Access and equity

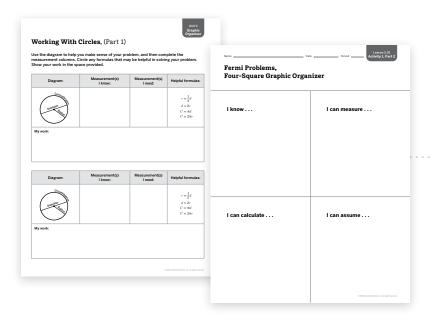
Engaging all students in grade-level content every day

Amplify Math includes numerous, tightly connected supports to ensure all students can access grade-level content every day. Design features include:

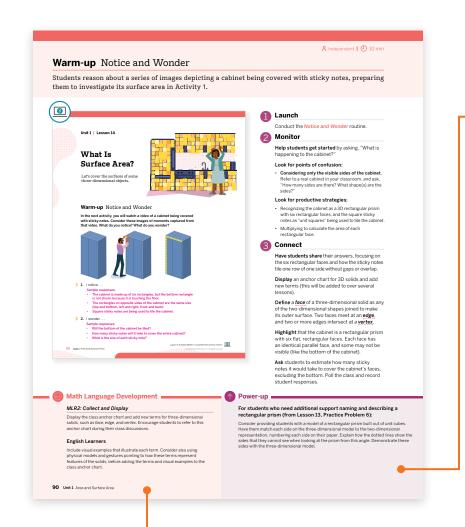
- · Consistent lesson structure.
- · Automatically assigned differentiated just-in-time supports called Power-ups.
- · Compelling historical and modern narratives and realworld situations.

The materials make use of instructional strategies that break down barriers that might stand between students and the content, including:

- Instructional and mathematical language routines
- Physical and digital manipulatives
- Visual aids
- · Graphic organizers



Graphic organizers





Math Language Development

MLR2: Collect and Display

Display the class anchor chart and add new terms for three-dimensional solids, such as face, edge, and vertex. Encourage students to refer to this anchor chart during their class discussions.

English Learners

Include visual examples that illustrate each term. Consider also using physical models and gestures pointing to how these terms represent features of the solids, before adding the terms and visual examples to the class anchor chart.

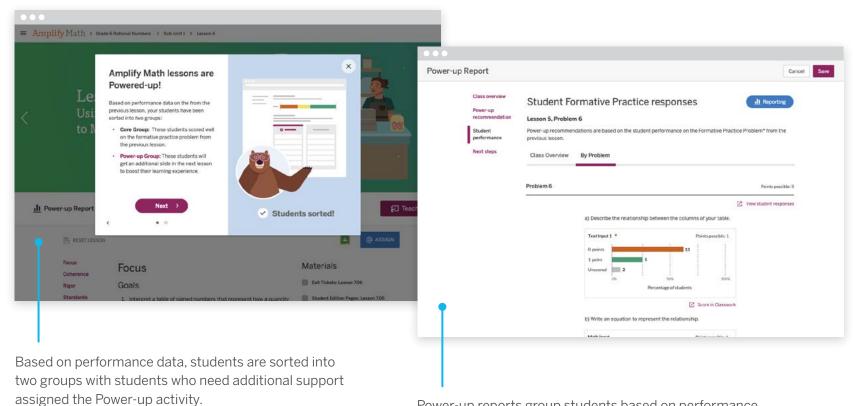


Power-up ■

For students who need additional support naming and describing a rectangular prism (from Lesson 13, Practice Problem 6):

Consider providing students with a model of a rectangular prism built out of unit cubes. Have them match each side on the three-dimensional model to the two-dimensional representation, numbering each side on their paper. Explain how the dotted lines show the sides that they cannot see when looking at the prism from this angle. Demonstrate these sides with the three-dimensional model.

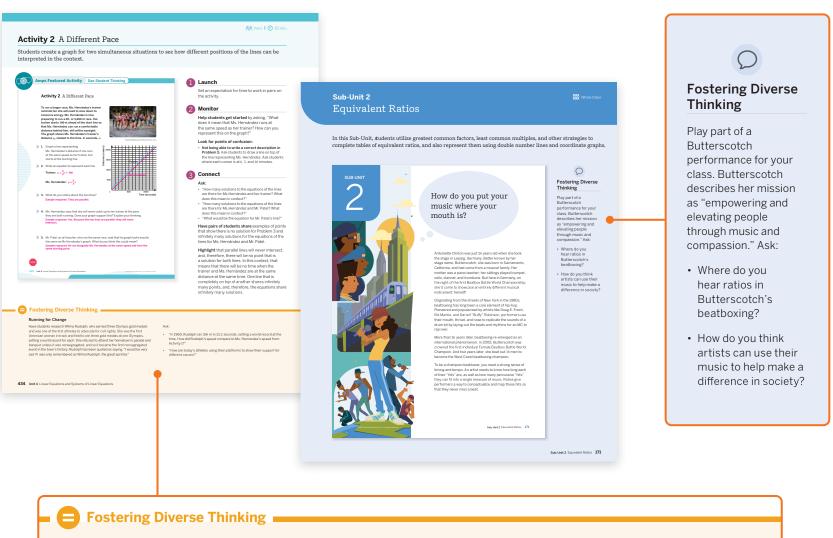
Power-ups are automatically assigned supports for students who need an additional boost to their learning experience. These just-in-time supports give students the chance to experience success with the lesson's content.



Power-up reports group students based on performance and provide item analysis for the formative practice problem, along with suggested next steps.

Bringing in and including student background knowledge in the classroom

In many cases, Amplify Math creates optional opportunities for students to share background experiences and activate background knowledge as they relate to the math activities.



Running for Change

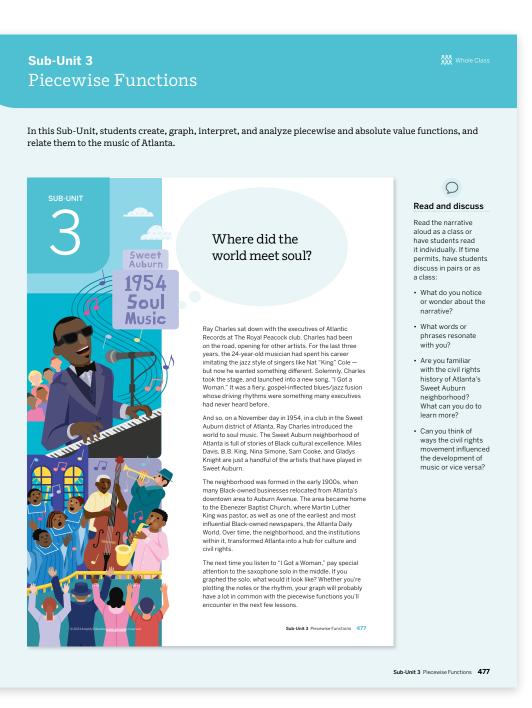
Have students research Wilma Rudolph, who earned three Olympic gold medals and was one of the first athletes to advocate for civil rights. She was the first American woman in track and field to win three gold medals at one Olympics, setting a world record for each. She refused to attend her hometown's parade and banquet unless it was nonsegregated, and so it became the first nonsegregated event in the town's history. Rudolph has been quoted as saying, "I would be very sad if I was only remembered as Wilma Rudolph, the great sprinter."

- "In 1960, Rudolph ran $200\,$ m in $23.2\,$ seconds, setting a world record at the time. How did Rudolph's speed compare to Ms. Hernandez's speed from
- "How are today's athletes using their platforms to show their support for different causes?"

Celebrating and working from what students know and can do

When students feel they are able to bring their whole selves to math class, they are more likely to see both the utility and the beauty of mathematics. If they can see themselves, their experiences, their families, and communities in the content, they are more likely to consider themselves doers of math.

Expose your students to a wide range of relevant scenarios, ideas, and people to ensure they can see themselves as players in the world of math.



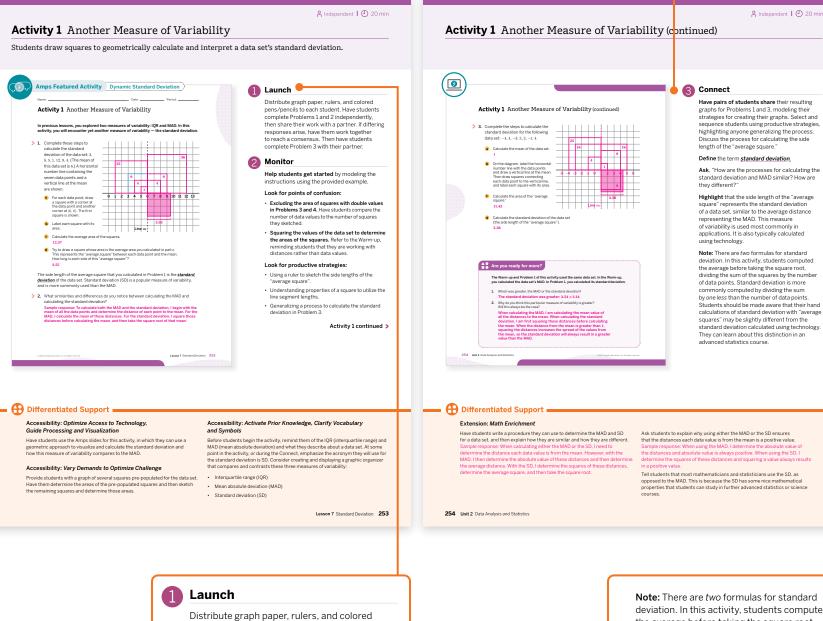
Create spaces where their thinking can be explained and examined without being immediately graded as right or wrong.



Connect

Have pairs of students share their resulting graphs for Problems 1 and 3, modeling their strategies for creating their graphs. Select and sequence students using productive strategies, $highlighting\ anyone\ generalizing\ the\ process.$ Discuss the process for calculating the side length of the "average square."

A Independent I 20 min



pens/pencils to each student. Have students

then share their work with a partner. If differing

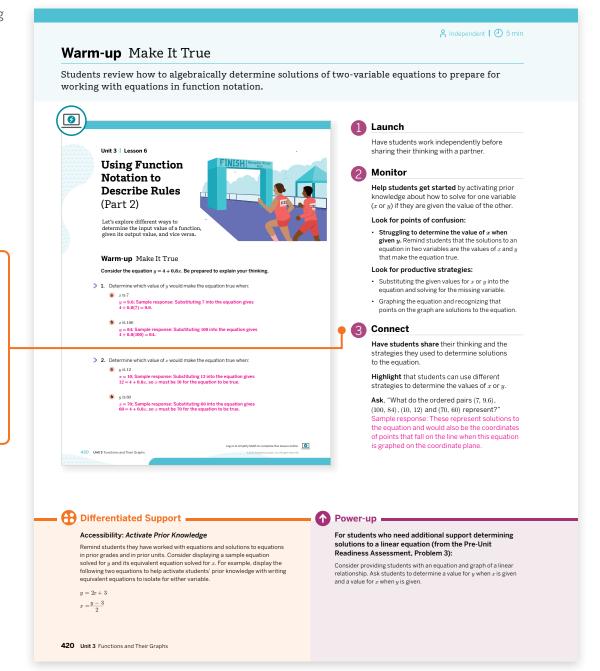
complete Problems 1 and 2 independently,

responses arise, have them work together

to reach a consensus. Then have students complete Problem 3 with their partner.

Note: There are *two* formulas for standard deviation. In this activity, students computed the average before taking the square root, dividing the sum of the squares by the number of data points. Standard deviation is more commonly computed by dividing the sum by one less than the number of data points.

Celebrate work while understanding what it tells you about how to advance the class discussion in productive ways.



Connect

Have students share their thinking and the strategies they used to determine solutions to the equation.

 $\textbf{Highlight} \ \text{that students can use different}$ strategies to determine the values of x or y.

Ask, "What do the ordered pairs (7, 9.6), (100, 84), (10, 12) and (70, 60) represent?" Sample response: These represent solutions to the equation and would also be the coordinates of points that fall on the line when this equation is graphed on the coordinate plane.

Fostering a positive math identity

Amplify Math is a program that acknowledges and celebrates the experiences and heritages of all students. Activities and instructional supports have been designed to reflect and leverage the knowledge systems of diverse groups including, Indigenous, Black/African American, Latinx, and non-Western peoples and cultures.

The inclusion of these activities and instructional supports in the program help:

- Students develop positive social identities based in the cultures in which they claim membership
- Students build empathy and respect for people both different and similar to them.



Reflect

Prior to synthesizing the concepts of the lesson, allow students a few moments for reflection. Encourage them to record any observations in their Student Edition. To help them engage in meaningful reflection, consider asking:

- "What was the most surprising thing when working with the digital instrument?"
- · "What questions do you still have about the relationship between ratios and music?"



Synthesize

Display the Summary from the Student Edition. Have students read the Summary or have a student volunteer read it aloud.

Highlight that during this unit, students will continue working with ratios, focusing on proportional relationships and using ratios to model real-world relationships.

- · "Does anyone play a string instrument, and if so, which one? Have you ever noticed any ratios or markings on the instrument?" Sample response: I play the guitar and it has frets on it.
- · "If you were to build your own stringed instrument, how would you decide where to place your fingers to create different notes?" Sample response: I would mark \frac{1}{2} and \frac{2}{2} because I know those create a nice sound when played together.
- "How does music help people communicate with
- "Can you think of any other ways that ratios may help people to communicate or exchange ideas?'





รู้รู้รู้ Whole Class | 🕘 5 min

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98 Unit 2 Introducing Proportional Relationships

Studen transfo

Rig

 Have you had any personal experiences that are related to the narrative in any way?

Unit 1

id Transformations

ts begin by studying examples of transformations in the plane. Then, students attend to precision with rmations using the structure of a grid and the coordinates of points.

> How do you make a piece of cardboard come alive?

Before Walt Disney, there was Lotte Reiniger.

As a girl living in Berlin, Reiniger was clever with a pair of scissors, cutting intricate figures out of the cardboard from old soap boxes. For many kids, this was just a way to pass the time. But for Reiniger, it was something more.

As a teenager, her interest in puppets led her into the world of German art and cinema. By the time she was twenty, she started making her own films.

Her most famous achievement is *The Adventures of Prince Achmed* — the world's first animated full-length feature film — ten years before Disney's *Snow White*.

With a staff of just five people, Reiniger constructed With a staff of just five people. Reiniger constructed elaborate paper puppets. Then using a camer aof her own invention, she would lay the puppets out and change their position frame-by-frame. It was a long and tedious process, but when the images were run through a film projector, they came out as a single fluid movement.

By changing the position of solid figures, Reiniger turned a piece of cardboard into a flap of a bird's wing, a gesture of an arm, or a sorcerer casting a spell. With only a pair of scissors, her imagination, and clever uses of transformation, Reiniger changed the world of animation forever.

Sub-Unit 1 Rigid Transformations 11

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Read and discuss

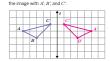
Read the narrative aloud as a class or have students read it individually. If time permits, have students discuss in pairs or as a

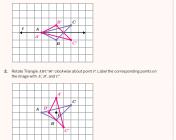
- · What do you notice or wonder about the narrative?
- · What words or phrases resonate with you?
- Have you had any personal experiences that are related to the narrative in any way?
- Do you have any hobbies or pastimes that you can see turning into a future career?

Activity 1 Transformation Information(continued)

9

Activity 1 Transformation Information(continued)





Connect

Connect

Have students share the strategies they used to transform the images. Focus on students who used tracing paper and students who used the grid units to draw the transformations.

> Have students share the strategies they used to transform the images. Focus on students who used tracing paper and students who used the grid units to draw the transformations.

A Independent | 4 15 min

- "How do the translations in Problems 1 and 2 differ?" In Problem 1, the triangle is translated in one direction (to the right). In Problem 2, the triangle is translated in two directions (down and to the right).
- "When rotating a figure, how does the orientation of the image vertices compare to the orientation of the preimage vertices, relative to the center of rotation?" The orientation is reversed.
- "Can you think of one word that you can use to describe any of these types of movements?" Sample responses: move, change, transform

Define the term transformation as a rule for moving or changing figures on the plane. Translations, reflections, and rotations are all examples of transformations.

Highlight how the structure of the grid can help students perform each transformation

Sub-Unit 1 Rigid Transformations 11

Lesson 4 Grid Moves 29