 students

Favorite Season

Guided Practice

Use the bar graph to answer the question.

1. How many dogs and cats are there?

45 + 35 = 80

answer: 80 dogs and cats

Pets

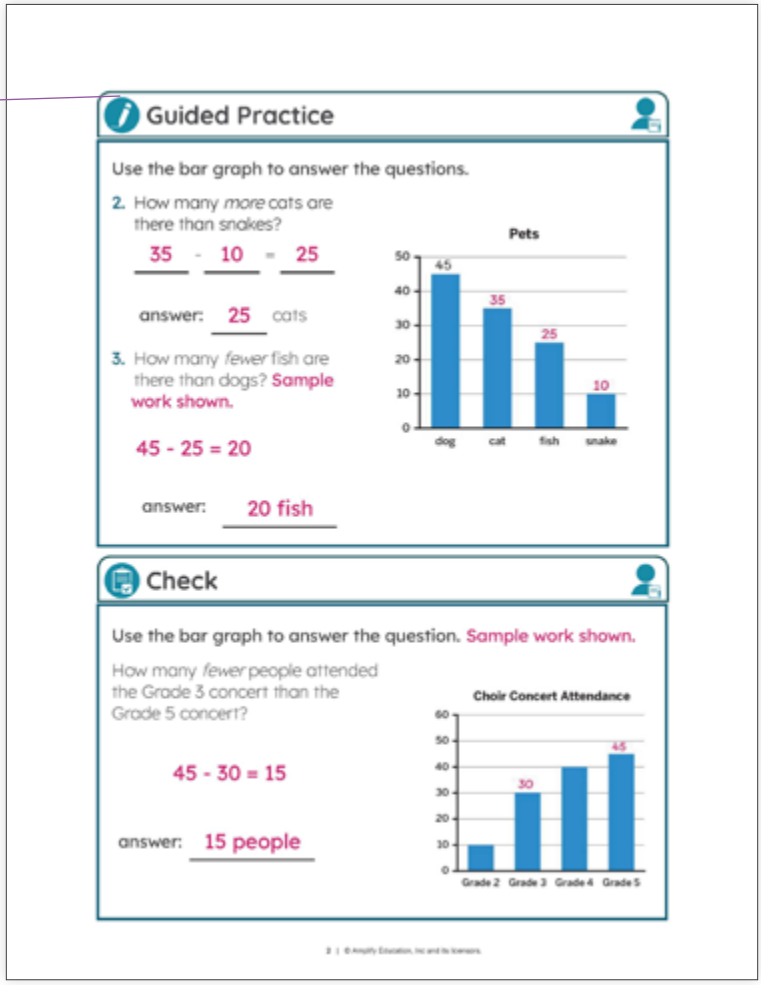
Vocabulary

If needed, share the meaning of the words with students.
data: Information about the things or people in a group.
scaled bar graph: A bar graph where the scale is marked in units other than 1.

Guided Practice

A Invite students to draw a line from the top of each bar to the vertical axis and annotate.

Key Takeaway:
Say, "When answering questions about data on a scaled bar graph, you can read the problems and analyze the graph to determine which information is already shown and which information you need to figure out."



Guided Practice

Use the bar graph to answer the questions.

2. How many *more* cats are there than snakes?

35 - 10 = 25

answer: 25 cats

3. How many *fewer* fish are there than dogs? Sample work shown.

45 - 25 = 20

answer: 20 fish

Check

Use the bar graph to answer the question. Sample work shown.

How many *fewer* people attended the Grade 3 concert than the Grade 5 concert?

45 - 30 = 15

answer: 15 people

Reflection

Ask:
- "What strategies can be helpful when answering questions about the data displayed on a bar graph?"
- "What questions do you still have?"

Check: Recommended Next Steps

Almost there	**Got it!**
If students need more support, consider using Mini-Lesson 1.15.A: *Interpreting Scaled Bar Graphs*.	If students need more practice, have students refer to the graph in the Check and solve the problem: • How many *more* people attended the Grade 5 concert than the Grade 2 concert?

Name _____ Date _____

Solving Two-Step Interpretation Questions

ML 1.18

Modeled Review

Name: Priya

Use the bar graph to answer the questions.

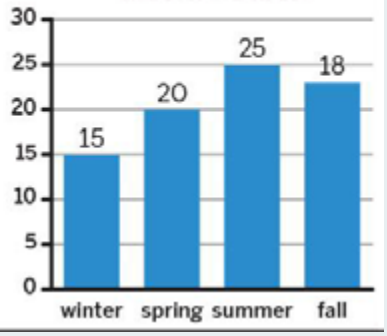
1. How many *fewer* students chose winter than summer?

   25 - 15 = 10 students

2. How many fewer students chose winter than summer and spring combined?

   25 + 20 = 45

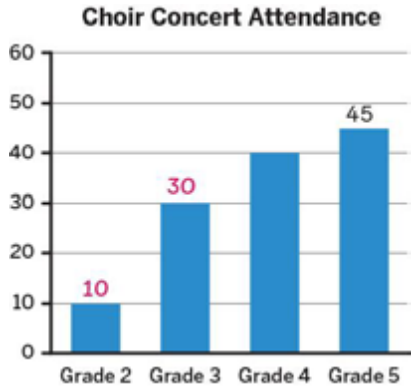
   45 - 15 = 30 students



Guided Practice

Use the bar graph to answer the question.

1. How many more people attended the Grade 5 concert than the Grade 2 and Grade 3 concerts combined?



step 1:

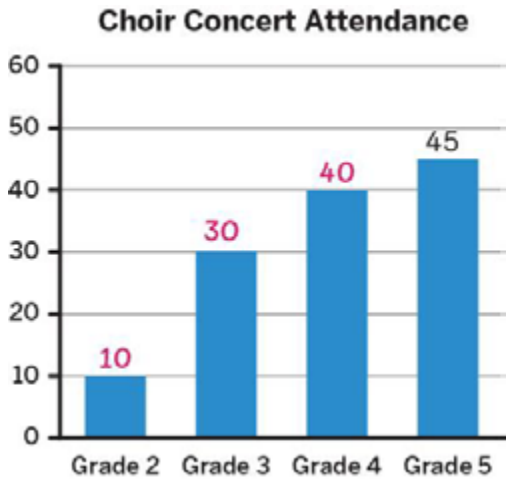
10	+	30	=	40
Grade 2		Grade 3		Total Grades 2 and 3

step 2:

45	-	40	=	5	more people
Grade 5		Total Grade 2 and 3			

Guided Practice

Use the bar graph to answer the questions. Sample work shown.



2. How many *fewer* people attended the Grade 3 concert than the Grade 4 and Grade 5 concerts combined?

40 + 45 = 85
85 - 30 = 55

answer: 55 people

3. How many *more* people attended the Grade 3 and Grade 4 concerts than the Grade 2 concert?

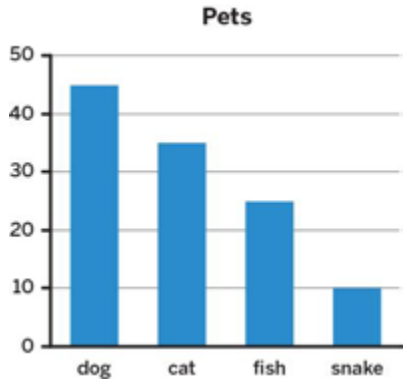
40 + 30 = 70
70 - 10 = 60

answer: 60 people

Check

Use the bar graph to answer the question. Sample work shown.

How many *more* dogs are there than fish and snakes combined?



25 + 10 = 35
45 - 35 = 10

answer: 10 dogs

Goal

Solve two-step problems about data represented on a scaled bar graph.

Standard

3.MD.B.3

Materials

rulers

Modeled Review

Point to Priya's work and **ask:**

- "What information did Priya know?"
- "What was Priya trying to find?"
- "What steps did she take to solve each problem?"

Reinforce Priya's thinking by saying, "Sometimes, questions about data represented on a bar graph require two steps. Priya had to do more than one calculation to solve Problem 2."

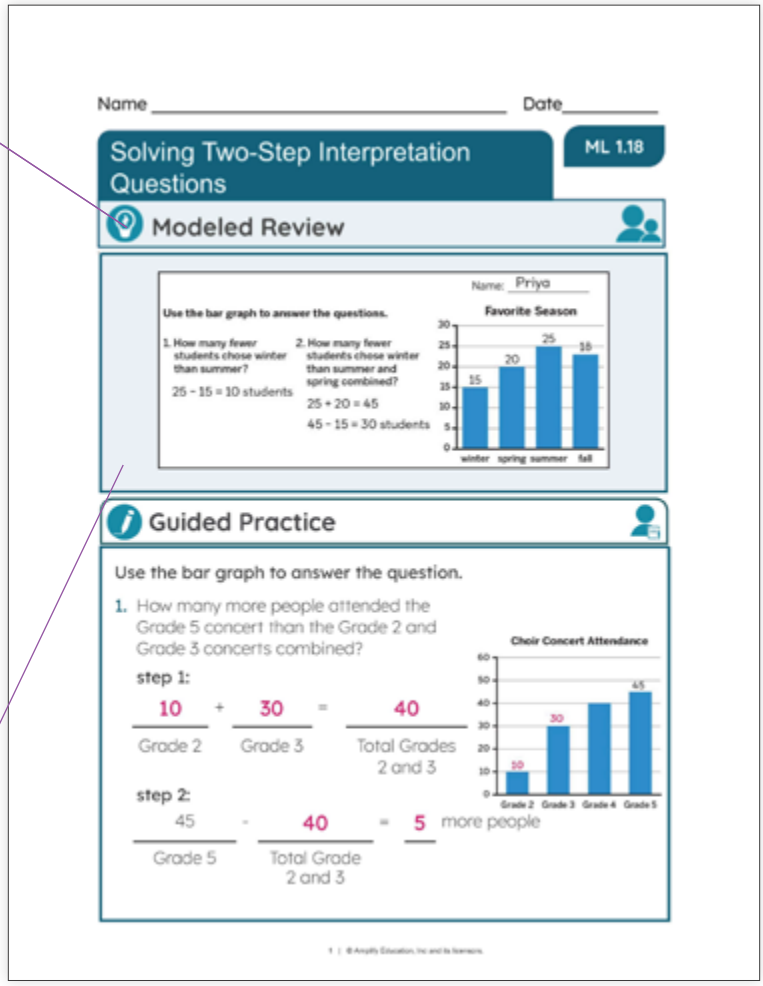
ML/EL Model thinking aloud to determine the information needed to solve the problem.

Guided Practice

For each problem, focus students' attention on using the scaled bar graphs to answer the questions.

To scaffold their thinking, **ask:**

- "What information do you know?"
- "What information are you trying to find?"


Name _____ Date _____

Solving Two-Step Interpretation Questions

ML 1.18

Modeled Review

Name: Priya

Use the bar graph to answer the questions.

1. How many fewer students chose winter than summer?
25 − 15 = 10 students

2. How many fewer students chose winter than summer and spring combined?
25 + 20 = 45
45 − 15 = 30 students

Favorite Season

15 20 25 18

winter spring summer fall

Guided Practice

Use the bar graph to answer the question.

1. How many more people attended the Grade 5 concert than the Grade 2 and Grade 3 concerts combined?

step 1:

10 (Grade 2) + 30 (Grade 3) = 40 (Total Grades 2 and 3)

step 2:

45 (Grade 5) − 40 (Total Grade 2 and 3) = 5 more people

Choir Concert Attendance

10 30 40 45

Grade 2 Grade 3 Grade 4 Grade 5

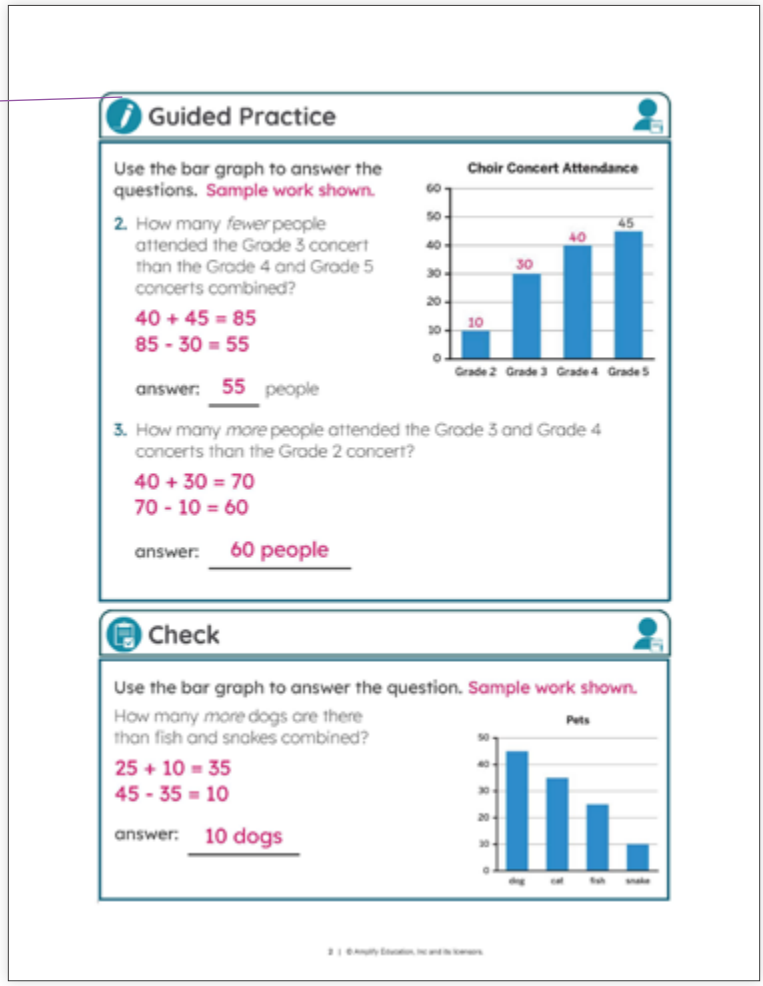
Vocabulary

If needed, share the meaning of the word with students.
scaled bar graph: A bar graph where the scale is marked in units other than 1.

Guided Practice

A Optimize access to tools by providing straightedges to line up the top of the bar with the vertical axis and make a mark between the units. Ask, "What number could this be?"

Key Takeaway:
Say, "There are different strategies to choose from when solving two-step problems. Some strategies you already know, such as adding and subtracting. Some strategies are unique to when you are working with bar graphs, such as using the size of the bars."



Guided Practice

Use the bar graph to answer the questions. Sample work shown.

Choir Concert Attendance

2. How many *fewer* people attended the Grade 3 concert than the Grade 4 and Grade 5 concerts combined?

40 + 45 = 85
85 - 30 = 55

answer: 55 people

3. How many *more* people attended the Grade 3 and Grade 4 concerts than the Grade 2 concert?

40 + 30 = 70
70 - 10 = 60

answer: 60 people

Check

Use the bar graph to answer the question. Sample work shown.

How many *more* dogs are there than fish and snakes combined?

Pets

25 + 10 = 35
45 - 35 = 10

answer: 10 dogs

Reflection

Ask:
- "What new ideas do you have about data?"
- "How does what you learned today connect to your prior learning?"

Check: Recommended Next Steps

Almost there	**Got it!**
If students need more support, consider using Mini-Lesson 1.17: *Solving One-Step Interpretation Questions*.	If students need more practice, have students refer to the graph in the Check and solve the problems: • How many *more* fish and cats combined are there than dogs? • How many *fewer* fish are there than cats and snakes?

GRADE 3

Centers

The following section includes a selection of Center Resources. Centers are engaging hands-on, 15-minute games for students to play collaboratively to strengthen their understanding of key skills and concepts. Centers appear in instruction as part of instructional activities, lesson differentiation, and daily Centers time (K–1 only).

Capture Squares

Students generate a number and connect two dots that are adjacent to the number. If that line closes a square, they capture it and shade it using their color. The player to shade three squares first is the winner.

GRADE 1	**Stage 1**	Add Within 10
	Stage 2	Subtract Within 10
GRADES 1, 2	**Stage 3**	Add Within 20
	Stage 4	Subtract Within 20
GRADE 3	**Stage 5**	Multiply With 2, 5, and 10
	Stage 6	Multiply With 2–5
	Stage 7	Multiply With 6–9

Capture Squares

Stage	Materials	Differentiation
Stage 1 Add Within 10 **(GRADE 1)**	• Directions, Gameboard (Centers Resources) • number cubes (Manipulative Kit) • crayons or colored pencils (Classroom materials)	**Support** Provide students with access to 10-frames and either counters or cubes to represent the expressions. **Stretch** Have students continue playing until all lines are drawn on the board. The player with more squares colored wins.
Stage 2 Subtract Within 10 **(GRADE 1)**	• Directions, Gameboard, Number Cards, 0–10 (Centers Resources) • crayons or colored pencils (Classroom materials)	**Support** • Provide students with access to 10-frames and either counters or cubes to represent the expressions. • Remind students to use the greater number as the minuend, even if the greater number was not drawn first. **Stretch** Have students continue playing until all lines are drawn on the board. The player with more squares colored wins.
Stage 3 Add Within 20 **(GRADES 1, 2)**	• Directions, Gameboard, Spinner, Number Cards, 0–10 (Centers Resources) • crayons or colored pencils, paper clips (Classroom materials)	**Support** Provide students with access to 10-frames and either counters or cubes to represent the expressions. **Stretch** • Encourage students to use the Wild to help them be strategic with their game play. • Have students continue playing until all lines are drawn on the board. The player with more squares colored wins.

Capture Squares (continued)

Stage	Materials	Differentiation
Stage 4 Subtract Within 20 **(GRADES 1, 2)**	• Directions, Gameboard, Spinner, Number Cards, 0–10 (Centers Resources) • crayons or colored pencils, paper clips (Classroom materials)	**Support** • Provide students with access to 10-frames and either counters or cubes to represent the expressions. • Remind students to use the number from the Spinner as the minuend. **Stretch** • Encourage students to use the Wild to help them be strategic with their game play. • Have students continue playing until all lines are drawn on the board. The player with more squares colored wins.
Stage 5 Multiply With 2, 5, and 10 **(GRADE 3)**	• Directions, Gameboard, Spinner (Centers Resources) • number cubes (Manipulative Kit) • crayons or colored pencils, paper clips (Classroom materials)	**Support** • Encourage students to use different multiplication strategies, such as repeated addition or equal groups, to find the product. • Provide students with access to a multiplication chart. **Stretch** • Encourage students to use the Wild to help them be strategic with their game play. • Have students continue playing until all lines are drawn on the board. The player with more squares colored wins.
Stage 6 Multiply With 2–5 **(GRADE 3)**	• Directions, Gameboard, Spinner (Centers Resources) • number cubes (Manipulative Kit) • crayons or colored pencils, paper clips (Classroom materials)	**Support** • Encourage students to use different multiplication strategies, such as repeated addition or equal groups, to find the product. • Provide students with access to a multiplication chart. **Stretch** • Encourage students to use the Wild to help them be strategic with their game play. • Have students continue playing until all lines are drawn on the board. The player with more squares colored wins.

Capture Squares (continued)

Stage	Materials	Differentiation
Stage 7 Multiply With 6–9 **(GRADE 3)**	• Directions, Gameboard, Spinner **(Centers Resources)** • number cubes **(Manipulative Kit)** • crayons or colored pencils, paper clips **(Classroom materials)**	**Support** • Encourage students to use different multiplication strategies, such as repeated addition or equal groups, to find the product. • Provide students with access to a multiplication chart. **Stretch** • Encourage students to use the Wild to help them be strategic with their game play. • Have students continue playing until all lines are drawn on the board. The player with more squares colored wins.

CENTER
Directions

Capture Squares

Stage 5

Let's multiply numbers (2, 5, and 10).

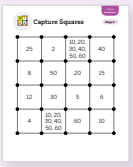
Pairs

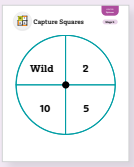
You'll need . . .


2 crayons or colored pencils


number cube


paper clip


Gameboard



Spinner

How to Play

1. Roll the number cube and spin the Spinner. Determine the product.
2. Draw 1 line connecting any 2 dots around the product. If you cannot draw a line, roll the number cube and spin again.
3. If you complete a square, shade the box with your color.
4. Take turns.

How to Win

- The first player to shade 3 boxes wins.

Capture Squares

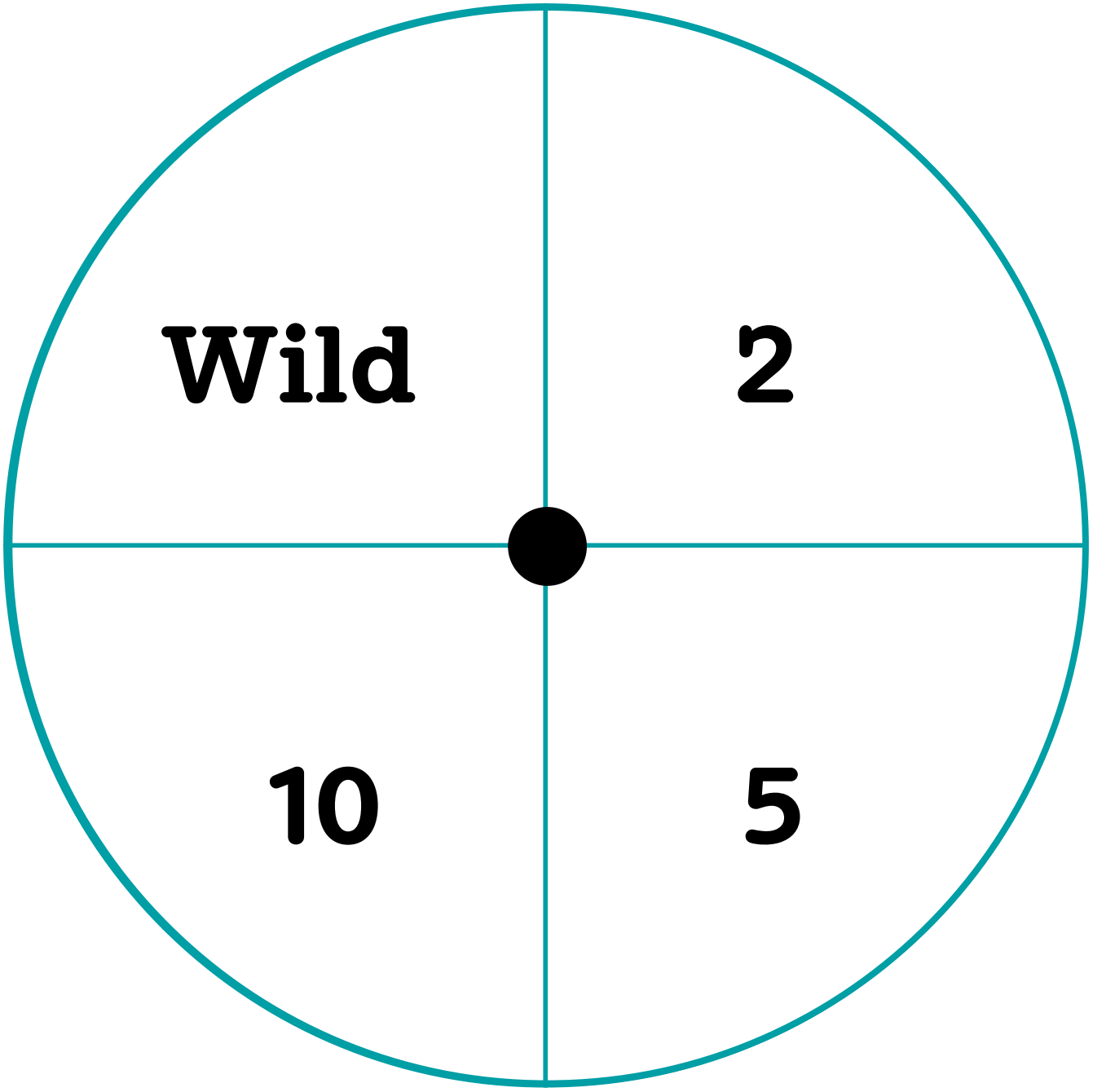
Stage 5

25	2	10, 20, 30, 40, 50, 60	40
8	50	20	15
12	30	5	6
4	10, 20, 30, 40, 50, 60	60	10

CENTER
Spinner

Capture Squares

Stage 5



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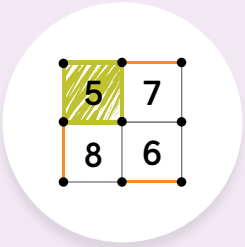
Directions



Capture Squares

Stage 6

Let's multiply numbers (2–5).

Pairs

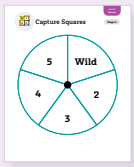
You'll need . . .


2 crayons or colored pencils


number cube


paper clip


Gameboard



Spinner

How to Play

1. Roll the number cube and spin the Spinner. Determine the product.
2. Draw 1 line connecting any 2 dots around the product. If you cannot draw a line, roll the number cube and spin again.
3. If you complete a square, shade the box with your color.
4. Take turns.

How to Win

- The first player to shade 3 boxes wins.

Capture Squares

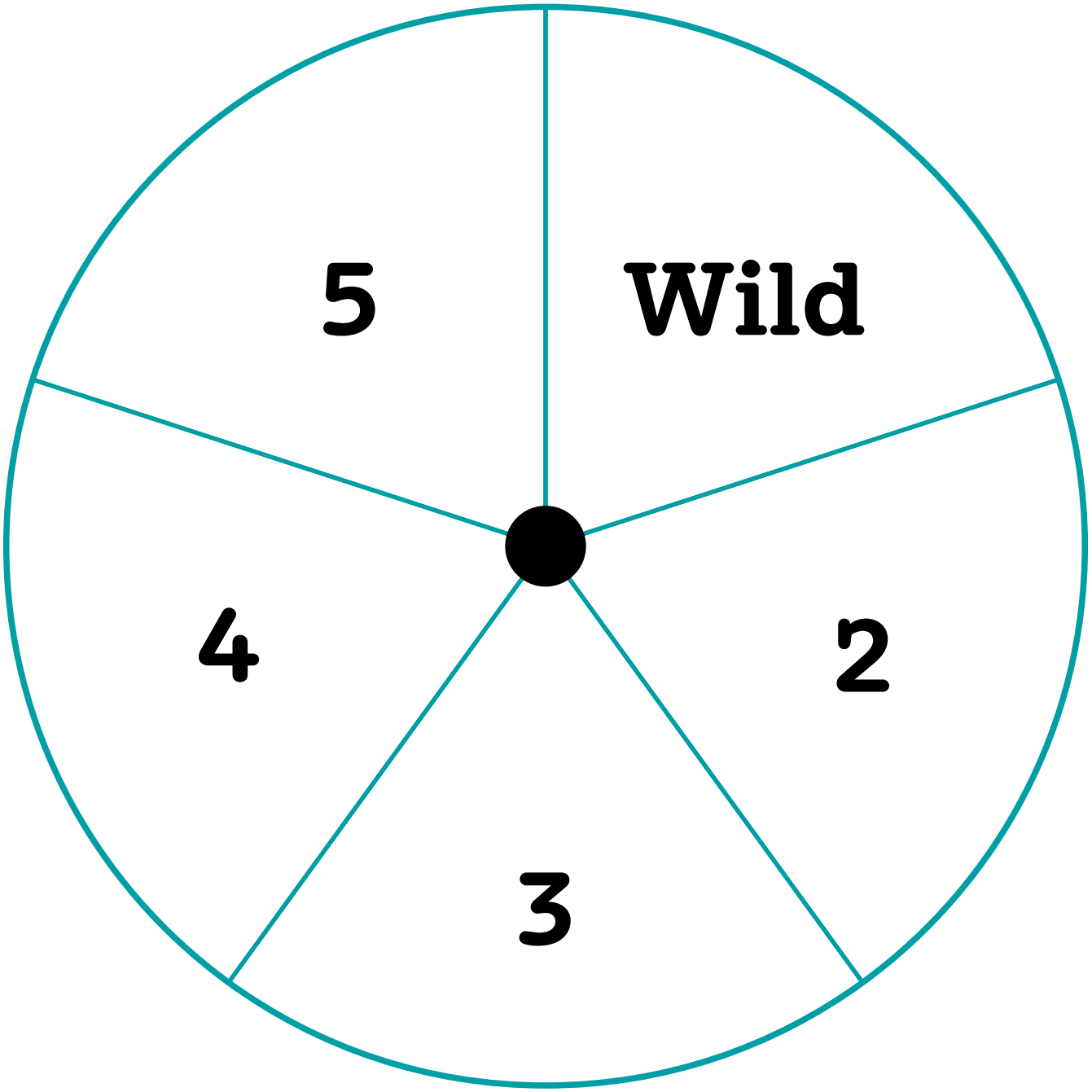
Stage 6

25	12	6	15	8
12	5	10	4	20
6	18	multiple of 4, 5, or 6	20	16
24	8	10	30	12
9	2	15	4	3

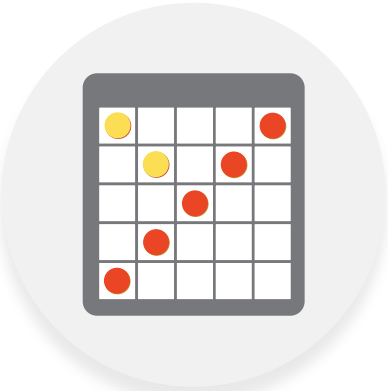
CENTER
Spinner

Capture Squares

Stage 6



Cover Up



Students take turns generating numbers and placing counters on a board. The first partner to fill a row, column, or diagonal wins.

GRADE 1

- **Stage 1** Add 1 or 2
- **Stage 2** Subtract 1 or 2
- **Stage 3** Make 10
- **Stage 4** Doubles
- **Stage 5** Near Doubles
- **Stage 6** Add 7, 8, or 9
- **Stage 7** Add or Subtract 10
- **Stage 8** Add Within 100 Without Composing
- **Stage 9** Add Within 100 With Composing

GRADE 2

- **Stage 10** Add Within 1,000 Without Composing

GRADES 2,3

- **Stage 11** Add Within 1,000 With Composing

GRADE 3

- **Stage 12** Factors 1–5 and 10
- **Stage 13** Factors 1–9

GRADE 4

- **Stage 14** Two-Digit Factors

Cover Up

Stage	Materials	Differentiation
Stage 1 Add 1 or 2 **(GRADE 1)**	• Directions, Gameboards A and B (one per player), Number Cards, 0–9 (Centers Resources) • two-color counters (Manipulative Kit)	**Support** • Have students use addition strategies, such as counting all, counting on, or relating addition to counting. • Provide students with access to 10-frames and either counters or cubes to represent the expressions. **Stretch** Encourage students to be strategic when adding 1 or 2 to cover a preferred number.
Stage 2 Subtract 1 or 2 **(GRADE 1)**	• Directions, Gameboards A and B (one per player), Number Cards, 2–10 (Centers Resources) • two-color counters (Manipulative Kit)	**Support** • Have students use subtraction strategies, such as representing all and then removing, counting back, or relating subtraction to counting. • Provide students with access to 10-frames and either counters or cubes to represent the expressions. **Stretch** Encourage students to be strategic when subtracting 1 or 2 to cover a preferred number.
Stage 3 Make 10 **(GRADE 1)**	• Directions, Gameboards A and B (one per player), Number Cards, 0–10 (Centers Resources) • two-color counters (Manipulative Kit)	**Support** • Have students use addition strategies, such as counting all, counting on, or relating addition to counting. • Provide students with access to 10-frames and either counters or cubes to make 10. **Stretch** Encourage students to be strategic when covering the sum.

Cover Up (continued)

Stage	Materials	Differentiation
Stage 4 Doubles **(GRADE 1)**	• Directions, Gameboards A and B (one per player), Number Cards, 0–10 (Centers Resources) • two-color counters (Manipulative Kit)	**Support** Provide students with access to 10-frames and either counters or cubes to represent the expressions. **Stretch** Encourage students to be strategic when covering the sum.
Stage 5 Near Doubles **(GRADE 1)**	• Directions, Gameboards A and B (one per player), Number Cards, 0–10 (Centers Resources) • two-color counters (Manipulative Kit)	**Support** • Have students think of near doubles as doubles plus one. Encourage students to draw number bonds to help them with this thinking. • Provide students with access to 10-frames and either counters or cubes to represent the expressions. **Stretch** Encourage students to be strategic when covering the sum.
Stage 6 Add 7, 8, or 9 **(GRADE 1)**	• Directions, Gameboards A and B (one per player), Number Cards, 0–10 (Centers Resources) • two-color counters (Manipulative Kit)	**Support** • Have students use addition strategies, such as counting all, counting on, or relating addition to counting. • Provide students with access to 10-frames and either counters or cubes to represent the expressions. **Stretch** Encourage students to be strategic when adding 7, 8, or 9 to cover a preferred number.

Cover Up (continued)

Stage	Materials	Differentiation
Stage 7 Add or Subtract 10 **(GRADE 1)**	• Directions, Gameboards A and B (one per player), Number Cards, Multiples of 10 (Centers Resources) • two-color counters (Manipulative Kit)	**Support** Have students use addition strategies, such as skip counting and counting on. **Stretch** Encourage students to add or subtract a multiple of 10 to cover a preferred number.
Stage 8 Add Within 100 Without Composing **(GRADE 1)**	• Directions, Gameboards A and B (one per player), Recording Sheet (Centers Resources) • base-ten units, two-color counters (Manipulative Kit)	**Support** • Have students record their expressions and show their work to find the sums. • Have students use Gameboard A to add a one-digit number and a two-digit number. **Stretch** Have students use Gameboard B to add 2 two-digit numbers.
Stage 9 Add Within 100 With Composing **(GRADE 1)**	• Directions, Gameboards A and B (one per player), Recording Sheet (Centers Resources) • base-ten units, two-color counters (Manipulative Kit)	**Support** • Have students record their expressions and show their work to find the sums. • Have students use Gameboard A to add a one-digit number and a two-digit number. **Stretch** Have students use Gameboard B to add 2 two-digit numbers.

Cover Up (continued)

Stage	Materials	Differentiation
Stage 10 Add Within 1,000 Without Composing **(GRADE 2)**	• Directions, Gameboards A and B, Recording Sheet (Centers Resources) • base-ten units, two-color counters (Manipulative Kit)	**Support** • Have students record their expressions and show their work to find the sums. • Have students use Gameboard A to add a two-digit number and a three-digit number. **Stretch** Have students use Gameboard B to add 2 three-digit numbers.
Stage 11 Add Within 1,000 With Composing **(GRADES 2, 3)**	• Directions, Gameboards A and B, Recording Sheet (Centers Resources) • base-ten units, two-color counters (Manipulative Kit)	**Support** • Have students record their expressions and show their work to find the sums. • Have students use Gameboard A to add a two-digit number and a three-digit number. **Stretch** Have students use Gameboard B to add 2 three-digit numbers.
Stage 12 Factors 1–5 and 10 **(GRADE 3)**	• Directions, Gameboards A and B, Recording Sheet (Centers Resources) • base-ten units, two-color counters (Manipulative Kit)	**Support** • Have students use multiplication strategies, such as using manipulatives, equal groups, or skip counting. • Have students record their strategies to find the products. **Stretch** Encourage students to be strategic when multiplying to cover a preferred number.

Cover Up (continued)

Stage	Materials	Differentiation
Stage 13 Factors 1–9 **(GRADE 3)**	• Directions, Gameboards A and B, Recording Sheet (Centers Resources) • base-ten units, two-color counters (Manipulative Kit)	**Support** • Have students use multiplication strategies, such as using manipulatives, equal groups, or skip counting. • Have students record their strategies to find the products. **Stretch** Encourage students to be strategic when multiplying to cover a preferred number.
Stage 14 Two-Digit Factors **(GRADE 4)**	• Directions, Gameboards A and B, Recording Sheet (Centers Resources) • base-ten units, two-color counters (Manipulative Kit)	**Support** • Encourage students to show their work when multiplying. • Have students use different multiplication strategies. **Stretch** Encourage students to be strategic when multiplying to cover a preferred number.

Cover Up

Stage 12

Let's multiply using factors of 1–5 and 10.

Pairs

You'll need . . .


2 base-ten units


two-color counters


Gameboard A or B


Recording Sheet

Set-up

- Choose a Gameboard.
- Choose who will use red counters and who will use yellow counters.

How to Play

1 Player A:

- Place each cube on a number in the gray row. Each cube can be on a different number, or both cubes can be on the same number. Multiply the numbers.
- Cover the product of the two numbers with a counter.
- Record the multiplication expression and product.

2 Player B:

- Move one of the cubes. Multiply the numbers.
- If the product is not already covered with a counter, cover it.
- Record the multiplication expression and product.

3 Take turns moving one cube at a time. Record each multiplication expression and product, even if you were unable to cover the product.

How to Win

- The first player to cover 5 squares in a row wins.

Cover Up

Stage 12

40	2	3	30	5
6	20	8	15	10
100	15	2	16	50
12	9	16	20	25
4	1	50	4	100

1	2	3	4	5	10

Cover Up

Stage 12

100	15	10	20	6
12	8	4	2	50
16	40	3	9	15
20	1	5	50	2
4	25	100	16	30

1	2	3	4	5	10

Name _____ Date _____

CENTER
Recording Sheet

Cover Up

Stage 12

Multiplication expression	Product

Last Number Wins

Students take turns writing the next 1, 2, or 3 numbers in the sequence. The player who writes the last number on the number path wins.

GRADE 1	**Stage 1**	Numbers to 99 by 1
	Stage 2	Numbers to 99 by 10
	Stage 3	Numbers to 120 by 1
GRADE 2	**Stage 4**	Skip Count by 2, 5, and 10

Last Number Wins

Stage	Materials	Differentiation
Stage 1 Numbers to 99 by 1 **(GRADE 1)**	• Directions, Gameboards A–D (Centers Resources) • dry-erase markers, sheet protectors (Classroom materials)	**Support** Have students take turns recording only 1 number at a time on the Gameboard. **Stretch** • Students choose a two-digit number from 10 to 78 and write this as their starting number. They count forward until they reach the end of the path. • Students choose a two-digit number from 90 to 99 and write this as their ending number. They count backward until they reach the beginning of the path.
Stage 2 Numbers to 99 by 10 **(GRADE 1)**	• Directions, Gameboards A–D (Centers Resources) • dry-erase markers, sheet protectors (Classroom materials)	**Support** Provide access to a hundreds chart to assist students in counting by 10. **Stretch** • Students choose a number from 1 to 9 and write this as their starting number. They count by 10 until they reach the end of the path. • Students choose a two-digit number from 90 to 99 and write this as their ending number. They count backward by 10 until they reach the beginning of the path.
Stage 3 Numbers to 120 by 1 **(GRADE 1)**	• Directions, Gameboards A–D (Centers Resources) • dry-erase markers, sheet protectors (Classroom materials)	**Support** Have students take turns recording only 1 number at a time on the Gameboard. **Stretch** • Students choose a two-digit number from 80 to 99. They write this as their starting number and count forward until they reach the end of the path. • Students choose a three-digit number from 100 to 120. They write this as their ending number and count backward until they reach the beginning of the path.

Stage	Materials	Differentiation
Stage 4 Skip Count by 2, 5, and 10 **(GRADE 2)**	• Directions, Gameboard (Centers Resources) • dry-erase markers, sheet protectors (Classroom materials)	**Support** • Have students take turns recording only 1 number at a time on the Gameboard. • Provide access to a hundreds chart to assist students in skip counting. **Stretch** • Students choose a number between 1 and 800. They write this as their starting number and then choose whether to count by 2, 5, or 10. Students count forward by that number until they reach the end of the path. • Students choose a number between 200 and 1,000. They write this as their ending number and then count backward by 10 until they reach the beginning of the path. • Students choose a number between 100 and 1,000. They write this as their ending number and then count backward by 5 until they reach the beginning of the path. • Students choose a number between 40 and 1,000. They write this as their ending number and then count backward by 2 until they reach the beginning of the path.

Last Number Wins

Stage 4

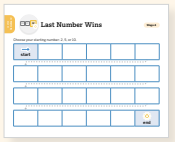
Let's count by 2, 5, and 10.

Pairs

You'll need . . .


dry-erase markers

sheet protectors


Gameboard

Set-up

- Choose a number that is less than or equal to 780, and record it in the first space on the Gameboard. This is your starting number.
- Choose whether to skip count by 2, 5, or 10.

How to Play

1. **Player A:** Record the next 1, 2, or 3 numbers on the Gameboard.
2. **Player B:** Record the next 1, 2, or 3 numbers on the Gameboard.
3. Take turns choosing how many numbers to record and recording them.

How to Win

- The player who records the last number on the Gameboard wins.

Last Number Wins

Stage 4

Choose if you will count by 2, 5, or 10.

start

end

Match It

Students match cards containing different representations.

GRADE 3	**Stage 1**	Multiplication Representations
	Stage 2	Division Representations
	Stage 3	Multiplication and Division Problems
	Stage 4	Elapsed Time
GRADE 4	**Stage 5**	Multiplication Comparison
	Stage 6	Multiplication Equations

Match It

Stage	Materials	Differentiation
Stage 1 Multiplication Representations **(GRADE 3)**	• Directions, Recording Sheet, Multiplication Representation Cards (Centers Resources)	**Support** • Have students work with just one or two pages of cards. • Omit the Recording Sheet and have students only focus on finding matches. **Stretch** Have students work in pairs to create their own set of multiplication representation cards with which they can play the game.
Stage 2 Division Representations **(GRADE 3)**	• Directions, Recording Sheet, Division Representation Cards (Centers Resources)	**Support** • Have students work with just one or two pages of cards. • Omit the Recording Sheet and have students only focus on finding matches. **Stretch** Have students work in pairs to create their own set of division representation cards with which they can play the game.
Stage 3 Multiplication and Division Problems **(GRADE 3)**	• Directions, Recording Sheet, Situation Cards (Centers Resources)	**Support** • Have students work with just one or two pages of cards. • Omit the Recording Sheet and have students only focus on finding matches. **Stretch** Have students work in pairs to create their own set of situation cards with which they can play the game.

Stage	Materials	Differentiation
Stage 4 Elapsed Time **(GRADE 3)**	• Directions, Recording Sheet, Elapsed Time Cards (Centers Resources)	**Support** • Have students work with just pages 1 and 2 of the Elapsed Time Cards. • Omit the Recording Sheet and have students only focus on finding matches. **Stretch** Have students work in pairs to create their own set of elapsed time cards with which they can play the game.
Stage 5 Multiplication Comparison **(GRADE 4)**	• Directions, Recording Sheet, Multiplication Comparison Cards (Centers Resources)	**Support** • Have students work with just one or two pages of cards. • Omit the Recording Sheet. **Stretch** Have students work in pairs to create their own set of multiplication comparison cards with which they can play the game.
Stage 6 Multiplication Equations **(GRADE 4)**	• Directions, Recording Sheet, Multiplication Equation Cards (Centers Resources)	**Support** • Have students work with just one or two pages of cards. • Omit the Recording Sheet and instead have students orally solve each problem. **Stretch** Have students work in pairs to create their own set of multiplication equation cards with which they can play the game.

CENTER
Directions

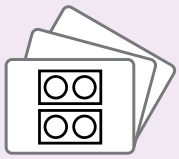
Match It

Stage 1

Let's match multiplication representations.

Pairs

You'll need . . .



Multiplication Representation Cards

Recording Sheet

Set-up

- Arrange the cards facedown in an array.

How to Play

1. On each turn, flip over two cards. Two cards match if they represent the same multiplication situation.
2. If the cards match, collect them and take another turn. If the cards do not match, flip them over facedown, and your turn is over. If you collect two matches in a row, your turn is over.
3. Record the representations for each match.
4. Take turns.

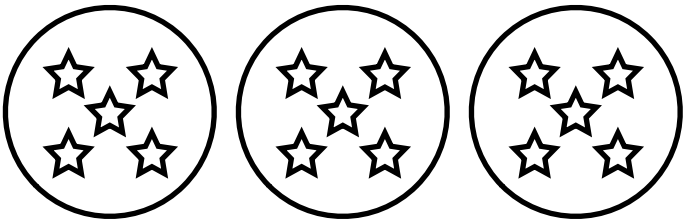
How to Win

- After all the matches have been found, the player who collected more cards wins.

Match It

Stage 1

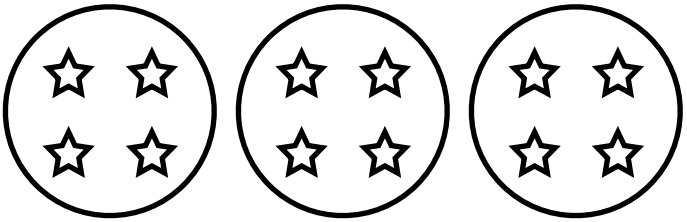
Directions: Make 1 copy per pair of students. Pre-cut the cards and distribute them so that each pair receives one set.



Match It Stage 1

3 groups of 5 objects

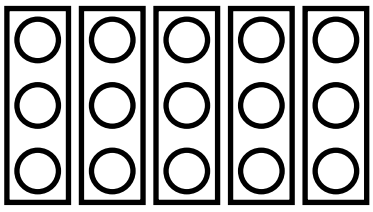
Match It Stage 1



Match It Stage 1

3 groups with 4 objects in each group

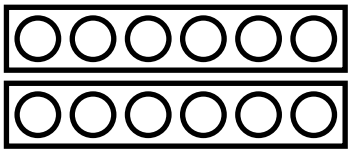
Match It Stage 1



Match It Stage 1

5 groups of 3

Match It Stage 1



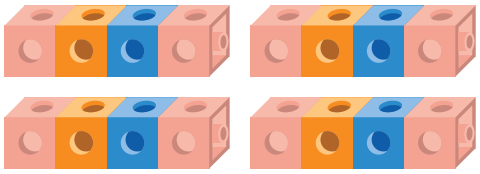
Match It Stage 1

2 groups of 6

Match It Stage 1

Match It

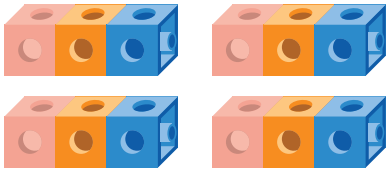
Stage 1



Match It Stage 1

4 groups of 4

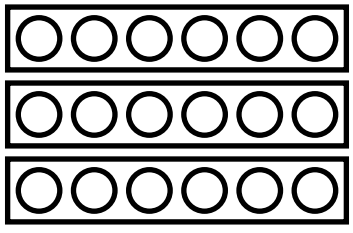
Match It Stage 1



Match It Stage 1

4 groups of 3

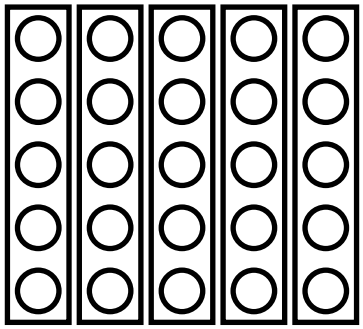
Match It Stage 1



Match It Stage 1

3 groups of 6

Match It Stage 1



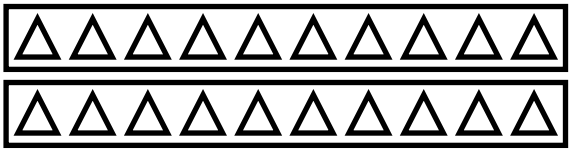
Match It Stage 1

5 groups of 5 objects

Match It Stage 1

Match It

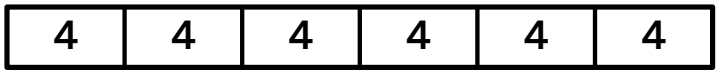
Stage 1



Match It Stage 1

2×10

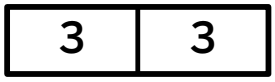
Match It Stage 1



Match It Stage 1

6×4

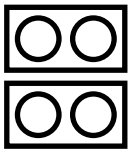
Match It Stage 1



Match It Stage 1

2×3

Match It Stage 1



Match It Stage 1

2×2

Match It Stage 1

Name _____ Date _____

CENTER
Recording Sheet

Match It

Stage 1

Representation	Representation

Target Numbers

Students add or subtract to get as close as possible to a target number.

GRADE 1	**Stage 1**	Add Ones
	Stage 2	Add Tens or Ones
	Stage 3	Add Two-digit Numbers
GRADE 2	**Stage 4**	Subtract Tens or Ones
	Stage 5	Subtract Two-digit Numbers
GRADES 2,3	**Stage 6**	Add Hundreds, Tens, or Ones
	Stage 7	Subtract Hundreds, Tens, or Ones
GRADE 5	**Stage 8**	Add Tenths or Hundredths
	Stage 9	Subtract Tenths or Hundredths

Target Numbers

Stage	Materials	Differentiation
Stage 1 Add Ones **(GRADE 1)**	• Directions, Recording Sheet, Number Cards, 1–9 (Centers Resources)	**Support** Provide students with access to connecting cubes (towers of 10 and single cubes). **Stretch** Allow students to choose their own target number (other than 95).
Stage 2 Add Tens or Ones **(GRADE 1)**	• Directions, Recording Sheet, Number Cards, 1–9 (Centers Resources)	**Support** Provide students with access to connecting cubes (towers of 10 and single cubes). **Stretch** Allow students to choose their own target number (other than 95).
Stage 3 Add Two-digit Numbers **(GRADE 1)**	• Directions, Recording Sheet, Number Cards, 0–9 (Centers Resources)	**Support** Provide students with access to connecting cubes (towers of 10 and single cubes). **Stretch** Allow students to choose their own target number (other than 95).

Target Numbers (continued)

Stage	Materials	Differentiation
Stage 4 Subtract Tens or Ones **(GRADE 2)**	• Directions, Recording Sheet, Number Cards, 1–9 (Centers Resources)	**Support** • Provide students with access to a hundreds chart. • Encourage students to show their work when subtracting. **Stretch** Allow students to choose their own starting number (other than 95).
Stage 5 Subtract Two-digit Numbers **(GRADE 2)**	• Directions, Recording Sheet, Number Cards, 1–9 (Centers Resources)	**Support** Encourage students to show their work when subtracting. **Stretch** Allow students to choose their own starting number (other than 100).
Stage 6 Add Hundreds, Tens, or Ones **(GRADES 2, 3)**	• Directions, Recording Sheet, Number Cards, 1–9 (Centers Resources)	**Support** Encourage students to show their work when adding. **Stretch** Encourage students to estimate the difference between their current round and the target number.

Target Numbers (continued)

Stage	Materials	Differentiation
Stage 7 Subtract Hundreds, Tens, or Ones **(GRADES 2, 3)**	• Directions, Recording Sheet, Number Cards, 1–9 (Centers Resources)	**Support** Encourage students to show their work when subtracting. **Stretch** Encourage students to estimate the difference between their current round and the target number.
Stage 8 Add Tenths or Hundredths **(GRADE 5)**	• Directions, Recording Sheet, Number Cards, 1–9 (Centers Resources)	**Support** Encourage students to show their work when adding. **Stretch** • Allow students to choose their own starting number and/or target number. • Have students draw two Number Cards, one to represent the tenths and the other to represent the hundredths.
Stage 9 Subtract Tenths or Hundredths **(GRADE 5)**	• Directions, Recording Sheet, Number Cards, 1–9 (Centers Resources)	**Support** Encourage students to show their work when subtracting. **Stretch** • Allow students to choose their own starting number and/or target number. • Have students draw two Number Cards, one to represent the tenths and the other to represent the hundredths.

CENTER
Directions

Target Numbers

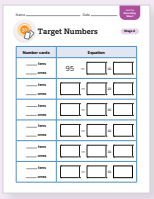
Stage 4

Let's subtract tens or ones from two-digit numbers.

Pairs

You'll need . . .

Number Cards, 1–9



Recording Sheet

Set-up

- Place the number cards facedown in a pile.

How to Play

1. Draw the top number card. Choose whether to subtract that number of *tens* or *ones* from the starting number.
2. Record your chosen number to create a subtraction equation. Complete the equation by finding the difference.
3. Record the difference from the previous equation as the starting number in your next equation.
4. Take turns until each player's Recording Sheet is full.

How to Win

- The player with a final difference closer to 0 wins.

Name _____ Date _____

CENTER
Recording Sheet

Target Numbers

Stage 4

Number cards	Equation
_____ tens _____ ones	95 − ☐ = ☐
_____ tens _____ ones	☐ − ☐ = ☐
_____ tens _____ ones	☐ − ☐ = ☐
_____ tens _____ ones	☐ − ☐ = ☐
_____ tens _____ ones	☐ − ☐ = ☐
_____ tens _____ ones	☐ − ☐ = ☐

Target Numbers

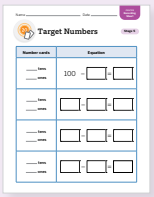
Stage 5

Let's subtract two-digit numbers from two-digit numbers.

Pairs

You'll need . . .

Number Cards, 1–9



Recording Sheet

Set-up

- Place the number cards facedown in a pile.

How to Play

1. Draw the top 3 number cards. Choose 1 card to represent the tens and 1 card to represent the ones to make a two-digit number to subtract from the starting number.
2. Record your chosen number to create a subtraction expression. Complete the equation by finding the difference.
3. Record the difference from the previous equation as the starting number in your next equation.
4. Take turns until each player's Recording Sheet is full.

How to Win

- The player with a final difference closer to 0 wins.

Name _____ Date _____

CENTER
Recording Sheet

Target Numbers

Stage 5

Number cards	Equation
_____ tens _____ ones	100 − ☐ = ☐
_____ tens _____ ones	☐ − ☐ = ☐
_____ tens _____ ones	☐ − ☐ = ☐
_____ tens _____ ones	☐ − ☐ = ☐

GRADE 3

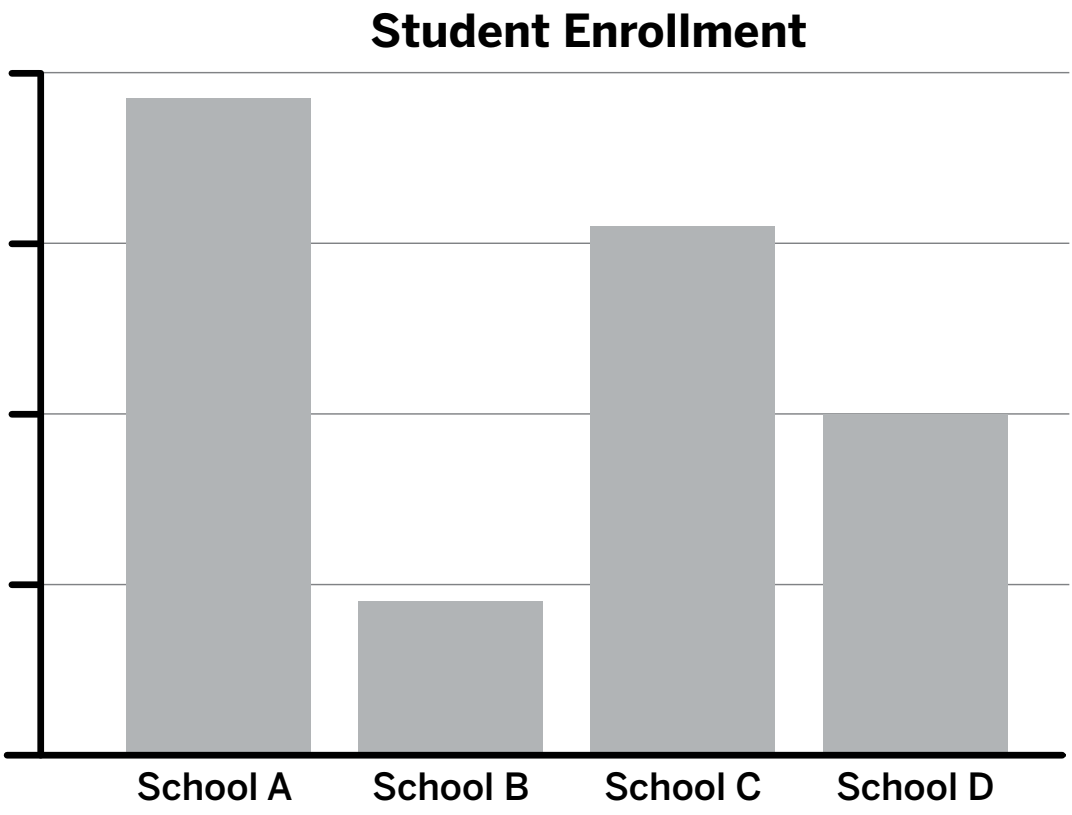
Extensions

The following section includes a selection of Extensions. Extensions are 10–15-minute activities aligned to the most critical topics in a sub-unit. These are print-based, hands-on activities, structured on the principle of student choice and designed to be student-led. Extensions appear as part of lesson differentiation.

Name ..... Date .....

You Choose! Pick any problem to start with.

1 There are 1000 students at the 4 schools. The data is shown on the bar graph. What is the approximate scale for the bar graph? Explain your thinking.

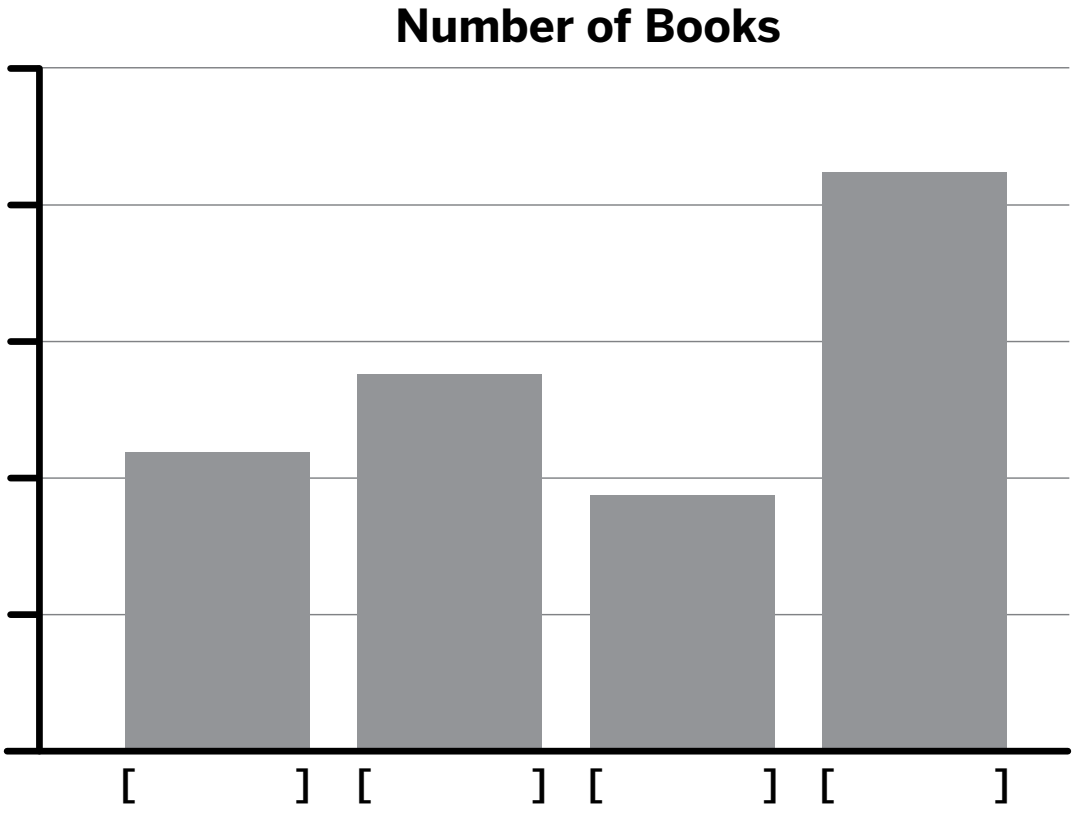


Name ..... Date .....

You Choose! Pick any problem to start with.

2

Jada, Clare, Han, and Priya compared the number of books they have in their home libraries. Jada has more books than Han but less than Clare. Priya has more books than Clare. They created a bar graph to show the number of books they have. Mark each bar with the correct girl's name.



Assign problems to students who want to extend their thinking.

Problems can be solved in any order.

Problem 1

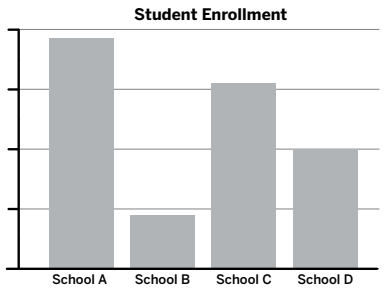
Students will extend their understanding of scaled bar graphs.

Provide students with the following hints if additional scaffolding is needed.

- **Hint 1:** Ask, "If the scale equals 20, how many total number of students will the 4 schools have together? How can you adjust the scale so the total number is 1000?"

Sample response shown.

The scale is about 100.



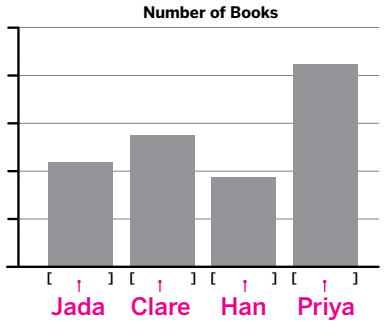
Problem 2

Students build fluency with adding and subtracting within 20 and extend their logical reasoning by solving the puzzle.

Provide students with the following hints if additional scaffolding is needed.

- **Hint 1:** Say, "Order the students by the number of books they have from the smallest to the largest."

Sample responses shown.



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