

 Amplify Desmos Math **CALIFORNIA**

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# Grade 7

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 **Math Language  
Development Resources**

# Contents

## Unit 1: Scale Drawings

|  |    |
|--|----|
| <b>Explore:</b> Scale-y Shapes (Optional) (Activity) | 2  |
| <b>1.01</b> Scaling Machines (Activity 2)            | 6  |
| <b>1.02</b> Scaling Robots (Activity 2)              | 8  |
| <b>1.03</b> Make It Scale (Activity 2)               | 10 |
| <b>1.04</b> Scale Factor Challenges (Activity 1)     | 12 |
| <b>1.05</b> Tiles (Activity 1)                       | 14 |
| <b>1.06</b> Introducing Scale (Activity 2)           | 16 |
| <b>1.07</b> Will It Fit? (Activity 1)                | 18 |
| <b>1.08</b> Scaling States, Part 1 (Activity 2)      | 20 |
| <b>1.09</b> Scaling States, Part 2 (Activity 1)      | 22 |
| <b>1.10</b> Scaling Buildings (Activity 1)           | 24 |
| <b>1.11</b> Team Spirit (optional) (Activity 2)      | 26 |

# Contents (continued)

## Unit 2: Introducing Proportional Relationships

|  |    |
|--|----|
| <b>Words With Multiple Meanings</b> .....                        | 28 |
| <b>Explore: Currency Exchange (Optional) (Activity)</b> .....    | 30 |
| <b>2.01 Paint (Activity 1)</b> .....                             | 34 |
| <b>2.02 Balloon Float (Activity 2)</b> .....                     | 36 |
| <b>2.03 Sugar, Spice, and Everything Rice (Activity 2)</b> ..... | 38 |
| <b>2.04 Robot Factory (Activity 1)</b> .....                     | 40 |
| <b>2.05 Snapshots (Activity 2)</b> .....                         | 42 |
| <b>2.06 Two and Two (Activity 2)</b> .....                       | 44 |
| <b>2.07 All Kinds of Equations (Activity 2)</b> .....            | 46 |
| <b>2.08 DinoPops (Activity 2)</b> .....                          | 48 |
| <b>2.09 Gallon Challenge (Activity 2)</b> .....                  | 50 |
| <b>2.10 Three Turtles (Activity 2)</b> .....                     | 52 |
| <b>2.11 Four Representations (Warm-Up)</b> .....                 | 54 |
| <b>2.12 Water Efficiency, Part 1 (Activity 1)</b> .....          | 56 |
| <b>2.13 Water Efficiency, Part 2 (Activity 1)</b> .....          | 58 |

# Contents (continued)

## Unit 3: Measuring Circles

|  |    |
|--|----|
| <b>Explore:</b> The Wandering Goat (Optional) (Activity) ..... | 60 |
| <b>3.01</b> Toothpicks (Activity 1) .....                      | 64 |
| <b>3.02</b> Is It a Circle? (Activity 2) .....                 | 66 |
| <b>3.03</b> Measuring Around (Activity 1) .....                | 68 |
| <b>3.04</b> Perimeter Challenges (Activity 1) .....            | 70 |
| <b>3.05</b> Area Strategies (optional) (Activity 1) .....      | 72 |
| <b>3.06</b> Radius Squares (Activity 2) .....                  | 74 |
| <b>3.07</b> Circle Area (Activity 1) .....                     | 76 |
| <b>3.08</b> Why Pi? (Activity 2) .....                         | 78 |
| <b>3.09</b> Area Challenges (optional) (Activity 1) .....      | 80 |
| <b>3.10</b> Circle vs. Square (optional) (Activity 1) .....    | 82 |

# Contents (continued)

## Unit 4: Proportional Relationships and Percentages

|  |     |
|--|-----|
| <b>Explore:</b> (Re)Presenting the United States (Optional) (Activity) ..... | 84  |
| <b>4.01</b> Mosaics (optional) (Activity 1) .....                            | 88  |
| <b>4.02</b> More and Less (Activity 1) .....                                 | 90  |
| <b>4.03</b> All the Equations (Activity 3) .....                             | 92  |
| <b>4.04</b> 100% (Activity 1) .....  | 94  |
| <b>4.05</b> Percent Machines (Activity 1) .....                              | 96  |
| <b>4.06</b> Back in My Day (Activity 1) .....                                | 98  |
| <b>4.07</b> Tax and Tip (Activity 2) .....                                   | 100 |
| <b>4.08</b> Plate Rate (Activity 1) .....                                    | 102 |
| <b>4.09</b> Bookcase Builder (Activity 2) .....                              | 104 |
| <b>4.10</b> Population & Pollution (Activity 1) .....                        | 106 |
| <b>4.11</b> Sticker Sizes (Activity 1) .....                                 | 108 |
| <b>4.12</b> Peach Cobbler (Activity 1) .....                                 | 110 |
| <b>4.13</b> Decimal Deep Dive (Activity 2) .....                             | 112 |

# Contents (continued)

## Unit 5: Operations With Positive and Negative Numbers

|  |     |
|--|-----|
| <b>Words With Multiple Meanings</b> .....                    | 114 |
| <b>Explore: Target Zero (Optional) (Activity)</b> .....      | 116 |
| <b>5.01 Floats and Anchors (Activity 1)</b> .....            | 120 |
| <b>5.02 More Floats and Anchors (Activity 2)</b> .....       | 122 |
| <b>5.03 Bumpers (Activity 2)</b> .....                       | 124 |
| <b>5.04 Draw Your Own (Activity 1)</b> .....                 | 126 |
| <b>5.05 Number Puzzles (Warm-Up)</b> .....                   | 128 |
| <b>5.06 Floating in Groups (Activity 2)</b> .....            | 130 |
| <b>5.07 Back in Time (Activity 1)</b> .....                  | 132 |
| <b>5.08 Speeding Turtles (Activity 2)</b> .....              | 134 |
| <b>5.09 Expressions (Activity 2)</b> .....                   | 136 |
| <b>5.10 Integer Puzzles (Warm-Up)</b> .....                  | 138 |
| <b>5.11 Temperatures Around the World (Activity 2)</b> ..... | 140 |
| <b>5.12 Visiting the Artic (Activity 1)</b> .....            | 142 |
| <b>5.13 Solar Panels and More (Warm-Up)</b> .....            | 144 |

# Contents (continued)

## Unit 6: Expressions, Equations, and Inequalities

|   |     |
|---|-----|
| <b>Words With Multiple Meanings</b> .....                       | 146 |
| <b>Explore:</b> Keeping the Balance (Optional) (Activity) ..... | 150 |
| <b>6.01</b> Toothpicks and Tiles (Optional) (Activity 1) .....  | 154 |
| <b>6.02</b> Smudged Receipts (Activity 2) .....                 | 156 |
| <b>6.03</b> Equations (Activity 2) .....                        | 158 |
| <b>6.04</b> Seeing Structure (Activity 1) .....                 | 160 |
| <b>6.05</b> Balancing Moves (Activity 1) .....                  | 162 |
| <b>6.06</b> Balancing Equations (Activity 1) .....              | 164 |
| <b>6.07</b> Keeping It True (Activity 1) .....                  | 166 |
| <b>6.08</b> Factoring and Expanding (Activity 2) .....          | 168 |
| <b>6.09</b> Always-Equal Machines (Activity 1) .....            | 170 |
| <b>6.10</b> Collect the Squares (Activity 1) .....              | 172 |
| <b>6.11</b> Pass the Equation (Activities 1–2) .....            | 174 |
| <b>6.12</b> Community Day (Activity 1) .....                    | 176 |
| <b>6.13</b> I Saw the Signs (Activity 1) .....                  | 178 |
| <b>6.14</b> Unbalanced Hangers (Activity 1) .....               | 180 |
| <b>6.15</b> Budgeting (Activity 2) .....                        | 182 |
| <b>6.16</b> Shira the Sheep (Activity 2) .....                  | 184 |
| <b>6.17</b> Write Them and Solve Them (Activity 2) .....        | 186 |

# Contents (continued)

## Unit 7: Angles, Triangles, and Prisms

|   |     |
|---|-----|
| <b>Explore:</b> Shaping Up (Optional) (Activity) .....  | 188 |
| <b>7.01</b> Pinwheels (Optional) (Activity 1) .....     | 192 |
| <b>7.02</b> Friendly Angles (Activity 2) .....          | 194 |
| <b>7.03</b> Angle Diagrams (Activity 2) .....           | 196 |
| <b>7.04</b> Missing Measures (Activity 1) .....         | 198 |
| <b>7.05</b> Can You Build It? (Activity 2) .....        | 200 |
| <b>7.06</b> Is It Enough? (Activity 1) .....            | 202 |
| <b>7.07</b> More Than One? (Activity 2) .....           | 204 |
| <b>7.08</b> Can You Draw It? (Activity 2) .....         | 206 |
| <b>7.09</b> Slicing Solids (Activity 2) .....           | 208 |
| <b>7.10</b> Simple Prisms (Optional) (Activity 1) ..... | 210 |
| <b>7.11</b> Complex Prisms (Activity 2) .....           | 212 |
| <b>7.12</b> Surface Area Strategies (Activity 1) .....  | 214 |
| <b>7.13</b> Popcorn Possibilities (Activity 2) .....    | 216 |

# Contents (continued)

## Unit 8: Probability and Sampling

|   |     |
|---|-----|
| <b>Words With Multiple Meanings</b> .....                             | 218 |
| <b>Explore: The Invention of Fairness (Optional) (Activity)</b> ..... | 222 |
| <b>8.01 How Likely? (Activity 1)</b> .....                            | 226 |
| <b>8.02 Prob-bear-bilities (Activity 3)</b> .....                     | 228 |
| <b>8.03 Mystery Bag (Activity 1)</b> .....                            | 230 |
| <b>8.04 Spin Class (Activity 1)</b> .....                             | 232 |
| <b>8.05 Is It Fair? (Activity 1)</b> .....                            | 234 |
| <b>8.06 Fair Games (Activity 1)</b> .....                             | 236 |
| <b>8.07 Weather or Not (Activity 2)</b> .....                         | 238 |
| <b>8.08 Simulate It! (Optional) (Activities 1–2)</b> .....            | 240 |
| <b>8.09 Car, Bike, or Train? (Activity 2)</b> .....                   | 243 |
| <b>8.10 Crab Island (Activity 2)</b> .....                            | 245 |
| <b>8.11 Headlines (Activity 2)</b> .....                              | 247 |
| <b>8.12 Flower Power (Activity 1)</b> .....                           | 249 |
| <b>8.13 Plots and Samples (Activity 1)</b> .....                      | 251 |
| <b>8.14 School Newspaper (Activity 1)</b> .....                       | 253 |
| <b>8.15 Air Quality (Optional) (Activity 2)</b> .....                 | 255 |

# Math Habits of Mind:

## Hábitos mentales matemáticos

I can slow down and first make sense of a challenging problem before trying to solve it.

Puedo ir más despacio y primero comprender un problema difícil antes de intentar resolverlo.

I can represent real-world problems and interpret their solutions within the context of the problem.

Puedo representar problemas del mundo real e interpretar sus soluciones dentro del contexto del problema.

I can justify my thinking and ask questions to help me understand the thinking of others.

Puedo justificar mi razonamiento y hacer preguntas que me ayuden a comprender el razonamiento de los demás.

I can apply the math that I know to solve real-world problems, make assumptions and revise my thinking as needed.

Puedo poner en práctica mis conocimientos matemáticos para resolver problemas del mundo real, formulando hipótesis y modificando mi razonamiento según sea necesario.

I can select an appropriate tool to help me solve problems.

Puedo seleccionar una herramienta adecuada que me ayude a resolver problemas.

I can communicate my thinking and solutions clearly to others.

Puedo comunicar mi razonamiento y soluciones claramente a los demás.

I can look for structure or patterns to help me solve problems.

Puedo buscar estructuras o patrones que me ayuden a resolver problemas.

I can look for repeated calculations and other repeated steps to make generalizations.

Puedo buscar cálculos y otros pasos repetidos para hacer generalizaciones.

Name: ..... Date: ..... Period: .....

## Questions and Sentence Frames

Why did you choose this habit of mind?

Did you choose any others? Why or why not?

What part of the Activity reminded you of this habit of mind?


Can you tell me more?

I chose this habit of mind because . . .

I also chose \_\_\_\_\_ because . . .

In the Activity, I . . .

# Scaled Copies

 **Directions:** Make copies and pre-cut. Give each student the appropriate support for partner conversations about whether the pairs of shapes are scaled copies.

**Note:** The top portion offers emerging language supports, the middle portion offers expanding language supports, and the bottom portion offers bridging language supports.

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Are these shapes scaled copies?

- **Corresponding** sides (create / do not create) equivalent ratios.
- Corresponding sides (are / are not) **proportional**.
- The shapes are the same shape, just different sizes. / The shapes are not the same shape.
- Corresponding angles (are / are not) the same measure.

I think these shapes (are / are not) **scaled copies**.

| Word bank      |        |             |                 |             |       |       |       |
|----------------|--------|-------------|-----------------|-------------|-------|-------|-------|
| <b>English</b> | angle  | equivalent  | corresponding   | multiply    | ratio | same  | shape |
| <b>Español</b> | ángulo | equivalente | correspondiente | multiplicar | razón | mismo | forma |

Are these shapes scaled copies?

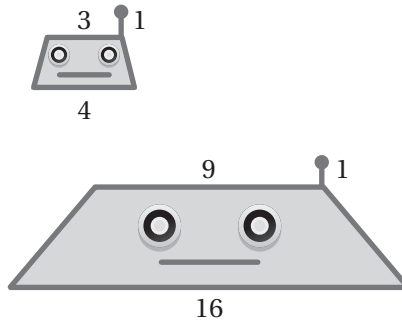
- **Corresponding** sides (create / do not create) *equivalent ratios*.
- Corresponding sides (are / are not) **proportional**.
- The shapes are the same shape, just different sizes. / The shapes are not the same shape.
- Corresponding angles (are / are not) the same measure.


I think these shapes (are / are not) **scaled copies**.

- Do **corresponding** sides create *equivalent ratios*?
- Are corresponding sides **proportional**?
- Are the shapes the same shape just different sizes?
- Do corresponding angles have the same measure?
- Are these shapes **scaled copies**?

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Analyzing Robots



- a**  **Discuss:** How can you tell the two figures are not scaled copies?

I can tell they are not scaled copies because . . .

The \_\_\_\_\_ are not the same.

- b** How can you help Anushka revise her work?

I would help Anushka revise her work by telling her to \_\_\_\_\_ each side length of the original figure by the \_\_\_\_\_ to create the copy. The number we multiply by is called the \_\_\_\_\_.

She also needs to remember to keep the \_\_\_\_\_ the same. Only the \_\_\_\_\_ of the figure changes.

| Word bank      |         |             |              |                  |       |        |
|----------------|---------|-------------|--------------|------------------|-------|--------|
| <b>English</b> | angles  | multiply    | same number  | scale factor     | shape | size   |
| <b>Español</b> | ángulos | multiplicar | mismo número | factor de escala | forma | tamaño |

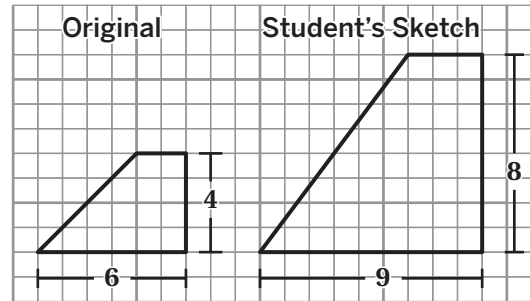
Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Drawing Scaled Copies With a Grid

Here is one student's sketch.

- Sasha thinks the student used a scale factor of 2.
- Randy thinks the student used a scale factor of 1.5.

The scale factor used was \_\_\_\_\_.  
(the same / different)



| Location | Original Side Length (units) | Times (scale factor) | Scaled Side Length (units) |
|----------|------------------------------|----------------------|----------------------------|
| Top      | 2                            | 1.5                  | 3                          |
| Right    | 4                            |                      | 8                          |
| Bottom   | 6                            |                      | 9                          |

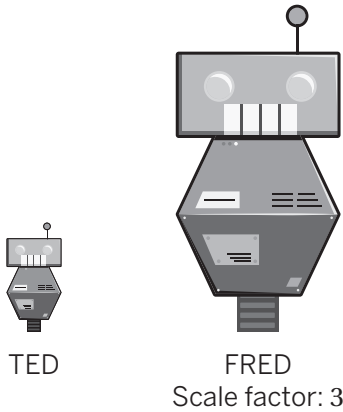
| Decide ( <i>decidir</i> )                        | Defend ( <i>defender</i> ) |
|--|----------------------------|
| Who is correct?<br><br>Sasha    Randy    Neither | because . . .              |

| Word bank |        |                |                  |         |         |
|-----------|--------|----------------|------------------|---------|---------|
| English   | bottom | different      | original         | neither | right   |
| Español   | abajo  | diferente      | original         | ni      | derecha |
| English   | same   | scaled copy    | scale factor     | sketch  | top     |
| Español   | mismo  | copia a escala | factor de escala | dibujo  | arriba  |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

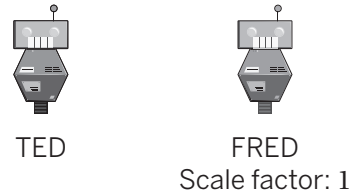
# Exploring Scale Factors

## Play 1



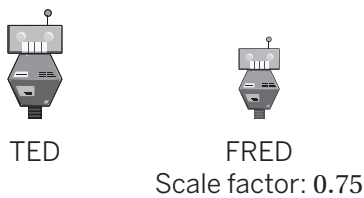
Scale Factor: \_\_\_\_\_. The scaled copy (FRED) is \_\_\_\_\_ TED.  
(smaller than / the same size as / larger than)

## Play 2



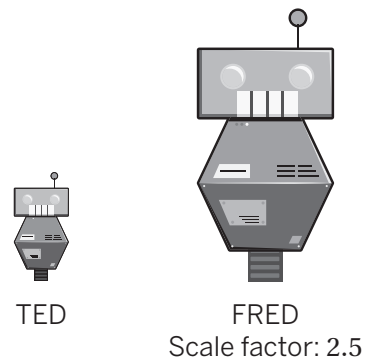
Scale Factor: \_\_\_\_\_. The scaled copy (FRED) is \_\_\_\_\_ TED.  
(smaller than / the same size as / larger than)

## Play 3



Scale Factor: \_\_\_\_\_. The scaled copy (FRED) is \_\_\_\_\_ TED.  
(smaller than / the same size as / larger than)

## Play 4



Scale Factor: \_\_\_\_\_. The scaled copy (FRED) is \_\_\_\_\_ TED.  
(smaller than / the same size as / larger than)

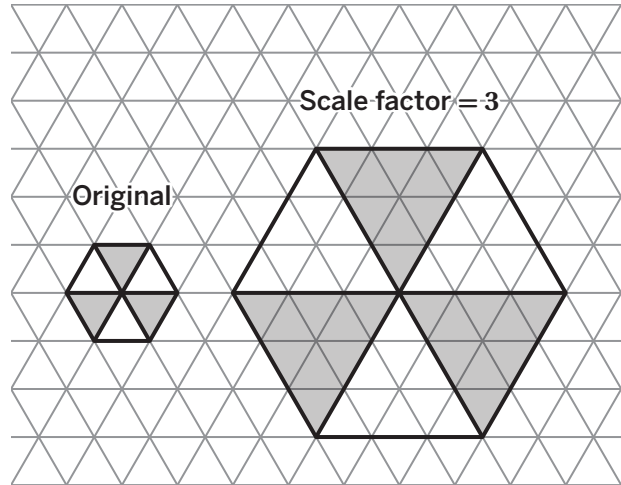
- Scale factors \_\_\_\_\_ 1 make a scaled copy smaller than TED.  
(less than / equal to / greater than)
- Scale factors \_\_\_\_\_ 1 make a scaled copy the same size as TED.  
(less than / equal to / greater than)
- Scale factors \_\_\_\_\_ 1 make a scaled copy larger than TED.  
(less than / equal to / greater than)

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Scaling Mosaics

Here is a mosaic and its scaled copy.

- Lucy says the scaled copy has 3 times as many tiles as the original.
- Malik claims the scaled copy has 6 times as many tiles as the original.



|                                      |  |
|--------------------------------------|--|
| Number of green tiles in original    |  |
| Number of green tiles in scaled copy |  |

| Decide ( <i>decidir</i> )              | Defend ( <i>defender</i> ) |
|--|----------------------------|
| Whose claim is correct?                | because . . .              |
| Lucy      Malik      Both      Neither |                            |

| Word bank |       |       |         |          |                |         |        |
|-----------|-------|-------|---------|----------|----------------|---------|--------|
| English   | both  | green | neither | original | scaled copy    | tile    | white  |
| Español   | ambos | verde | ni      | original | copia a escala | baldosa | blanco |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Scale

## Burj Khalifa

The scale in this drawing is \_\_\_\_\_ unit to \_\_\_\_\_ meters.

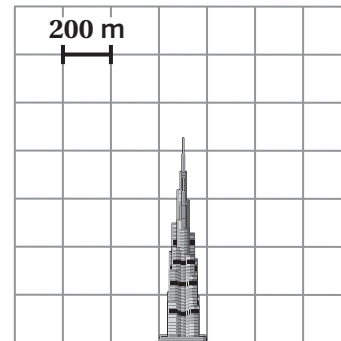
The Burj Khalifa is \_\_\_\_\_  
(less than / equal to / greater than)

800 meters tall in real life.

The Burj Khalifa is \_\_\_\_\_ units in the drawing.

The Burj Khalifa is around \_\_\_\_\_ meters tall in real life because . . .

The Burj Khalifa



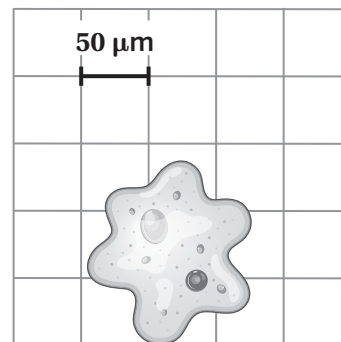
## Amoeba

The scale in this drawing is \_\_\_\_\_ unit to \_\_\_\_\_ micrometers.

The Amoeba is \_\_\_\_\_  
units in the drawing.

The Amoeba is around \_\_\_\_\_ micrometers tall in real life because . . .

Amoeba



Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Will the Court Fit?

The scale of this drawing is \_\_\_\_\_ to \_\_\_\_\_.

To find the actual length (L) of the court, I multiplied \_\_\_\_\_ by \_\_\_\_\_ which equals \_\_\_\_\_.

To find the actual width (W) of the court, I multiplied \_\_\_\_\_ by \_\_\_\_\_ which equals \_\_\_\_\_.

Here is my strategy to determine the actual distances from a **scale drawing**:

I know the current proposal \_\_\_\_\_ fit in the park because . . .  
(will / will not)

| Word bank        |                      |
|------------------|----------------------|
| English          | Español              |
| actual           | real                 |
| basketball court | cancha de baloncesto |
| bigger           | más grande           |
| current          | actual               |
| distance         | distancia            |
| multiply         | multiplicar          |
| park             | parque               |
| proposal         | propuesta            |
| ruler            | regla                |
| scale drawing    | dibujo a escala      |
| smaller          | más pequeño          |
| strategy         | estrategia           |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Scaling Utah


| Scale A:                 | Scale B:                 | Scale C:                  |
|--------------------------|--------------------------|---------------------------|
| 1 centimeter to 35 miles | 1 centimeter to 70 miles | 1 centimeter to 100 miles |

Compare your drawings that were created using Scales A and B. Circle one.

The drawing using Scale A is smaller.      The drawing using Scale B is smaller.

Compare your drawings that were created using Scales B and C. Circle one.

The drawing using Scale B is smaller.      The drawing using Scale C is smaller.

**a**  **Discuss:** How did your prediction from Problem 6 compare to your scale drawing?"

My prediction was \_\_\_\_\_ because . . .  
(correct / incorrect)

**b** Use noticings from your drawings to describe how you would change the scale if Marco wants to print his design on a postage stamp.

| Word bank      |         |          |         |            |               |             |        |        |
|----------------|---------|----------|---------|------------|---------------|-------------|--------|--------|
| <b>English</b> | change  | compare  | drawing | larger     | postage stamp | smaller     | scale  | size   |
| <b>Español</b> | cambiar | comparar | dibujo  | más grande | sello postal  | mas pequeño | escala | tamaño |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Scaling Nevada

If Marco uses a scale of 4 centimeters to 100 miles, will the distances be shorter, longer, or the same size as the distances in the original design?

— = 1 centimeter



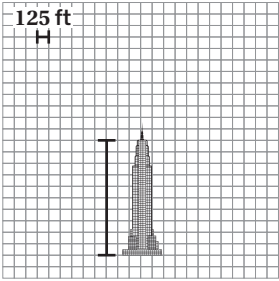
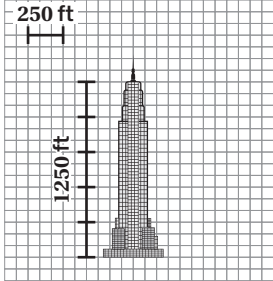
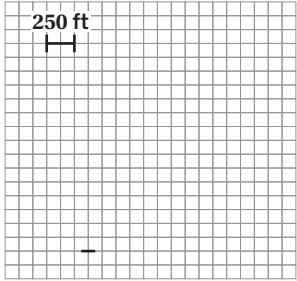
Shorter      Longer      Same size

Explain your thinking.

| Word bank |            |              |           |           |       |
|-----------|------------|--------------|-----------|-----------|-------|
| English   | centimeter | design       | distance  | longer    | mile  |
| Español   | centímetro | diseño       | distancia | más largo | milla |
| English   | original   | same size    | scale     | shorter   |       |
| Español   | original   | mismo tamaño | escala    | más corto |       |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Same Object, Different Scale

| Scale Drawing 1   | Scale Drawing 2   | Scale Drawing 3  |
|---|---|--|
|    |    |   |
| <p>The scale is 1 unit to _____ feet.</p>   | <p>The scale is _____ units to _____ feet.</p>                                      | <p>The scale is 2 units to 250 feet.</p>   |
| <p>The Empire State Building is _____ units in the scale drawing.</p> <p>The Empire State Building is _____ feet tall in real life.</p> | <p>In this drawing, the Empire State Building is _____ units tall because . . .</p> | <p>In this drawing, the Empire State Building is _____<br/>(smaller than / larger than / the same size as)<br/>Scale Drawing 1.</p> <p>This is because . . .</p> |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Sticker Stickler

A scale factor of \_\_\_\_\_ would make my drawing *too large* to fit on the sticker because . . .

A scale factor of \_\_\_\_\_ would make my drawing *too small* to fit on the sticker because . . .

A scale factor of \_\_\_\_\_ would make my drawing *just right* to fit on the sticker because . . .

| Word bank |               |         |          |        |       |         |
|-----------|---------------|---------|----------|--------|-------|---------|
| English   | across        | empty   | fit      | height | logo  | measure |
| Español   | a través      | vacío   | caber    | altura | logo  | medir   |
| English   | right         | small   | sticker  | tall   | wide  | width   |
| Español   | perfectamente | pequeño | pegatina | alto   | ancho | anchura |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Words With Multiple Meanings

Draw a picture or write in words to show one or more math meanings and another meaning of the term.

**Math meaning(s)**

origin

**Another meaning**

# Math Habits of Mind: Hábitos mentales matemáticos

I can slow down and first make sense of a challenging problem before trying to solve it.

Puedo ir más despacio y primero comprender un problema difícil antes de intentar resolverlo.

I can represent real-world problems using equations and inequalities and interpret their solutions within the context of the problem.

Puedo representar problemas del mundo real usando ecuaciones y desigualdades e interpretar sus soluciones dentro del contexto del problema.

I can justify my thinking and ask questions to help me understand the thinking of others.

Puedo justificar mi razonamiento y hacer preguntas que me ayuden a comprender el razonamiento de los demás.

I can apply the math that I know to solve real-world problems, make assumptions and revise my thinking as needed.

Puedo poner en práctica mis conocimientos matemáticos para resolver problemas del mundo real, formulando hipótesis y modificando mi razonamiento según sea necesario.

I can select an appropriate tool to help me solve problems.

Puedo seleccionar una herramienta adecuada que me ayude a resolver problemas.

I can communicate my thinking and solutions clearly to others.

Puedo comunicar mi razonamiento y soluciones claramente a los demás.

I can look for structure or patterns to help me solve problems.

Puedo buscar estructuras o patrones que me ayuden a resolver problemas.

I can look for repeated calculations and other repeated steps to make generalizations.

Puedo buscar cálculos repetidos y otros pasos repetidos para hacer generalizaciones.

Name: ..... Date: ..... Period: .....

## Questions and Sentence Frames

Why did you choose this habit of mind?

Did you choose any others? Why or why not?

What part of the Activity reminded you of this habit of mind?


Can you tell me more?

I chose this habit of mind because . . .

I also chose \_\_\_\_\_ because . . .

In the Activity, I . . .

# Color Match

 **Directions:** Make copies and pre-cut. Give each student the appropriate support for justifying their choice by choosing one or more of the explanations for the bulleted list. **Note:** The top portion offers emerging language supports, the middle portion offers expanding language supports, and the bottom portion offers bridging language supports.

These mixtures are in *equivalent ratios* because . . .

- Using a unit rate: There are \_\_\_\_\_ cups of white paint for 1 cup of blue paint in all of the mixtures.
- Using a factor: If I \_\_\_\_\_ the number of white cups and blue cups in the mixture I chose by \_\_\_\_\_, I get 3 white cups and 4 blue cups.
- The mixtures make the same (color / size), they are a different (color / size).

| Word bank |             |             |        |         |
|-----------|-------------|-------------|--------|---------|
| English   | color       | equivalent  | factor | mixture |
| Español   | color       | equivalente | factor | mezcla  |
| English   | multiply    | ratio       | same   | size    |
| Español   | multiplicar | razón       | mismo  | tamaño  |

These mixtures are in *equivalent ratios* because . . .

- Using a unit rate: There are \_\_\_\_\_ cups of white paint for each cup of blue paint in all of the mixtures.
- Using a factor: If I (multiply / divide) the number of white cups and blue cups in the mixture I chose by \_\_\_\_\_, I get 3 white cups and 4 blue cups.
- The mixtures make the same (color / size), they are a different (color / size).

These mixtures are in *equivalent ratios* because . . .

- What happens when you reduce the ratios in the original mixtures and mixture you chose?
- How can you multiply or divide the numbers in the original mixture to get to the numbers in the one you chose?
- What do you know about the size of the mixtures?

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Balloon Float

Ariel

| Object      | Weight (oz) | Number of Balloons |
|-------------|-------------|--------------------|
| Light bulb  | 2           | 6                  |
| Rubber duck | 10          | 30                 |
| Toy bear    | 6           |                    |
| Carrot      | 3           |                    |

Emma

| Object      | Weight (oz)                 | Number of Balloons |
|-------------|-----------------------------|--------------------|
| Light bulb  | 2 $\xrightarrow{\times 3}$  | 6                  |
| Rubber duck | 10 $\xrightarrow{\times 3}$ | 30                 |
| Toy bear    | 6                           |                    |
| Carrot      | 3                           |                    |

|   |  |  |
|---|--|--|
| Circle the strategy that best describes the student's work. | Multiplies by a value down the table   | Multiplies by a value down the table   |
|   | Multiplies by a value across the table | Multiplies by a value across the table |
| What could they do next?                                    |  |  |

|  |  |  |
|--|--|--|
| Compare: How are these strategies different?<br><i>Comparar: ¿En qué se diferencian estas estrategias?</i> | Compare: How are these strategies alike?<br><i>Comparar: ¿En qué se parecen estas estrategias?</i> | Connect: How are these strategies like your own?<br><i>Conectar: ¿En qué se parecen estas estrategias a las tuyas?</i> |
|  |  |  |

| Word bank |                   |          |         |         |                   |             |      |        |
|-----------|-------------------|----------|---------|---------|-------------------|-------------|------|--------|
| English   | across            | balloons | column  | divide  | up and down       | multiply    | row  | weight |
| Español   | de un lado a otro | globos   | columna | dividir | de arriba a abajo | multiplicar | fila | peso   |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Rice and Spice

**Ingredients**

| Rice (cups) | Multiplied by | Water (cups)   |
|-------------|---------------|----------------|
| 1           |               | $1\frac{1}{2}$ |
| 2           |               | 3              |
| 3           |               | $4\frac{1}{2}$ |

**Cook Time**

| Rice (cups) | Multiplied by | Time (min) |
|-------------|---------------|------------|
| 1           |               | 7          |
| 2           |               | 11         |
| 3           |               | 15         |

7. Which relationships are proportional (if any)? Circle one.
- A. The relationship between the cups of rice and the cups of water is proportional.
  - B. The relationship between the cups of rice and the time is proportional.
8. For any proportional relationships, determine a constant of proportionality and explain what it means.

Each cup of \_\_\_\_\_ needs \_\_\_\_\_ cups of \_\_\_\_\_ to cook.

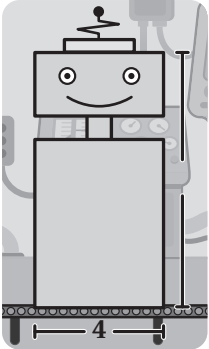
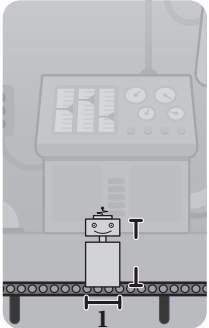
## Word bank

| Word bank      |                               |      |             |                             |       |        |       |
|----------------|-------------------------------|------|-------------|-----------------------------|-------|--------|-------|
| <b>English</b> | constant of proportionality   | cup  | multiply    | proportional (relationship) | rice  | time   | water |
| <b>Español</b> | constante de proporcionalidad | taza | multiplicar | (relación) proporcional     | arroz | tiempo | agua  |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Robot Hats

Use this table to guide your thinking in answering the prompt.

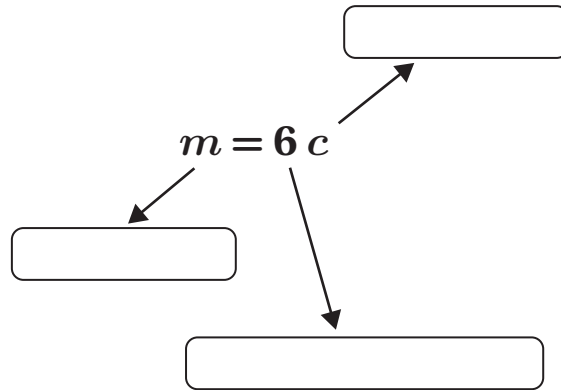
| Drawing  | Explanation   |
|--|---|
|   | <p>If the robot's width (<math>w</math>) is 4 inches, then the height for placing its hat is _____ inches because . . .</p> |
|  | <p>If the robot's width (<math>w</math>) is 1 inch, then the height for placing its hat is _____ inches because . . .</p>   |

For any robot's width, how could you determine the height for placing its hat? Use the sentence frames to help explain your thinking.

- If I know the robot's width, then I can calculate the height for placing its height by . . .
- If the robot's width is 1 inch, then the height for placing its hat is \_\_\_\_\_ inches because . . .
- When the robot's width is 1 inch, this is helpful for calculating other scaled copy measurements because . . .

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

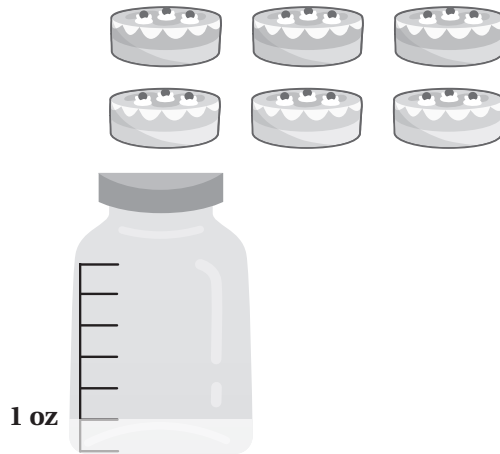
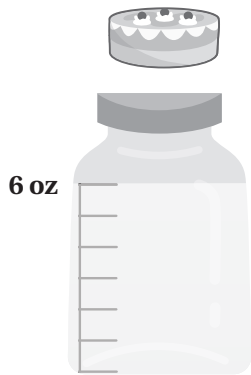
# Cakes



Explain what the constant of proportionality means in this situation. Circle one. Use the visual if it helps you with your choice.

Each cake uses 6 ounces of milk.

One ounce of milk is used for every 6 cakes.



Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Jayden's Cooler

My constant of proportionality: \_\_\_\_\_

My partner's constant of proportionality: \_\_\_\_\_

What is the relationship between the constants of proportionality that you and your partner found?

- The two constants of proportionality are alike because . . .
- The two constants of proportionality are different because . . .

What do these constants of proportionality tell you about the situation?

- $\frac{5}{8}$  tells me that it takes \_\_\_\_\_ of a \_\_\_\_\_ to fill the tank with 1 \_\_\_\_\_ .  
(gallon / minute) (gallon / minute)
- $\frac{8}{5}$  tells me that the tank fills with \_\_\_\_\_ of a \_\_\_\_\_ each \_\_\_\_\_ .  
(gallon / minute) (gallon / minute)

| Word bank |                               |             |        |        |
|-----------|-------------------------------|-------------|--------|--------|
| English   | constant of proportionality   | denominator | gallon | minute |
| Español   | constante de proporcionalidad | denominador | galón  | minuto |
| English   | numerator                     | reciprocal  | tank   | water  |
| Español   | numerador                     | recíproco   | tanque | agua   |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Equations and Proportionality

1. Decide whose equation is correct.
2. Use the questions, word bank, and sentence frames to support your thinking.
3. Be prepared to defend your thinking.

What does a proportional equation look like?

Mai's equation

$$\frac{4}{x} = y$$

Karima's equation

$$y = \frac{x}{4}$$


What is the constant of proportionality in a proportional relationship?

| Decide: Is _____'s equation correct?<br><i>Decide: Decide: ¿Es correcta la ecuación de _____?</i> | Defend: Explain your thinking.<br><i>Defender: Explica tu pensamiento.</i> |
|---|--|
| Mai<br>□  | Mai's equation _____ proportional<br>(is / is not)<br>because . . .        |
| Karima<br>□   | Karima's equation _____ proportional<br>(is / is not)<br>because . . .     |

| Word bank |                               |         |             |              |
|-----------|-------------------------------|---------|-------------|--------------|
| English   | constant of proportionality   | divide  | multiply    | proportional |
| Español   | constante de proporcionalidad | dividir | multiplicar | proporcional |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# TriceraPops

 **Directions:** Make copies and pre-cut. Give each student the appropriate support for partner conversations about whether a graph represents a proportional relationship.

**Note:** The top portion offers emerging language supports, the middle portion offers expanding language supports, and the bottom portion offers bridging language supports.

Does this graph represent a proportional relationship?

Yes it does, because . . .

No it does not, because . . .

- The points (create / do not create) a straight line.
- A line connecting these points (will / will not) pass through the *origin*.
- The coordinates of the points (create / do not create) equivalent ratios.

| Word bank      |       |             |                   |        |       |         |          |
|----------------|-------|-------------|-------------------|--------|-------|---------|----------|
| <b>English</b> | point | coordinates | equivalent ratio  | origin | line  | graph   | straight |
| <b>Español</b> | punto | coordenadas | razón equivalente | origen | línea | gráfica | recta    |

Does this graph represent a proportional relationship?

Yes it does, because . . .

No it does not, because . . .

- The points (create / do not create) a straight line.
- A line connecting these points (will / will not) pass through the *origin*.
- The coordinates of the points (create / do not create) equivalent ratios.

Does this graph represent a proportional relationship?

- Do the points create a straight line?
- Would the line connecting these points pass through the *origin*?
- Are the ratios of the coordinates equivalent?

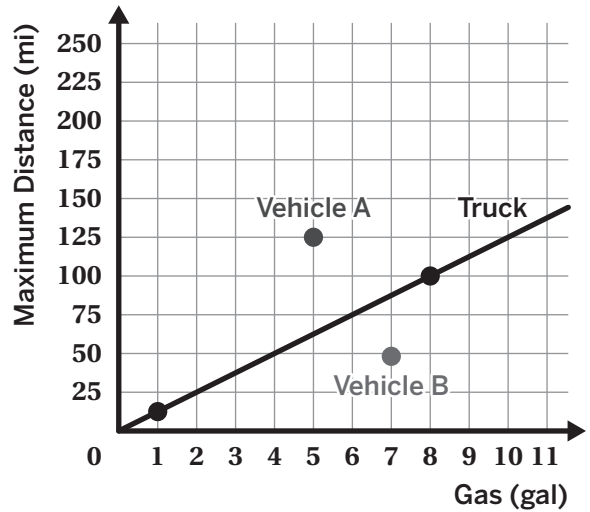
Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Gas Mileage

Kaya wants to buy a new vehicle that gets better gas mileage than her truck.

Which Vehicle should she pick?

Vehicle A      Vehicle B      Either Vehicle A or Vehicle B



Explain your thinking. Complete the table or choose a sentence frame to aid you in your writing.

|           | $(x, y)$ | Gas Mileage (miles per gallon) |
|-----------|----------|--------------------------------|
| Vehicle A |          |                                |
| Vehicle B |          |                                |

The point on the line for Vehicle \_\_\_\_\_ is higher than the point on the line for Vehicle \_\_\_\_\_ which means that . . .

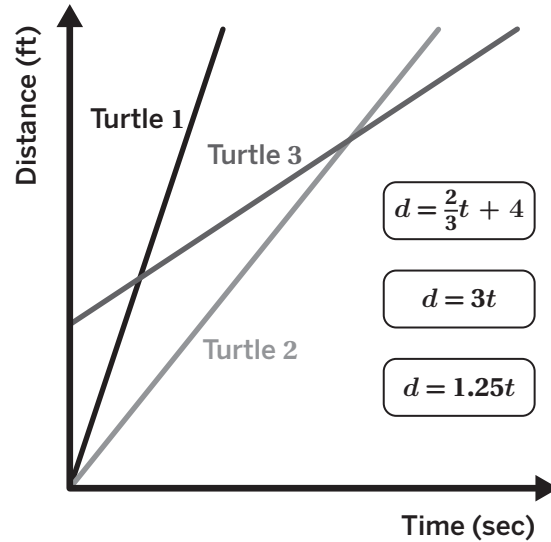
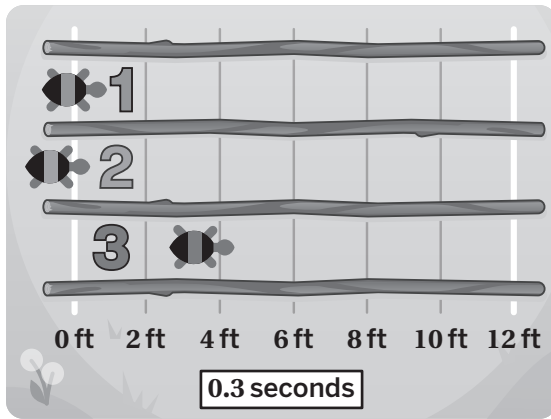
Vehicle A can go \_\_\_\_\_ using 5 miles of gas and Vehicle B can go \_\_\_\_\_ using 5 gallons of gas.

| Word bank |         |           |                            |        |          |       |          |
|-----------|---------|-----------|----------------------------|--------|----------|-------|----------|
| English   | buy     | distance  | gas mileage                | gallon | higher   | point | vehicle  |
| Español   | comprar | distancia | rendimiento de la gasolina | galón  | más alto | punto | vehículo |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Three Turtles

Consider the turtle's race, graph, and equations. Use your answers from the questions and the sentence frames to help you explain your thinking.



Which turtle has a head start?

Which turtle travels the fastest?

Which turtles cross paths during the race?

The line for Turtle 1 represents the equation \_\_\_\_\_ because ...  
( $d = \frac{2}{3}t + 4$ ,  $d = 3t$ ,  $d = 1.25t$ )

The line for Turtle 2 represents the equation \_\_\_\_\_ because ...  
( $d = \frac{2}{3}t + 4$ ,  $d = 3t$ ,  $d = 1.25t$ )

The line for Turtle 3 represents the equation \_\_\_\_\_ because ...  
( $d = \frac{2}{3}t + 4$ ,  $d = 3t$ ,  $d = 1.25t$ )

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Warm-Up

## Description

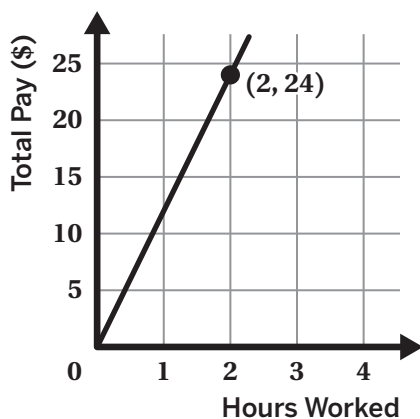
Lucia works at a sporting goods store where she earns \$12 per hour.

## Equation

$x$  represents the number of hours worked.  
 $y$  represents the total pay in dollars.

$$y = 12x$$

## Graph



## Table

| Hours worked | Total pay (\$) |
|--------------|----------------|
| 0            | 0              |
| 1            | 12             |
| 5            | 60             |
| 8            | 96             |
| 10           | 120            |



**Discuss:** What connections do you see between the four representations?

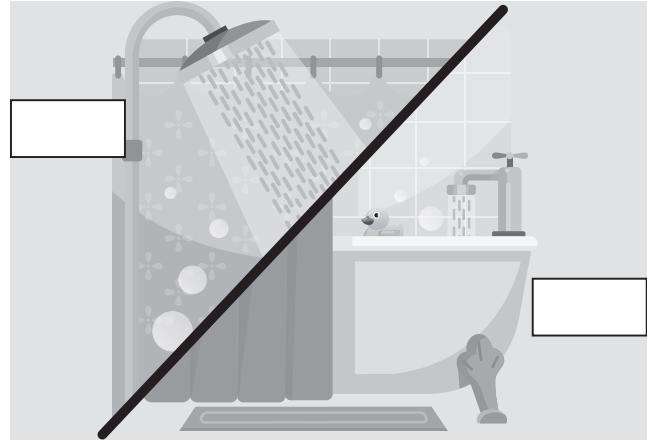
| Description   | Equation  |
|---|---|
| The constant of proportionality is _____ because Lucia earns _____ per _____. | The constant of proportionality is _____ because the equation is in the form $y = kx$ where $k$ is _____. |
| Graph   | Table   |
| The constant of proportionality is _____ because . . .                        | The constant of proportionality is _____ because . . .  |

All the representations show that Lucia earns \_\_\_\_\_ for every \_\_\_\_\_ she works.

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Choosing Values

What uses more water: a bath or a shower? And how much more water?



|  | Would you use this information to calculate the answer? | Make an estimate of this value |
|--|---|--------------------------------|
| Time spent in shower                             | <input type="checkbox"/>                                |                                |
| Time spent in bath                               | <input type="checkbox"/>                                |                                |
| How fast water comes out of a shower head (rate) | <input type="checkbox"/>                                |                                |
| How fast water comes out of a bath faucet (rate) | <input type="checkbox"/>                                |                                |
| Dimensions (size) of the bathtub                 | <input type="checkbox"/>                                |                                |
| Amount of water the bathtub can hold             | <input type="checkbox"/>                                |                                |
|  | <input type="checkbox"/>                                |                                |
|  | <input type="checkbox"/>                                |                                |

| Word bank      |                 |                   |        |          |         |            |       |
|----------------|-----------------|-------------------|--------|----------|---------|------------|-------|
| <b>English</b> | (take a) bath   | (take a) shower   | faucet | length   | bathtub | estimate   | value |
| <b>Español</b> | (tomar un) baño | (tomar una) ducha | grifo  | duración | baño    | estimación | valor |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

## Create a Poster

According to my representation, a showerhead uses \_\_\_\_\_ gallons of water per minute.

If I shower for \_\_\_\_\_ minutes, then I use \_\_\_\_\_ gallons of water.

If I shower for \_\_\_\_\_ minutes, then I use \_\_\_\_\_ gallons of water.

If I shower for \_\_\_\_\_ minutes, then I use \_\_\_\_\_ gallons of water.



According to my representation, the amount of water needed to fill the bathtub is \_\_\_\_\_ gallons. The amount of time in the bath \_\_\_\_\_ affect the amount of water used.  
(does / does not)

With the conditions in our representation, a shower would use more water than a bath if . . .

With the conditions in our representation, a bath would use more water than a shower if . . .

| Word bank |                 |             |            |            |                |                   |
|-----------|-----------------|-------------|------------|------------|----------------|-------------------|
| English   | (take a) bath   | conditions  | less water | more water | representation | (take a) shower   |
| Español   | (tomar un) baño | condiciones | menos agua | más agua   | representación | (tomar una) ducha |

# Math Habits of Mind: Hábitos mentales matemáticos

I can slow down and first make sense of a challenging problem before trying to solve it.

Puedo ir más despacio y primero comprender un problema difícil antes de intentar resolverlo.

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## Questions and Sentence Frames

Why did you choose this habit of mind?

Did you choose any others? Why or why not?

What part of the Activity reminded you of this habit of mind?

Can you tell me more?

I chose this habit of mind because . . .

I also chose \_\_\_\_\_ because . . .

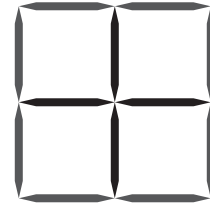
In the Activity, I . . .

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Proportional or Not?

Use the graphs to decide which relationships are proportional.

- Side length of a square vs. perimeter
- Side length of a square vs. number of interior toothpicks
- Both
- Neither



Explain your thinking.

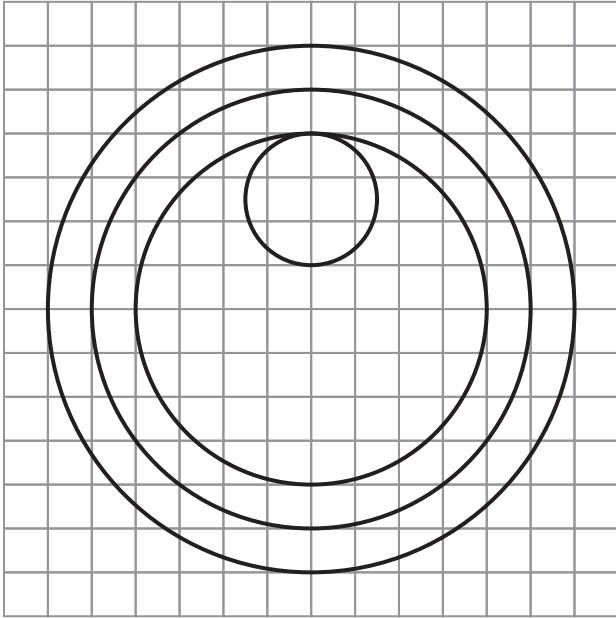
The side length of a square vs. its perimeter \_\_\_\_\_ proportional because . . .  
(is / is not)

The side length of a square vs. the number of interior toothpicks \_\_\_\_\_ proportional because . . .  
(is / is not)

| Word bank      |        |                               |                      |       |        |          |
|----------------|--------|-------------------------------|----------------------|-------|--------|----------|
| <b>English</b> | curved | constant of proportionality   | equivalent ratios    | line  | origin | straight |
| <b>Español</b> | curvo  | constante de proporcionalidad | razones equivalentes | línea | origen | recto    |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Circle Centers



## First Draft:

The diameter of the smallest circle is . . .

The diameter of the largest circle is . . .

The *center* of the circle is . . .

## Questions to Consider:


- How do you know that \_\_\_\_\_?
- What do you mean when you say \_\_\_\_\_?
- Can you say that another way?
- Did you mention how many circles there are?
- Did you write about the size of the circles using the words radius or diameter?
- Did you write about where the circles are using the word *center*?

## Ideas from my partner(s):

My partner suggested that I . . .

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# So Many Circles

 **Directions:** Make copies and pre-cut. Give each student the appropriate support for describing whether a graph represents a proportional relationship. **Note:** The top portion offers emerging language supports, the middle portion offers expanding language supports, and the bottom portion offers bridging language supports.

Do you think the relationship between circumference and diameter is proportional?

(Yes it is / No it is not), because . . .

- The points (create / do not create) a straight line.
- A line connecting these points (will / will not) pass through the origin.
- The coordinates of the points (create / do not create) equivalent ratios.
- The constant of proportionality is \_\_\_\_\_. / There is no constant of proportionality.

| Word bank      |                |             |          |              |          |
|----------------|----------------|-------------|----------|--------------|----------|
| <b>English</b> | circumference  | coordinates | diameter | equivalent   | graph    |
| <b>Español</b> | circunferencia | coordenadas | diámetro | equivalente  | gráfica  |
| <b>English</b> | line           | origin      | point    | proportional | straight |
| <b>Español</b> | línea          | origen      | punto    | proporcional | recta    |

Do you think the relationship between circumference and diameter is proportional?

(Yes it is / No it is not), because . . .

- The points (create / do not create) a straight line.
- A line connecting these points (will / will not) pass through the origin.
- The coordinates of the points (create / do not create) equivalent ratios.
- The constant of proportionality is \_\_\_\_\_. / There is no constant of proportionality.

Do you think the relationship between circumference and diameter is proportional?

- Do the points create a straight line?
- Would the line connecting these points pass through the origin?
- Are the ratios of the coordinates equivalent?
- Is there a constant of proportionality?

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Calculating Perimeters

“Walking around the track in the shape of a semicircle is *half* the distance of walking around the entire circular track.”

Dyani

“The distances are *equal*!”

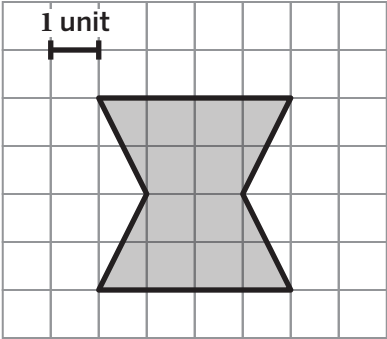
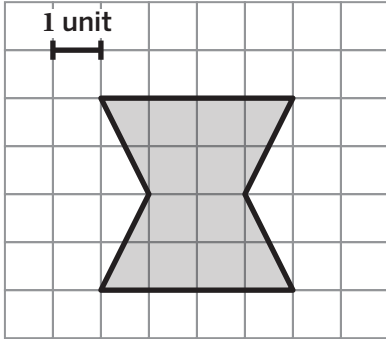
Elena

| Decide: Is _____'s claim correct?<br><i>Decide: Decide: ¿Es correcta la afirmación de _____?</i> | Defend: Explain your thinking.<br><i>Defender: Explica tu pensamiento.</i> |
|--|--|
| Dyani's claim is _____ because ...<br><i>(correct/incorrect)</i>                                 |  |
| Elena's claim is _____ because ...<br><i>(correct/incorrect)</i>                                 |  |

| Word bank      |         |       |               |           |             |
|----------------|---------|-------|---------------|-----------|-------------|
| <b>English</b> | circle  | curve | half          | perimeter | semicircle  |
| <b>Español</b> | círculo | curva | mitad (medio) | perímetro | semicírculo |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Calculating Area

| Strategy 1   | Strategy 2   |
|--|--|
| The area of this shape is: _____ square units.   | The area of this shape is: _____ square units.   |
| Show your strategy:  | Show your strategy:  |
|                           |                  |
| Explain your strategy:   | Explain your strategy:   |
| Compare: How are these strategies different?<br><i>Comparar: ¿En qué se diferencian estas estrategias?</i> | Connect: How are these strategies alike?<br><i>Conectar: ¿En qué se parecen estas estrategias?</i> |

| Word bank |      |        |             |       |             |            |           |          |  |  |
|-----------|------|--------|-------------|-------|-------------|------------|-----------|----------|--|--|
| English   | area | count  | decompose   | move  | rearrange   | rectangle  | triangle  | surround |  |  |
| Español   | área | contar | descomponer | mover | reorganizer | rectángulo | triángulo | rodear   |  |  |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Squares Cover Circle



**Discuss:** Why might it be helpful to know about how many radius squares are needed to cover a circle?

Use the sentence frames below to help you explain your thinking.

- Knowing how many radius squares are needed to cover a circle can help me to . . .
- Knowing how many radius squares are needed to cover a circle is helpful because . . .
- It takes about \_\_\_\_\_ radius squares to cover a circle. This is helpful because . . .
- If I know how many radius squares are needed to cover a circle, then . . .
- The radius of a circle is related to the area of the circle because . . .

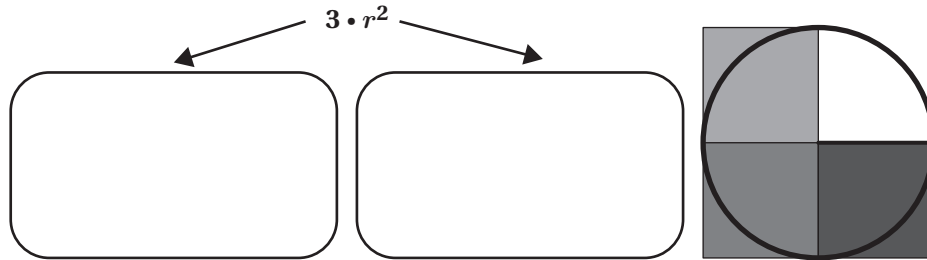
It takes a little more than \_\_\_\_\_ radius squares to cover a circle. The area of each radius square is \_\_\_\_\_, or \_\_\_\_\_, where  $r$  represents the radius of the circle.

| Word bank |      |         |          |        |          |
|-----------|------|---------|----------|--------|----------|
| English   | area | circle  | length   | radius | square   |
| Español   | área | círculo | longitud | radio  | cuadrado |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Finding a Formula

What do you think each part of the expression means? Draw on the diagram if it helps with your thinking.



Jaleel says that Precious's expression is an underestimate of the area of the circle.

- What does it mean for the expression to be an *underestimate*?

If the expression is an underestimate, then it gives an approximate area that is \_\_\_\_\_ the exact area.  
(less than / greater than)

- Do you agree with Jaleel?

I \_\_\_\_\_ with Jaleel because ...  
(agree / disagree)

| Word bank      |      |         |            |         |             |        |          |
|----------------|------|---------|------------|---------|-------------|--------|----------|
| <b>English</b> | area | circle  | expression | formula | multiply    | radius | square   |
| <b>Español</b> | área | círculo | expresión  | fórmula | multiplicar | radio  | cuadrado |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Unrolling a Circle

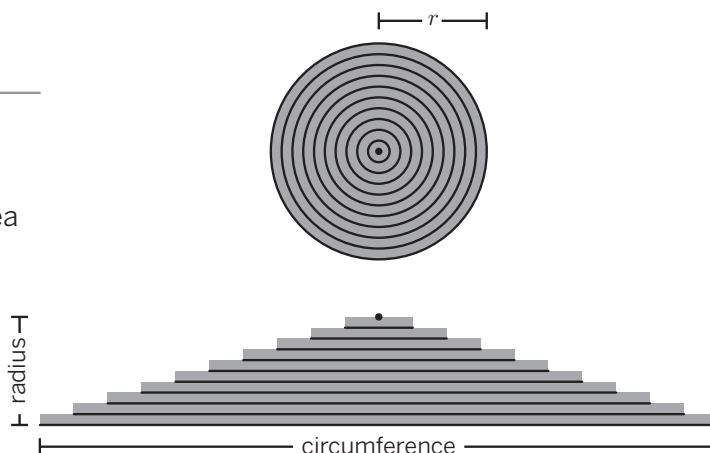
The area of a triangle is  $A = \frac{1}{2} \cdot \text{base} \cdot \text{height}$ .

- The “base” of the triangle is the \_\_\_\_\_ of the circle.
- The “height” of the triangle is the \_\_\_\_\_ of the circle.

We can rewrite the formula for calculating the area of the triangle as:

$$A = \frac{1}{2} \cdot \text{base} \cdot \text{height}$$

$$A = \frac{1}{2} \cdot \boxed{\phantom{000000}} \cdot \boxed{\phantom{000000}}$$



Use this fact to convince a friend that the area of a circle is  $A = \pi \cdot r^2$ .

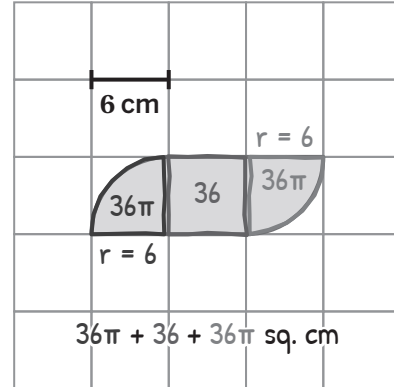
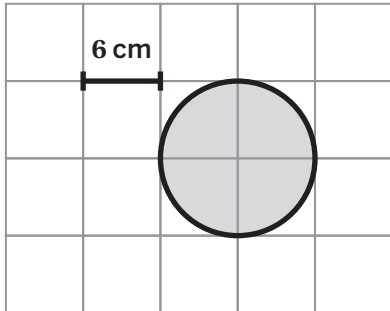
| Explain your thinking  | Show your thinking  |
|--|---|
| <p>The circumference is _____ and the radius of a circle is _____. I can substitute those into the equation.</p> <p>Because the diameter is twice as long as the radius, I can write _____ instead of <math>\pi d</math>.</p> <p>Another way to write <math>\frac{1}{2} \cdot 2</math> is _____.</p> <p>Another way to write <math>r \cdot r</math> is _____.</p> <p>If I put all of this together, I get _____.</p> | $A = \frac{1}{2} \cdot \text{circumference} \cdot \text{radius}$ $A = \frac{1}{2} \cdot \boxed{\phantom{000000}} \cdot \boxed{\phantom{000000}}$ $A = \frac{1}{2} \cdot \boxed{\phantom{000000}} \cdot \boxed{\phantom{000000}}$ $A = \frac{1}{2} \cdot \pi \cdot 2 \cdot r \cdot r$ $A = \boxed{\phantom{000000}} \cdot \pi \cdot \boxed{\phantom{000000}}$ $A = \boxed{\phantom{000000}}$ |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Calculating Areas

Consider Taylor's work.

- Identify any correct thinking.
- Identify any mistakes Taylor made.
- Use the image of the full circle if it helps with your thinking.

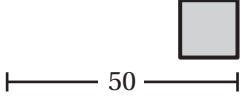
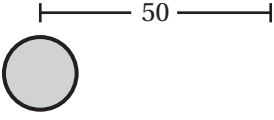


| Correct thinking     | Mistake                      |
|----------------------|------------------------------|
| Taylor correctly ... | Taylor made a mistake by ... |
| I know because ...   | I know because ...           |

| Word bank |      |                   |        |       |         |         |        |
|-----------|------|-------------------|--------|-------|---------|---------|--------|
| English   | area | side length       | whole  | half  | quarter | mistake | radius |
| Español   | área | longitud del lado | entero | medio | cuarto  | error   | radio  |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Which is Greater?

| Square Area   | Circle Area   |
|---|---|
|    |    |
| <p>To determine the area of a square, I need to know . . .</p>  | <p>To determine the area of the circle, I need to know . . .</p>  |
| <p>If I am given the perimeter of a square, I can determine the side length by . . .</p>  | <p>If I am given the perimeter (circumference) of a circle, I can determine the length of the diameter by . . .</p>                             |
| <p>The side length of this square is _____ yards.</p> <p>Then to calculate the area, I can . . .</p>  | <p>The diameter of this circle is _____ yards.</p> <p>If I know the diameter of a circle, I can determine the length of the radius by . . .</p> |
| <p>The radius of this circle is _____ yards.</p> <p>Then to calculate the area, I can . . .</p> <p>So, the area of this square is _____ square yards.</p> | <p>So, the area of this circle is _____ square yards.</p>   |

# Math Habits of Mind: Hábitos mentales matemáticos

I can slow down and first make sense of a challenging problem before trying to solve it.

Puedo ir más despacio y primero comprender un problema difícil antes de intentar resolverlo.

I can represent real-world problems using equations and inequalities and interpret their solutions within the context of the problem.

Puedo representar problemas del mundo real usando ecuaciones y desigualdades e interpretar sus soluciones dentro del contexto del problema.

I can justify my thinking and ask questions to help me understand the thinking of others.

Puedo justificar mi razonamiento y hacer preguntas que me ayuden a comprender el razonamiento de los demás.

I can apply the math that I know to solve real-world problems, make assumptions and revise my thinking as needed.

Puedo poner en práctica mis conocimientos matemáticos para resolver problemas del mundo real, formulando hipótesis y modificando mi razonamiento según sea necesario.

I can select an appropriate tool to help me solve problems.

Puedo seleccionar una herramienta adecuada que me ayude a resolver problemas.

I can communicate my thinking and solutions clearly to others.

Puedo comunicar mi razonamiento y soluciones claramente a los demás.

I can look for structure or patterns to help me solve problems.

Puedo buscar estructuras o patrones que me ayuden a resolver problemas.

I can look for repeated calculations and other repeated steps to make generalizations.

Puedo buscar cálculos y otros pasos repetidos para hacer generalizaciones.

## Questions and Sentence Frames

Why did you choose this habit of mind?

Did you choose any others? Why or why not?

What part of the Activity reminded you of this habit of mind?

Can you tell me more?

I chose this habit of mind because . . .

I also chose \_\_\_\_\_ because . . .

In the Activity, I . . .

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Percent Shaded

Tiam and Ramón both determined how to shade 30% of the square teal. Here is their work.

Tiam

$100\% \div 20 = 5\%$

|  |  |  |    |    |
|--|--|--|----|----|
|  |  |  |    | 5% |
|  |  |  | 5% | 5% |
|  |  |  | 5% | 5% |
|  |  |  |    | 5% |

Ramón

20 boxes total

30% of 20

$0.30 \cdot 20$

6

6 teal boxes



**Discuss:** How did each student determine the number of boxes to shade?

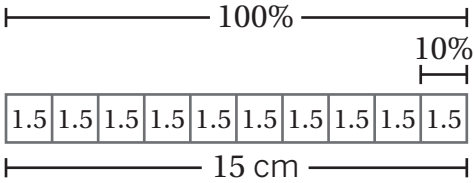
|  |  |
|--|--|
| <p><b>Compare:</b> How are these strategies different?</p> <p><i>Comparar: ¿En qué se diferencian estas estrategias?</i></p> | <p><b>Connect:</b> How are these strategies alike?</p> <p><i>Conectar: ¿En qué se parecen estas estrategias?</i></p> |
|  |  |

| Word bank      |      |         |         |             |            |        |          |       |
|----------------|------|---------|---------|-------------|------------|--------|----------|-------|
| <b>English</b> | box  | decimal | divide  | multiply    | percent    | shade  | square   | total |
| <b>Español</b> | caja | decimal | dividir | multiplicar | porcentaje | sombra | cuadrado | total |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

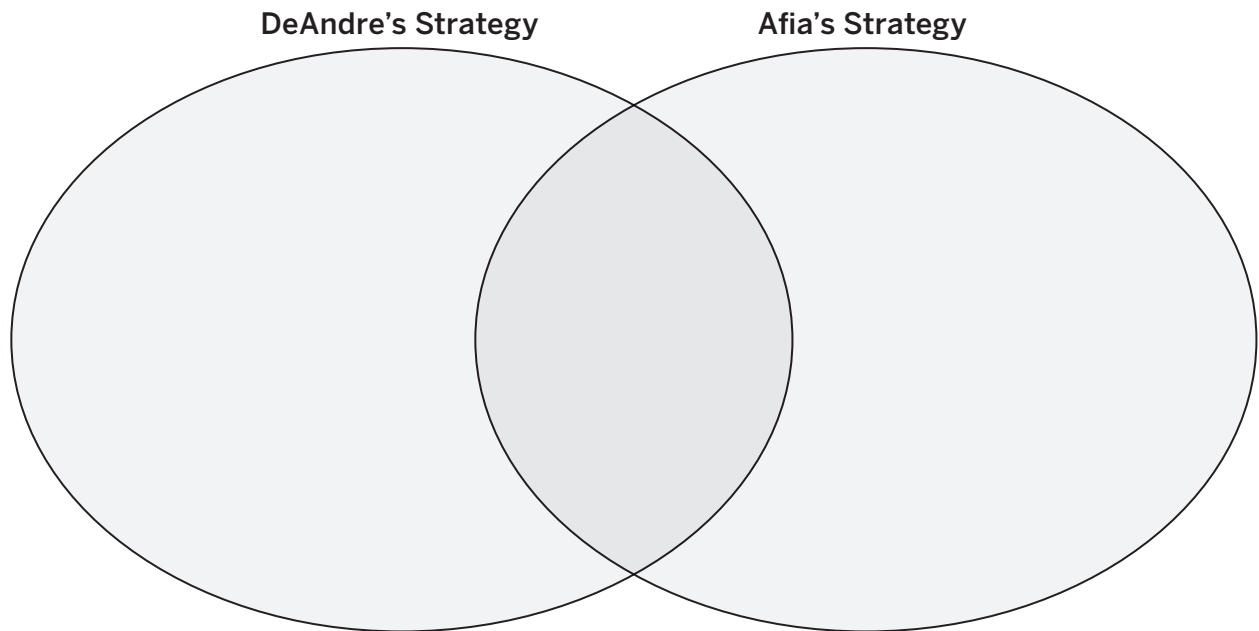
# Granola Bars

DeAndre and Afia both determined the length of the 15-centimeter granola bar after a 10% decrease.

| DeAndre   | Afia  |                       |     |                       |      |     |                      |       |         |  |
|---|---|-----------------------|-----|-----------------------|------|-----|----------------------|-------|---------|--|
|  <p style="text-align: center; margin-top: 10px;"><math>15 - 1.5 = 13.5</math></p> | <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="border-right: 1px solid black; padding: 5px;">OLD</td> <td style="padding: 5px;">NEW</td> <td style="padding: 5px;"><math>\frac{100\%}{-10\%}</math></td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;">100%</td> <td style="padding: 5px;">90%</td> <td style="padding: 5px;"><math>\frac{\quad}{90\%}</math></td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;">15 cm</td> <td style="padding: 5px;">13.5 cm</td> <td></td> </tr> </table> <p style="text-align: center; margin-top: 5px;"><math>\times 0.9</math></p> | OLD                   | NEW | $\frac{100\%}{-10\%}$ | 100% | 90% | $\frac{\quad}{90\%}$ | 15 cm | 13.5 cm |  |
| OLD   | NEW   | $\frac{100\%}{-10\%}$ |     |                       |      |     |                      |       |         |  |
| 100%  | 90%   | $\frac{\quad}{90\%}$  |     |                       |      |     |                      |       |         |  |
| 15 cm   | 13.5 cm   |                       |     |                       |      |     |                      |       |         |  |

These strategies represent a percent \_\_\_\_\_ because ...  
(increase / decrease)

Create a venn diagram to compare and contrast their strategies.



| Word bank      |                               |         |         |             |            |         |          |
|----------------|-------------------------------|---------|---------|-------------|------------|---------|----------|
| <b>English</b> | constant of proportionality   | decimal | divide  | multiply    | percent    | section | subtract |
| <b>Español</b> | constante de proporcionalidad | decimal | dividir | multiplicar | porcentaje | sección | sustraer |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Percents and Equations

Manuel paid off 88% of his debt. He originally owed \$1950. How much does Manuel owe now?



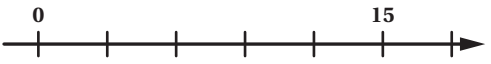


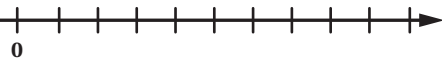
| What information do you <i>know</i> ? | What information is <i>unknown</i> ? | Draw a visual representation. |
|---------------------------------------|--------------------------------------|-------------------------------|
|                                       |                                      |                               |

| Does this represent percent increase or percent decrease? | Select an equation and describe what it means. | Use your equation to determine how much Manuel owes now. |
|---|--|--|
|   |  |  |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Double Number Lines

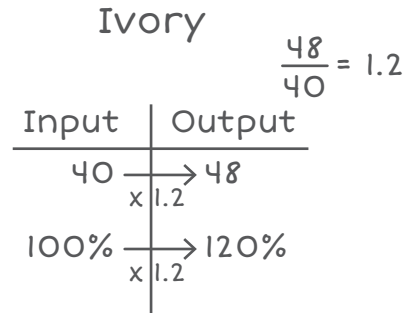
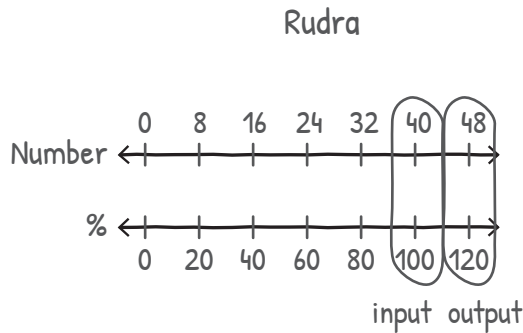
Record the quantities for each problem.

| Original Amount<br>(Cantidad Original)  | Percent increase / Percent decrease<br>(Porcentaje de aumento / Porcentaje de disminución) | What amount does each partition represent?<br>(¿Qué cantidad representa cada partición?) | New amount<br>(Nueva cantidad) |
|---|--|--|--------------------------------|
| <p>A store sells all of its clothes for 50% more than it costs to make (also called a “markup”).</p> <p>If a shirt costs \$12 to make, what is the price of the shirt?</p> <p>Shirt Cost (\$)</p>  <p>% of Cost</p>  |  |  |                                |
| <p>At the movie theater, the size of popcorn bags decreased by 20%.</p> <p>If the original bags held 15 cups of popcorn, how much do the new bags hold?</p> <p>Popcorn (cups)</p>  <p>% of Old Bags</p>             |  |  |                                |
| <p>A school had 1,200 students last year and only 1,080 students this year.</p> <p>What was the percent decrease in the number of students?</p> <p>Number of People</p>  <p>% of Students Last Year</p>             |  |  |                                |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Putting Inputs In

Here are two strategies for determining the percent increase.



**Compare:** How are these strategies different?  
*Comparar:* ¿En qué se diferencian estas estrategias?

**Connect:** How are these strategies alike?  
*Conectar:* ¿En qué se parecen estas estrategias?

## Word bank

|                |         |           |        |          |         |        |        |            |
|----------------|---------|-----------|--------|----------|---------|--------|--------|------------|
| <b>English</b> | decimal | decrease  | double | increase | input   | number | output | percentage |
| <b>Español</b> | decimal | disminuir | doble  | aumentar | entrada | número | salida | porcentaje |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

## Comparing the Changes

Compare the average prices of a mattress and the federal minimum wage in 2000 and 2022.

| Year                     | Price of a Mattress | Minimum Wage (\$ per hour) |
|--------------------------|---------------------|----------------------------|
| 2000                     | \$995               | \$5.15                     |
| 2022                     | \$1,065             | \$7.25                     |
| <b>Percent increase:</b> |                     |                            |

Select a sentence frame to answer each question.

In what way have mattresses gotten more expensive since 2000?

- Mattresses have gotten more expensive because . . .
- Mattresses cost more in 2022 than in 2000 because . . .
- The price of a mattress has increased because . . .

In what way have they gotten cheaper since 2000?

- Mattresses have gotten cheaper because . . .
- Mattresses cost less in 2022 than in 2000 because . . .
- The price of a mattress has decreased because . . .

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Tip

Kiran and Ava had a bill for \_\_\_\_\_. The tax rate is \_\_\_\_\_ and they want to tip \_\_\_\_\_.

**Kiran calculates the tip after tax is added to the bill.**

| Kiran    |          |
|----------|----------|
| Bill:    | \$100.00 |
| 5% tax:  | \$       |
| 20% tip: | \$       |
| Total:   | \$???.?? |

The bill is \_\_\_\_\_.

The tax on the bill is \_\_\_\_\_ because 5% of 100 is \_\_\_\_\_.

The new subtotal is \_\_\_\_\_ because the original bill \_\_\_\_\_ + the tax \_\_\_\_\_ = \_\_\_\_\_.

The tip on the subtotal is \_\_\_\_\_ because 20% of \_\_\_\_\_ is \_\_\_\_\_.

The total bill is \_\_\_\_\_ because the subtotal \_\_\_\_\_ + the tip \_\_\_\_\_ = \_\_\_\_\_.

**Ava calculates the tip before tax is added to the bill.**

| Ava      |          |
|----------|----------|
| Bill:    | \$100.00 |
| 5% tax:  | \$       |
| 20% tip: | \$       |
| Total:   | \$???.?? |

The bill is \_\_\_\_\_.

The tax on the subtotal is \_\_\_\_\_ because 20% of \_\_\_\_\_ is \_\_\_\_\_.

The tip on the bill is \_\_\_\_\_ because 20% of 100 is \_\_\_\_\_.

The total bill is \_\_\_\_\_ because the bill \_\_\_\_\_ + the tax, \_\_\_\_\_ + the tip, \_\_\_\_\_ = \_\_\_\_\_.

Whose strategy would result in a greater tip? Explain your thinking.

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Waiting Tables

## Restaurant Workers

\_\_\_\_\_ might feel \_\_\_\_\_ about this policy because . . .  
(Laila / Tiana / Julian / Peter) (happy / unhappy)

Gabriel might feel \_\_\_\_\_ about this policy because . . .  
(happy / unhappy)

## Restaurant Owners

Restaurant owners might feel \_\_\_\_\_  
(happy / unhappy)  
about this policy because . . .

## Customers

Customers might feel \_\_\_\_\_  
(happy / unhappy)  
about this policy because . . .

## Word bank

|                |   |           |          |              |            |       |
|----------------|---|-----------|----------|--------------|------------|-------|
| <b>English</b> | pay increase/<br>pay decrease               | advantage | customer | disadvantage | employee   | happy |
| <b>Español</b> | aumento salarial/<br>disminución salarial   | ventaja   | cliente  | desventaja   | empleado/a | feliz |
| <b>English</b> | price increase/<br>price decrease           | owner     | policy   | restaurant   | unhappy    |       |
| <b>Español</b> | aumento de precio/<br>disminución de precio | dueño/a   | política | restaurante  | triste     |       |

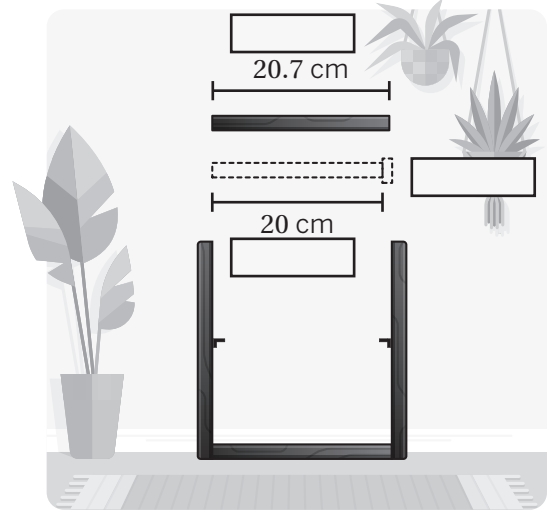
Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Challenge Your Shelf

Nikolai is making a shelf for his new bookcase.

He wants it to be 20 centimeters long. It ends up being 20.7 centimeters long.

The acceptable percent error is 5% for a shelf to fit.



|         | Desired Shelf | Actual Shelf | Error |
|---------|---------------|--------------|-------|
| Meaning |               |              |       |
| Value   |               |              |       |

The *desired* shelf length is \_\_\_\_\_. The *actual* shelf length is \_\_\_\_\_.

The error is \_\_\_\_\_. This error is \_\_\_\_\_% of the *desired* length.

The acceptable percent error is \_\_\_\_\_.

The shelf \_\_\_\_\_ fit. I know this because . . .  
(will / will not)

| Word bank |            |        |         |       |          |            |         |
|-----------|------------|--------|---------|-------|----------|------------|---------|
| English   | acceptable | actual | desired | error | length   | percent    | shelf   |
| Español   | aceptable  | real   | deseado | error | longitud | por ciento | estante |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Pollution Percentages

- Choose one information card from your chosen topic to focus on. What information do you know from reading this card?
  
- Choose another information card to focus on. What information do you know from reading this card?
  
- Write two questions about something you could figure out using the information you are given. Use the question starters if it is helpful.
 

|                       |                   |
|-----------------------|-------------------|
| How much . . .        | What amount . . . |
| What percent of . . . | What is . . .     |

| Word bank      |          |           |          |               |             |           |
|----------------|----------|-----------|----------|---------------|-------------|-----------|
| <b>English</b> | plastic  | generated | waste    | mismanage     | recycled    | tons      |
| <b>Español</b> | plástico | generado  | residuos | gestionar mal | reciclado   | toneladas |
| <b>English</b> | emitted  | polyester | clothes  | fast fashion  | information | topic     |
| <b>Español</b> | emitido  | poliéster | ropa     | moda rápida   | información | tema      |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Scaling Stickers

Polina

| Height (in.)   | Width (in.) |
|----------------|-------------|
| 2              | 5           |
| $3\frac{1}{2}$ |             |

Diagram showing scaling from 2 to  $3\frac{1}{2}$  with a multiplier of  $1\frac{3}{4}$ .

Jamir

| Height (in.)   | Width (in.) |
|----------------|-------------|
| 2              | 5           |
| $3\frac{1}{2}$ |             |

Diagram showing scaling from 2 to  $3\frac{1}{2}$  with a multiplier of  $2\frac{1}{2}$ .

Compare: How are these strategies different?  
*Comparar: ¿En qué se diferencian estas estrategias?*

Compare: How are these strategies alike?  
*Comparar: ¿En qué se parecen estas estrategias?*

Connect: How are these strategies like yours?  
*Conectar: ¿En qué se parecen estas estrategias a la suya?*


## Word bank

| Word bank |                |         |                   |        |             |      |                       |       |
|-----------|----------------|---------|-------------------|--------|-------------|------|-----------------------|-------|
| English   | across         | column  | down              | height | multiply    | row  | sticker               | width |
| Español   | de lado a lado | columna | de arriba a abajo | altura | multiplicar | fila | etiqueta autoadhesiva | ancho |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Which Recipe?


**Recipe A**



**Number of servings: 9**

- $2\frac{7}{10}$  lb of peaches
- $\frac{1}{2}$  cups of butter
- 1 cup of flour
- $1\frac{1}{8}$  cups of sugar
- $\frac{1}{2}$  tsp of lemon juice


**Recipe B**



**Number of servings: 12**

- 4 lb of peaches
- $\frac{3}{4}$  cups of butter
- $\frac{3}{4}$  cups of flour
- $1\frac{1}{3}$  cups of sugar
- $\frac{1}{2}$  tsp of lemon juice

**Recipe C**




**Number of servings:  $4\frac{1}{2}$**

- $1\frac{4}{5}$  lb of peaches
- $\frac{1}{4}$  cups of butter
- $\frac{2}{3}$  cups of flour
- $\frac{3}{4}$  cups of sugar
- 1 tsp of lemon juice

| Recipe A   | Recipe B  | Recipe C  |
|--|---|---|
| Recipe A calls for _____ cups of sugar.  | Recipe B calls for _____ cups of sugar.           | Recipe C calls for _____ of a cup of sugar.       |
| Recipe A makes _____ servings.   | Recipe B makes _____ servings.                    | Recipe C makes _____ servings.                    |
| Recipe A has _____ of a cup of sugar per serving.  | Recipe B has _____ of a cup of sugar per serving. | Recipe C has _____ of a cup of sugar per serving. |
| <p>I _____ that Recipe C is the least sweet. I think recipe _____ would be the least sweet, because ...</p> <p style="text-align: center;"><small>(agree / disagree) (A / B / C)</small></p> |   |   |

| Word bank      |       |          |          |        |         |        |       |
|----------------|-------|----------|----------|--------|---------|--------|-------|
| <b>English</b> | cups  | least    | most     | recipe | serving | sugar  | sweet |
| <b>Español</b> | tazas | la menor | la mayor | receta | porción | azúcar | dulce |

# Terminating or Repeating?

 **Directions:** Make copies and pre-cut. Give each student the appropriate support for partner conversations on how to determine if a decimal is repeating or terminating. **Note:** The top portion offers emerging language supports, the middle portion offers expanding language supports, and the bottom portion offers bridging language supports.

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In order to determine if a decimal will be terminating or repeating,

- First I set up a long division problem, being careful to put the \_\_\_\_\_ and \_\_\_\_\_ in the right position. The numerator is the dividend and the denominator is the divisor.
- Then I complete the \_\_\_\_\_.
- If I get a remainder of 0, then I know it is a \_\_\_\_\_. If I notice a repeating pattern of one or more numbers that goes on infinitely, I know it is a \_\_\_\_\_. I can show the repeating decimal by putting a \_\_\_\_\_ over the number(s) that repeat.

| Word bank      |       |         |             |                |           |           |             |
|----------------|-------|---------|-------------|----------------|-----------|-----------|-------------|
| <b>English</b> | bar   | decimal | denominator | long division  | numerator | repeating | terminating |
| <b>Español</b> | barra | decimal | denominador | división larga | numerador | periódico | exacto      |

In order to determine if a decimal will be terminating or repeating,

- First I set up a long division problem, being careful to put the numerator and denominator in the right position. The numerator is the dividend and the denominator is the divisor.
- Then I complete the \_\_\_\_\_.
- If I get a remainder of 0, then I know it is a \_\_\_\_\_. If I notice a repeating pattern of one or more numbers that goes on infinitely, I know it is a \_\_\_\_\_. I can show the repeating decimal by putting a \_\_\_\_\_ over the number(s) that repeat.

In order to determine if a decimal will be terminating or repeating,

- First I . . .
- Then I . . .
- If I get a remainder of 0, then I know . . .
- If I notice a repeating pattern of one or more numbers that goes on infinitely, then I know . . .
- I can show the repeating decimal by . . .

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Words With Multiple Meanings

Draw a picture or write in words to show one or more math meanings and another meaning of the term.

**Math meaning(s)**

**opposite**

**Another meaning**

# Math Habits of Mind: Hábitos mentales matemáticos

I can slow down and first make sense of a challenging problem before trying to solve it.

Puedo ir más despacio y primero comprender un problema difícil antes de intentar resolverlo.

I can represent real-world problems using equations and inequalities and interpret their solutions within the context of the problem.

Puedo representar problemas del mundo real usando ecuaciones y desigualdades e interpretar sus soluciones dentro del contexto del problema.

I can justify my thinking and ask questions to help me understand the thinking of others.

Puedo justificar mi razonamiento y hacer preguntas que me ayuden a comprender el razonamiento de los demás.

I can apply the math that I know to solve real-world problems, make assumptions and revise my thinking as needed.

Puedo poner en práctica mis conocimientos matemáticos para resolver problemas del mundo real, formulando hipótesis y modificando mi razonamiento según sea necesario.

I can select an appropriate tool to help me solve problems.

Puedo seleccionar una herramienta adecuada que me ayude a resolver problemas.

I can communicate my thinking and solutions clearly to others.

Puedo comunicar mi razonamiento y soluciones claramente a los demás.

I can look for structure or patterns to help me solve problems.

Puedo buscar estructuras o patrones que me ayuden a resolver problemas.

I can look for repeated calculations and other repeated steps to make generalizations.

Puedo buscar cálculos repetidos y otros pasos repetidos para hacer generalizaciones.

Name: ..... Date: ..... Period: .....

## Questions and Sentence Frames

Why did you choose this habit of mind?

Did you choose any others? Why or why not?

What part of the Activity reminded you of this habit of mind?

Can you tell me more?

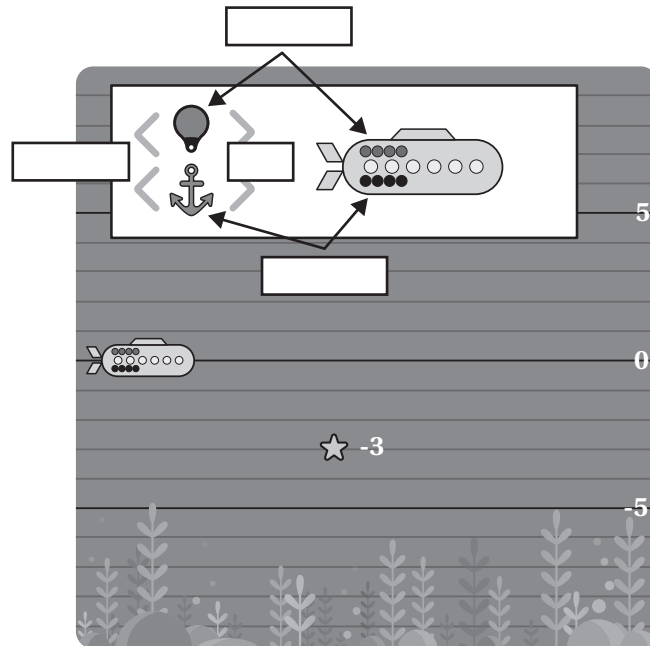
I chose this habit of mind because . . .

I also chose \_\_\_\_\_ because . . .

In the Activity, I . . .

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Collect the Star



In order to collect the star, I . . .

In order to collect the star, my partner . . .

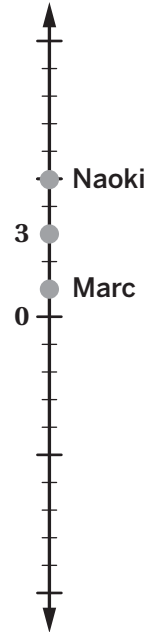
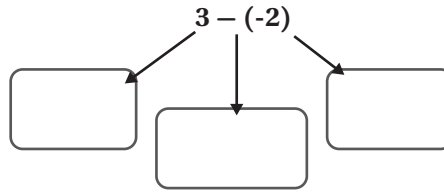
Both of these actions make the submarine go to -3 units because . . .

Another way to collect the star would be to . . .

| Word bank |         |        |          |          |          |           |
|-----------|---------|--------|----------|----------|----------|-----------|
| English   | add     | anchor | float    | remove   | star     | submarine |
| Español   | agregar | ancla  | flotador | eliminar | estrella | submarino |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Depths of Understanding



This is like adding 2 anchors, so the submarine goes down to 1.

Marc

This is like removing 2 anchors, so the submarine goes up to 5.

Naoki

| Decide: Is _____'s explanation correct? Decide: Decide: ¿Es correcta la explicación de _____? | Defend: Explain your thinking. Defender: Explica tu pensamiento. |
|---|--|
| Marc<br><input type="checkbox"/>  | Marc's explanation _____ correct because ...<br>(is / is not)    |
| Naoki<br><input type="checkbox"/>   | Naoki's explanation _____ correct because ...<br>(is / is not)   |

| Word bank |       |        |          |           |          |
|-----------|-------|--------|----------|-----------|----------|
| English   | add   | anchor | float    | submarine | remove   |
| Español   | sumar | ancla  | flotador | submarino | eliminar |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Carefully Placed

Deven and Emma made mistakes on the previous challenge.

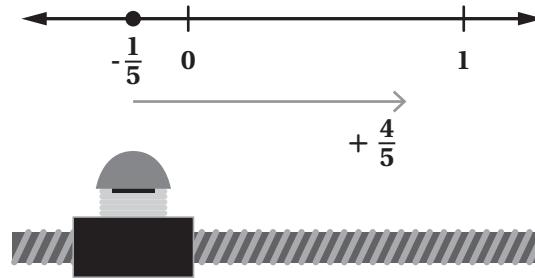
Circle your favorite mistake.

Deven

$$-\frac{1}{5} + \frac{4}{5} = \frac{5}{5}$$

Emma

$$-\frac{1}{5} + \frac{4}{5} = -\frac{3}{5}$$



|  |   |
|--|---|
| <b>Identify any correct thinking.</b>              | _____ correctly determined that . . .<br>(Deven / Emma) |
| <b>Identify any incorrect or unclear thinking.</b> |   |
| <b>Create a correct and clear solution.</b>        | I could tell _____ that . . .<br>(Deven/Emma)           |

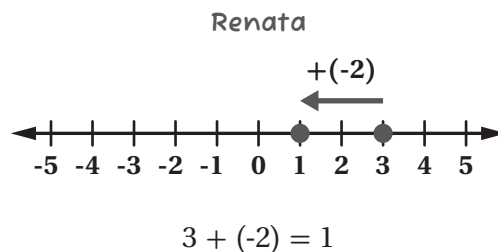
| Word bank |          |            |           |          |          |         |          |
|-----------|----------|------------|-----------|----------|----------|---------|----------|
| English   | correct  | incorrect  | left      | negative | positive | right   | start    |
| Español   | correcto | incorrecto | izquierda | negativo | positivo | derecha | comenzar |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Pluses and Minuses

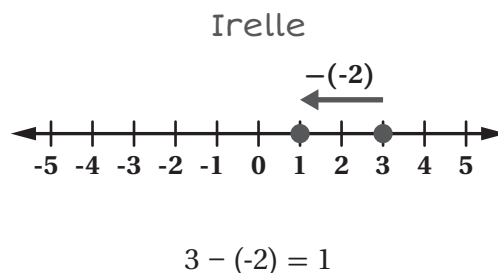
When Renata \_\_\_\_\_ -2, she moved to  
(added / subtracted)  
the \_\_\_\_\_.  
(left / right)

This is \_\_\_\_\_ because...  
(correct / incorrect)



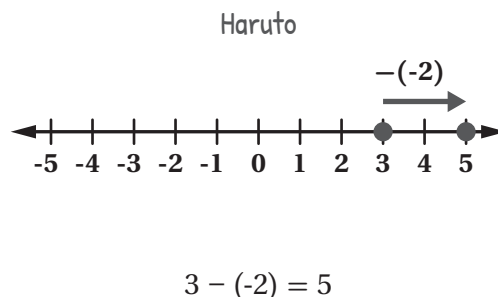
When Irelle \_\_\_\_\_ -2, she moved to  
(added / subtracted)  
the \_\_\_\_\_.  
(left / right)

This is \_\_\_\_\_ because...  
(correct / incorrect)



When Haruto \_\_\_\_\_ -2, he moved to  
(added / subtracted)  
the \_\_\_\_\_.  
(left / right)


This is \_\_\_\_\_ because...  
(correct / incorrect)



## Word bank

|                |          |          |            |           |          |
|----------------|----------|----------|------------|-----------|----------|
| <b>English</b> | add      | correct  | incorrect  | left      | negative |
| <b>Español</b> | sumar    | correcto | incorrecto | izquierda | negativo |
| <b>English</b> | opposite | positive | right      | start     | subtract |
| <b>Español</b> | opuesto  | positivo | derecha    | comenzar  | sustraer |

# Warm-Up

 **Directions:** Make copies and pre-cut. Give each student the appropriate support for describing whether a their equation is true. **Note:** The top portion offers emerging language supports, the middle portion offers expanding language supports, and the bottom portion offers bridging language supports.

How do you know that your equation is true?

I know my equation is true because . . .

- If I rewrite the subtraction as \_\_\_\_\_, I get the same answer.
- If I imagine the problem as floats and anchors, the submarine would end up at \_\_\_\_\_.
- If I use a number line, I can see that the two expressions have the same final value.
- If I break the numbers up to make zeros, I can see that they are equal.

| Word bank |          |          |           |          |                |
|-----------|----------|----------|-----------|----------|----------------|
| English   | add      | anchor   | float     | negative | number line    |
| Español   | sumar    | ancla    | flotador  | negativo | recta numérica |
| English   | positive | remove   | submarine | subtract | zero           |
| Español   | positivo | eliminar | submarino | sustraer | cero           |

How do you know that your equation is true?

I know my equation is true because . . .

- If I rewrite subtraction as addition, I . . .
- If I imagine the problem as floats and anchors . . .
- If I use a number line . . .
- If I make zeros . . .

How do you know that your equation is true?

- How can you show it by rewriting subtraction as addition?
- How can you use floats and anchors to explain your thinking?
- How can you use a number line to show your thinking?
- How can you make zeros to show that the two sides are equal?

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Underwater Expressions

Demetrius says the value of the expression  $2 \cdot (-4)$  is  $-8$ .

Do you agree?

Explain your thinking. Use the submarine and sentence frames if they help you to explain your thinking.

2 represents the number of \_\_\_\_\_.

2 is positive because it is like \_\_\_\_\_ groups.  
(adding / removing)

$-4$  represents the \_\_\_\_\_. It is  
(floats / anchors)

negative because \_\_\_\_\_ are  
(floats / anchors)

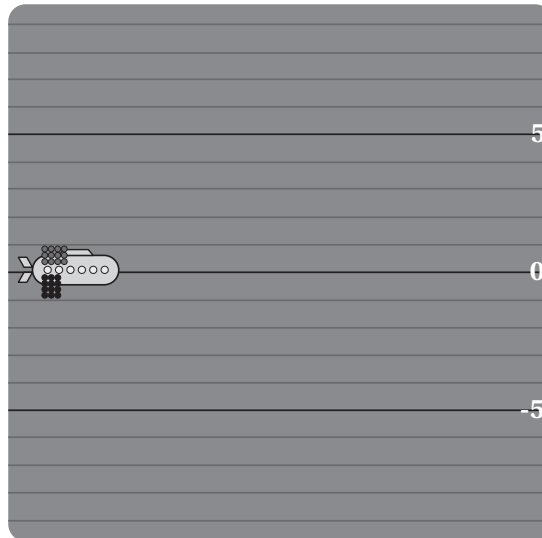
negative.

2 groups of 4 anchors make a total of \_\_\_\_ anchors.

Adding groups of anchors will move the submarine \_\_\_\_\_.  
(up / down)

Adding \_\_\_\_ anchors will move the submarine down \_\_\_\_ units from 0 which will be at \_\_\_\_.

I know this because . . .

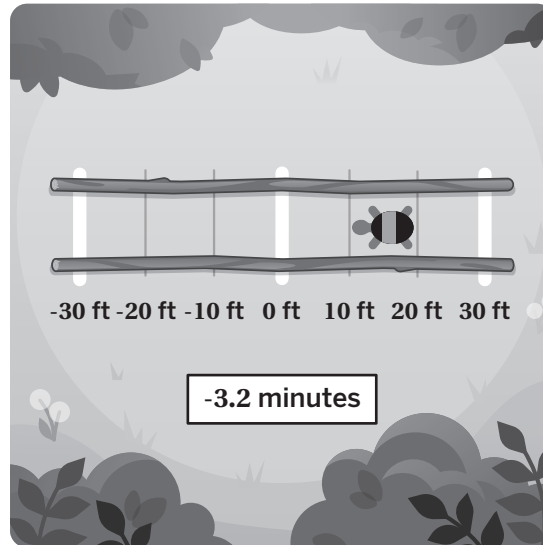


| Word bank |       |        |       |          |       |          |           |       |        |
|-----------|-------|--------|-------|----------|-------|----------|-----------|-------|--------|
| English   | add   | anchor | down  | float    | group | remove   | submarine | total | up     |
| Español   | sumar | ancla  | abajo | flotador | grupo | eliminar | submarino | total | arriba |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Time for Turtles

Here is the equation one student wrote to determine Tam's position.



Explain what each number represents in the situation.

$$(-5) (-3.2) = 16$$

-5 represents. . .  
Tam is walking \_\_\_\_\_  
(left / right)  
\_\_\_\_\_ feet every minute

16 represents. . .  
Tam's walking \_\_\_\_\_ at  
(walking rate/ position/ time)  
that time

-3.2 represents. . .

| Word bank |           |      |        |          |           |         |        |         |
|-----------|-----------|------|--------|----------|-----------|---------|--------|---------|
| English   | left      | feet | minute | position | rate      | right   | time   | walk    |
| Español   | izquierda | pies | minuto | posición | velocidad | derecha | tiempo | caminar |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Turtle Express



**Discuss:** Which equations represent this situation, where  $r$  represents Tommy's walking rate? How do you know?

| Equation            | Does this equation represent the situation? | Explain your thinking   |
|---------------------|---|---|
| $r \cdot 5 = -17$   |   | Tommy's _____ multiplied by the _____<br>(walking rate/ position/ time) (walking rate/ position/ time)<br>he is walking _____ equal to his _____.<br>(is / is not) (walking rate/ position/ time)                 |
| $(-17) \cdot 5 = r$ |   | Tommy's _____ multiplied by the _____<br>(walking rate/ position/ time) (walking rate/ position/ time)<br>he is walking _____ equal to his _____.<br>(is / is not) (walking rate/ position/ time)                 |
| $r = \frac{17}{5}$  |   | Tommy's _____ _____ equal to the opposite<br>(walking rate/ position/ time) (is / is not)<br>of his _____ divided by the _____ he is<br>(walking rate/ position/ time) (walking rate/ position/ time)<br>walking. |
| $r = \frac{-17}{5}$ |   | Tommy's _____ _____ equal to<br>(walking rate/ position/ time) (is / is not)<br>his _____ divided by the _____ he is<br>(walking rate/ position/ time) (walking rate/ position/ time)<br>walking.                 |
| $r = \frac{5}{-17}$ |   | Tommy's _____ _____ equal to<br>(walking rate/ position/ time) (is / is not)<br>the _____ he is walking divided by<br>(walking rate/ position/ time)<br>his _____.<br>(walking rate/ position/ time)              |

Use the sentence frames if they help with your thinking:

- The equation \_\_\_\_\_ and the equation \_\_\_\_\_ have the same solution because . . .
- The equation \_\_\_\_\_ would also have the same solution because . . .

| Word bank |          |        |                     |
|-----------|----------|--------|---------------------|
| English   | position | time   | walking rate        |
| Español   | posición | tiempo | velocidad de marcha |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Always, Sometimes, Never

| Statement A                     | Statement B                  | Statement C                |
|---------------------------------|------------------------------|----------------------------|
| $x + y$ is greater than $x - y$ | $3 - x$ is less than $2 - x$ | $\frac{-x}{x}$ is positive |

6. Statement \_\_\_\_\_ is \_\_\_\_\_ true.  
(A / B / C) (always / sometimes / never)

- This is because . . .
- On a number line . . .
- The expression \_\_\_\_\_ can be rewritten as \_\_\_\_\_ because . . .

| Statement D                                    | Statement E                    | Statement F                               |
|--|--------------------------------|---|
| $-x \cdot y$ is the opposite of $y \cdot (-x)$ | $\frac{y}{2}$ is less than $y$ | $x \cdot y$ is greater than $\frac{x}{y}$ |

7. Statement \_\_\_\_\_ is \_\_\_\_\_ true.  
(D / E / F) (always / sometimes / never)

- This is because . . .
- The expression \_\_\_\_\_ can be rewritten as \_\_\_\_\_ because . . .
- If \_\_\_\_\_ is positive, then . . .  
( $x / y$ )
- If \_\_\_\_\_ is negative, then . . .  
( $x / y$ )

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Warm-Up

|   |    |   |    |  |   |  |
|---|----|---|----|--|---|--|
| 1 | -2 | 3 | -4 |  |   |  |
|   | ×  |   | <  |  | × |  |

- a. Make the inequality true by using the numbers to fill in the blanks.
- b. Explain how you know this inequality is true. Use the sentence frames if they help with your thinking.

- I know my inequality is true because . . .
- A negative times a negative is a \_\_\_\_\_.  
(positive/negative)
- A positive times a negative is a \_\_\_\_\_.  
(positive/negative)
- A negative times a positive is a \_\_\_\_\_.  
(positive/negative)
- \_\_\_\_\_ times \_\_\_\_\_ is \_\_\_\_\_.  
(number) (number) (positive/negative)
- \_\_\_\_\_ is \_\_\_\_\_.  
(number) (greater than/less than) (number)

| Word bank |              |             |           |             |          |          |           |
|-----------|--------------|-------------|-----------|-------------|----------|----------|-----------|
| English   | greater than | inequality  | less than | multiply    | negative | positive | true      |
| Español   | mayor que    | desigualdad | menor que | multiplicar | negativo | positivo | verdadero |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Slippery Slope

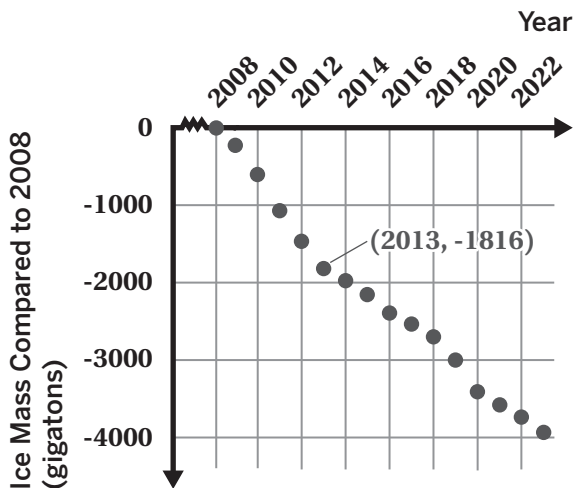
Tell a story about the graph of Greenland’s ice mass.

The  $x$ -axis represents . . . . .

The  $y$ -axis represents . . . . .

The ice in Greenland is \_\_\_\_\_ .  
(*increasing / decreasing*)

The point (2013, -1816) represents . . . . .



In the year \_\_\_\_\_, the ice in Greenland decreased a total of \_\_\_\_\_ gigatons. This is represented by the point ( \_\_\_\_\_, \_\_\_\_\_).

I think one cause of the decrease in ice in Greenland compared to 2008 . . . . .

I predict that . . . . .

Use these questions to support discussion when your classmates’ stories are shared.

What did you mean when you said \_\_\_\_\_?

Where on the graph do you see \_\_\_\_\_ part of your story?

What parts of each of our stories are alike? What parts are different?

| Word bank |               |
|-----------|---------------|
| English   | Español       |
| decrease  | decrecer      |
| gigatons  | gigatoneladas |
| ice       | hielo         |
| increase  | crecer        |
| mass      | masa          |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Arctic Sea Ice

| Year | Summer Sea Ice (cu. km) |
|------|-------------------------|
| 1980 | 16,316                  |
| 1990 | 13,815                  |
| 2000 | 11,084                  |
| 2010 | 4,742                   |
| 2020 | 4,158                   |

- Average change in summer ice per year using the actual data:
- Some scientists predict that there will be no summer sea ice in the Arctic by 2050. Do you think this prediction is reasonable? Explain your thinking.







\_\_\_\_\_ because each year the Arctic lost ice at a rate of about \_\_\_\_\_ cubic kilometers per  
*(Yes/No)* *(number)*  
 year. That means they could lose \_\_\_\_\_ between \_\_\_\_\_ and 2050, which is \_\_\_\_\_  
*(number)* *(year)* *(some/ a lot/ all)*  
 of the ice.

| Word bank |      |       |         |      |         |                        |      |
|-----------|------|-------|---------|------|---------|------------------------|------|
| English   | all  | a lot | lost    | rate | some    | positive               | year |
| Español   | todo | mucho | perdido | tasa | algunos | hielo marino de verano | año  |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Warm-Up

This table shows some actions that reduce carbon emissions.

|  |  |   |
|--|--|---|
| <p>Recycling waste</p>    | <p>Using public transportation</p>  | <p>Washing your clothes with cold water</p>  |
| <p>Eating less meat</p>  | <p>Biking instead of driving</p>   | <p>Using solar panels</p>                   |

1. What do you think it means to reduce carbon emissions?  
Reducing carbon emissions means . . .

2. What might impact someone's decision to take an action or not?

| Word bank      |        |                    |                      |                       |                 |         |                       |                 |
|----------------|--------|--------------------|----------------------|-----------------------|-----------------|---------|-----------------------|-----------------|
| <b>English</b> | action | biking             | carbon emissions     | public transportation | washing clothes | reduce  | recycling waste       | solar panels    |
| <b>Español</b> | acción | andar en bicicleta | emisiones de carbono | transporte publico    | lavar ropa      | reducir | reciclaje de residuos | paneles solares |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Words With Multiple Meanings

Draw a picture or write in words to show one or more math meanings and another meaning of the term.

**Math meaning(s)**

expand

**Another meaning**

# Words With Multiple Meanings

Draw a picture or write in words to show one or more math meanings and another meaning of the term.

**Math meaning(s)**

**factor**

**Another meaning**

# Math Habits of Mind: Hábitos mentales matemáticos

I can slow down and first make sense of a challenging problem before trying to solve it.

Puedo ir más despacio y primero comprender un problema difícil antes de intentar resolverlo.

I can represent real-world problems using equations and inequalities and interpret their solutions within the context of the problem.

Puedo representar problemas del mundo real usando ecuaciones y desigualdades e interpretar sus soluciones dentro del contexto del problema.

I can justify my thinking and ask questions to help me understand the thinking of others.

Puedo justificar mi razonamiento y hacer preguntas que me ayuden a comprender el razonamiento de los demás.

I can apply the math that I know to solve real-world problems, make assumptions and revise my thinking as needed.

Puedo poner en práctica mis conocimientos matemáticos para resolver problemas del mundo real, formulando hipótesis y modificando mi razonamiento según sea necesario.

I can select an appropriate tool to help me solve problems.

Puedo seleccionar una herramienta adecuada que me ayude a resolver problemas.

I can communicate my thinking and solutions clearly to others.

Puedo comunicar mi razonamiento y soluciones claramente a los demás.

I can look for structure or patterns to help me solve problems.

Puedo buscar estructuras o patrones que me ayuden a resolver problemas.

I can look for repeated calculations and other repeated steps to make generalizations.

Puedo buscar cálculos y otros pasos repetidos para hacer generalizaciones.

## Questions and Sentence Frames

Why did you choose this habit of mind?

Did you choose any others? Why or why not?

What part of the Activity reminded you of this habit of mind?

Can you tell me more?


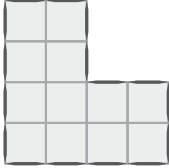
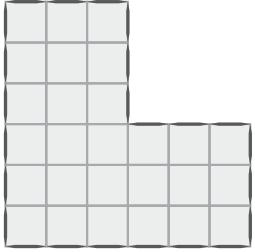
I chose this habit of mind because . . .

I also chose \_\_\_\_\_ because . . .

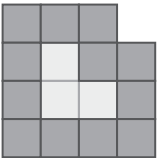
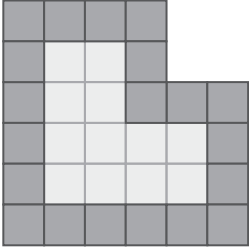
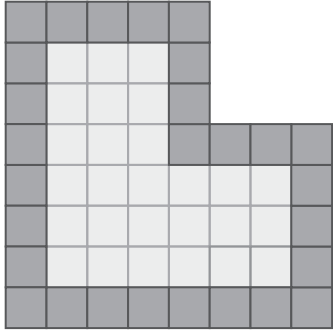
In the Activity, I . . .

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Patterns and Predictions

| Stage 1   | Stage 2   | Stage 3   |
|---|---|---|
|  |  |  |
| Number of border toothpicks:  | Number of border toothpicks:  | Number of border toothpicks:  |

I noticed that the number of border toothpicks is always \_\_\_\_\_ so . . .

| Stage 1   | Stage 2   | Stage 3   |
|---|---|---|
|  |  |  |
| Number of border tiles:   | Number of border tiles:   | Number of border tiles:   |

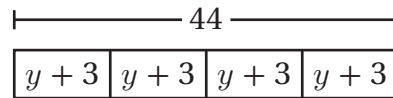
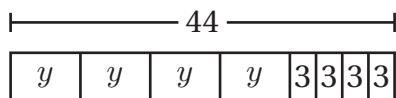
I know that the number of border tiles goes up by \_\_\_\_\_ with each stage so . . .

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Ordering Food

Raven and her three siblings are also considering using their \$44 to order from Salads-R-Us. This restaurant charges a \$3 service fee for each meal.

Here are two diagrams that represent the situation.



What does each part of the tape diagram represent in the situation?

---

How does the diagram represent the situation?

**44:**

**$y$ :**

**3:**

**44:**

**$y + 3$ :**

## Word bank

|                |        |         |                    |                     |        |                         |       |          |
|----------------|--------|---------|--------------------|---------------------|--------|-------------------------|-------|----------|
| <b>English</b> | meal   | section | service fee        | sibling             | spend  | takeout                 | total | variable |
| <b>Español</b> | comida | sección | tarifa de servicio | hermana/<br>hermano | gastar | (comida)<br>para llevar | total | variable |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Missing Representations

Irene incorrectly matched these two cards.

What would you tell Irene to convince her that these cards don't match?

The cards do not match because . . .

The tape diagram shows \_\_\_\_\_ parts of \_\_\_\_\_.

The equation shows \_\_\_\_\_ parts of \_\_\_\_\_ plus \_\_\_\_\_.

One group from the card sort did not have a matching equation.

Write an equation that matches.

There are \_\_\_\_\_ parts of \_\_\_\_\_. The total is \_\_\_\_\_.

Equation:

Riku's mom buys 4 cinnamon buns, one per family member. Each person also gets \$2 to spend on a beverage. The bill is \$28 total.

One group from the card sort did not have a matching story.

Write a story that matches.

$x$  represents: \_\_\_\_\_ 2 represents: \_\_\_\_\_ 28 represents: \_\_\_\_\_

Story:

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Which Diagram?

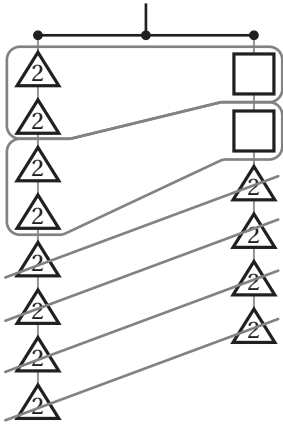
|   | Highlight the key information.  | Draw a picture. | What information is <i>unknown</i> ? |
|---|---|-----------------|--------------------------------------|
| 3 | A postal worker weighs 5 identical cardboard packages and a 3-pound plastic box. Everything weighs a total of 45 pounds.  |                 |                                      |
| 4 | Tyani is making 5 gift bags. Each bag contains $x$ pencils. Tyani adds 3 more pencils to each bag. Altogether, the gift bags contain 45 pencils.                  |                 |                                      |
| 5 | A national park charges \$3 for each car that enters and also a fee for each person that enters. A family of 5 enters the park in 1 car and pays a total of \$45. |                 |                                      |
| 6 | A souvenir store sells hats for the same price. Ava buys 5 hats and pays a total of \$45.   |                 |                                      |

Name: ..... Date: ..... Period: .....

# Unknown Weights

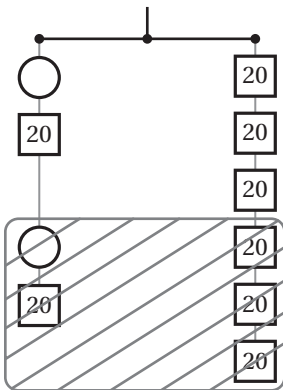
## Adnan's Strategy

Determining the weight of one square:



## Zoe's Strategy

Determining the weight of one circle:



Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Connecting Hangers to Equations

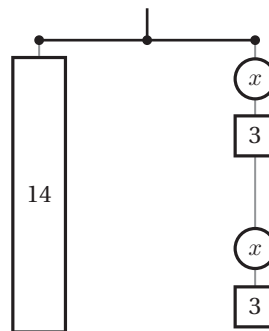
Anand and Darius used equations to determine the value of  $x$  in the previous problem.

Darius wrote the equation  $14 = 2x + 6$ .

Anand wrote the equation  $14 = 2(x + 3)$ .

Who is correct?

Darius    Anand    Both    Neither



Explain your thinking.

The equations are alike because . . .

The equations are different because . . .

Darius' equation is correct because . . .

Anand's equation is correct because . . .

Both equations are correct because . . .

Neither equation is correct because . . .

| Word bank    |                     |
|--------------|---------------------|
| English      | Español             |
| balance      | balancear           |
| equation     | ecuación            |
| group        | grupo               |
| parentheses  | paréntesis          |
| same         | misma / mismo       |
| square       | cuadrado / cuadrada |
| tape diagram | diagrama de cinta   |
| total        | total               |
| triangle     | triángulo           |

Name: ..... Date: ..... Period: .....

# Keep It True

Definition (in your own words)

Process

**solution to an equation**

$$201 = 3x + 180$$

$$x = 7$$

$$201 = 3x + 180$$

$$x = 5$$

Examples

Non-examples

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Step by Step by Step by Step

$$2(x - 9) = 10$$

|       | Amir  | Sadia  |
|-------|---|--|
| Solve | $2(x - 9) = 10$ $2x - 18 = 10$  | $2(x - 9) = 10$ $x - 9 = 5$  |
| Words | <p style="text-align: center;"><b>Expanding First</b></p> <p>Amir used the _____ property to _____ the expression. He _____ each term inside the _____ by the _____, which is ____.</p> | <p style="text-align: center;"><b>Dividing First</b></p> <p>Sadia _____ both sides of the equation by ____ because the parentheses shows _____. To undo the multiplication, we can _____ to keep the equation _____.</p> |

| Word bank |           |             |                        |         |          |             |             |         |
|-----------|-----------|-------------|------------------------|---------|----------|-------------|-------------|---------|
| English   | balance   | coefficient | distributive property  | divide  | equation | multiply    | parentheses | term    |
| Español   | balancear | coeficiente | propiedad distributiva | dividir | ecuación | multiplicar | paréntesis  | término |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Equivalent Expressions

$$-5(8 - 2x)$$

| Zion  | Juliana  | Nickolas  |
|---|--|---|
| $-5(2x - 8)$  | $-40 - 10x$  | $-40 + 2x$  |
| <p><b>Correct thinking:</b></p> <p>Zion correctly . . .</p>                     | <p><b>Correct thinking:</b></p> <p>Juliana correctly . . .</p>                   | <p><b>Correct thinking:</b></p> <p>Nickolas correctly . . .</p>                   |
| <p><b>Mistake:</b></p> <p>Zion's expression is not equivalent because . . .</p> | <p><b>Mistake:</b></p> <p>Juliana expression is not equivalent because . . .</p> | <p><b>Mistake:</b></p> <p>Nickolas expression is not equivalent because . . .</p> |

| Word bank      |       |                       |                        |          |        |             |           |          |
|----------------|-------|-----------------------|------------------------|----------|--------|-------------|-----------|----------|
| <b>English</b> | add   | commutative property  | distributive property  | expand   | factor | multiply    | reorder   | subtract |
| <b>Español</b> | sumar | propiedad conmutativa | propiedad distributiva | expandir | factor | multiplicar | reordenar | restar   |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Collect the Squares

| Caleb's work       | What did Caleb do?                                      | Is his work correct? |
|--------------------|---|----------------------|
| $-2x - 2 + 8x + 8$ | <b>Step 1:</b> Caleb combined two _____ by adding them. |                      |
| $-2x + 8x - 2 + 8$ | <b>Step 2:</b> Caleb grouped the terms by _____ them.   |                      |
| $6x + 6$           | <b>Step 3:</b> Caleb combined _____ terms.              |                      |
| $12x$              | <b>Step 4:</b> Caleb combined _____ terms.              |                      |

| Word bank |       |          |             |            |       |                                 |           |          |
|-----------|-------|----------|-------------|------------|-------|---------------------------------|-----------|----------|
| English   | add   | combine  | equivalent  | expression | group | like (unlike) terms             | reorder   | subtract |
| Español   | sumar | combinar | equivalente | expresión  | grupo | términos similares (diferentes) | reordenar | restar   |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Equation Roundtable

Sort the equations based on your chosen first step.

| Divide | Distribute | Other |
|--------|------------|-------|
|        |            |       |



**Discuss:** Why did you choose this first step?

## Sentence Frames

First, I \_\_\_\_\_.

Second, I \_\_\_\_\_.

Third, I \_\_\_\_\_.

To solve the equation \_\_\_\_\_, I divided first because . . .

To solve the equation \_\_\_\_\_, I distributed first because . . .

The equation \_\_\_\_\_ needs a different first step because . . .

These strategies are alike because . . .

These strategies are different because . . .

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Three Reads

| What information do you know?  | What information is <i>unknown</i> ? |
|--|--------------------------------------|
| <p>Kyrie has already made _____ invitations.</p> <p>Kyrie is making _____ invitations.</p> |                                      |

| Tape diagram or sketch          |       |       |       |       |       |       |       |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Total Invitations Needed: _____ |       |       |       |       |       |       |       |
| Already made                    | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 |
|                                 |       |       |       |       |       |       |       |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Riding the Rides



The symbol  $>$  means greater than.

Other ways to say this are *more than*, *higher*, or *larger*.

**Height Restriction:**



The symbol  $\geq$  means greater than or equal to.

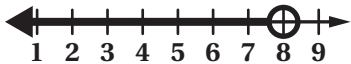
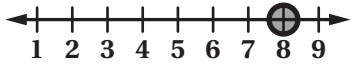
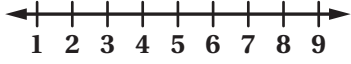
Other ways to say this are *at least* or the *minimum* amount.

**Height Restriction:**

| Word bank |          |                          |         |
|-----------|----------|--------------------------|---------|
| English   | at least | greater than or equal to | minimum |
| Español   | al menos | mayor que o igual a      | mínimo  |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

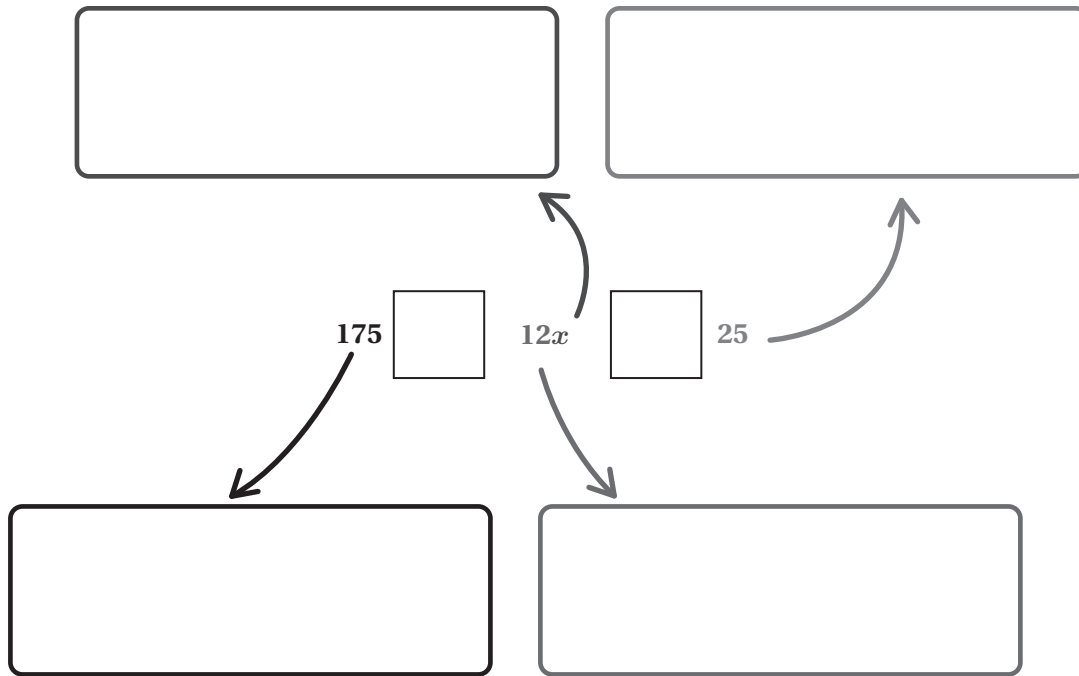
# Unbalanced Hangers

| Inequality / Equation   | Description    | Solution in words    |
|---|----------------|----------------------|
| $3x < 24$<br>    | I notice . . . | $x$ _____ 8          |
| $3x = 24$<br>    | I notice. . .  | $x$ _____ 8          |
| $3x \leq 24$<br> | I think. . .   | $x$ _____<br>_____ 8 |

| Word bank             |                   |
|-----------------------|-------------------|
| English               | Español           |
| closed circle         | círculo cerrado   |
| equal to              | igual a           |
| equation              | ecuación          |
| inequality            | desigualdad       |
| less than             | menos que         |
| less than or equal to | menos o igual que |
| open circle           | círculo abierto   |
| shaded                | sombreado         |
| solution              | solución          |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Bao's Budgeting



Initial amount of money  
in Bao's account

Amount of money Bao  
withdraws each month

Amount of money in account  
a year from now

Amount of months Bao  
withdraws money

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Help Shira and Chloe

Consider Chloe's work.

- Identify any correct thinking.
- Identify the mistake Chloe made.

| Correct thinking   | Mistake  |
|--|--|
| <p>Chloe correctly . . .</p> <p>I know because . . .</p> | <p>Chloe made a mistake when she . . .</p> <p>I know because . . .</p> |

| Word bank |         |             |          |          |           |
|-----------|---------|-------------|----------|----------|-----------|
| English   | graph   | inequality  | solution | solve    | true      |
| Español   | grafico | desigualdad | solución | resolver | verdadero |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Solve It!

| Situation | What I know after . . . |                        |
|-----------|-------------------------|------------------------|
|           | Reading the problem     | Solving the inequality |
|           |                         |                        |
|           |                         |                        |

### Sentence frames:

This problem is about . . .

The most important information to know in this situation is . . .

The first thing I would do to solve the inequality is . . .

The variable represents . . .

In this situation, \_\_\_\_\_ represents . . .  
(number)

This solution means . . .

# Math Habits of Mind: Hábitos mentales matemáticos

I can slow down and first make sense of a challenging problem before trying to solve it.

Puedo ir más despacio y primero comprender un problema difícil antes de intentar resolverlo.

I can represent real-world problems using equations and inequalities and interpret their solutions within the context of the problem.

Puedo representar problemas del mundo real usando ecuaciones y desigualdades e interpretar sus soluciones dentro del contexto del problema

I can justify my thinking and ask questions to help me understand the thinking of others.

Puedo justificar mi razonamiento y hacer preguntas que me ayuden a comprender el razonamiento de los demás.

I can apply the math that I know to solve real-world problems, make assumptions and revise my thinking as needed.

Puedo poner en práctica mis conocimientos matemáticos para resolver problemas del mundo real, formulando hipótesis y modificando mi razonamiento cuando sea necesario.

I can select an appropriate tool to help me solve problems.

Puedo seleccionar una herramienta adecuada que me ayude a resolver problemas.

I can communicate my thinking and solutions clearly to others.

Puedo comunicar mi razonamiento y soluciones claramente a los demás.

I can look for structure or patterns to help me solve problems.

Puedo buscar estructuras o patrones que me ayuden a resolver problemas.

I can look for repeated calculations and other repeated steps to make generalizations.

Puedo buscar cálculos y otros pasos repetidos para hacer generalizaciones.

## Questions and Sentence Frames

Why did you choose this habit of mind?

Did you choose any others? Why or why not?

What part of the Activity reminded you of this habit of mind?

Can you tell me more?

I chose this habit of mind because . . .

I also chose \_\_\_\_\_ because . . .

In the Activity, I . . .

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Pinwheels

| Callen | Duri |
|--------|------|
|        |      |

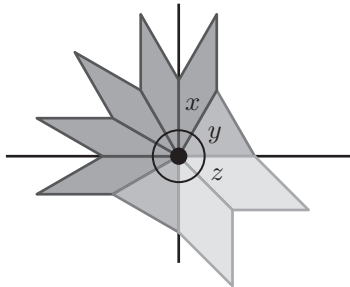
|   |   |
|---|---|
| <p><b>Compare:</b> How are these strategies different? <i>Comparar:</i> ¿En qué se diferencian estas estrategias?</p> | <p><b>Connect:</b> How are these strategies alike? <i>Conectar:</i> ¿En qué se parecen estas estrategias?</p> |
| <br><br><br>  | <br><br><br>  |

| Word bank      |          |        |         |        |          |          |       |         |
|----------------|----------|--------|---------|--------|----------|----------|-------|---------|
| <b>English</b> | addition | angle  | circle  | count  | division | familiar | right | vertex  |
| <b>Español</b> | suma     | ángulo | círculo | contar | división | familiar | recto | vértice |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

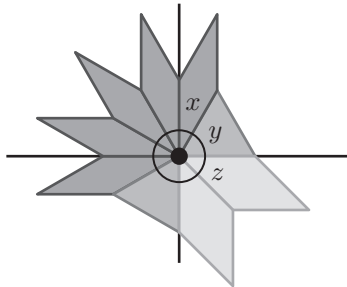
# Relationships and Equations

$$3x = 90$$



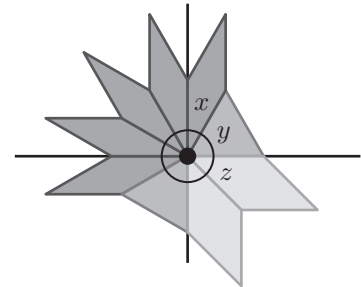
$3x = 90$  is \_\_\_\_\_ because ...  
(true / false)

$$x + y = 90$$



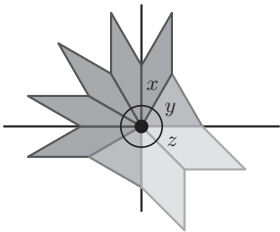
$x + y = 90$  is \_\_\_\_\_ because ...  
(true / false)

$$5x = 180$$



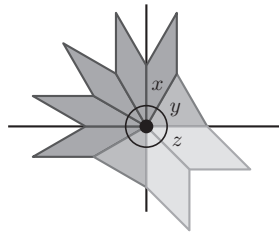
$5x = 180$  is \_\_\_\_\_ because ...  
(true / false)

$$x + y + 2z = 180$$



$x + y + 2z = 180$  is \_\_\_\_\_  
because ... (true / false)

$$x + y + z = 360$$



$x + y + z = 360$  is \_\_\_\_\_  
because ... (true / false)

## Word bank

| English        | Español                |
|----------------|------------------------|
| circle         | círculo                |
| complementary  | complementario         |
| half a circle  | la mitad de un círculo |
| right angle    | ángulo recto           |
| straight angle | ángulo llano           |
| supplementary  | suplementario          |
| vertex         | vértice                |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Vertical Angle Puzzle

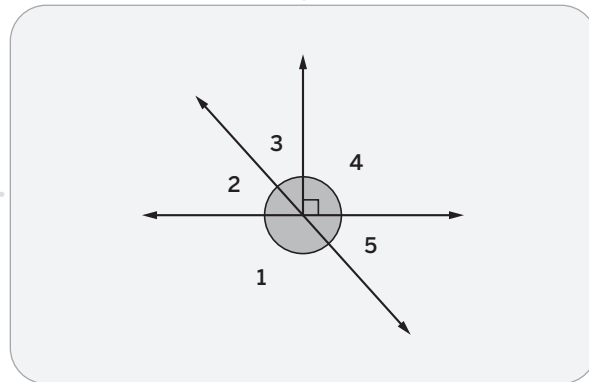
1. Define **vertical angles** in your own words: \_\_\_\_\_
2. Determine whether each set of angles is a pair of vertical angles. Circle *true* or *false*.
3. Explain your thinking.

**1 and 4**

Vertical angles    yes    no  
Explanation:

**2 and 3**

Vertical angles    yes    no  
Explanation:



Vertical angles    yes    no  
Explanation:

Vertical angles    yes    no  
Explanation:

**2 and 5**

**3 and 5**

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Missing Angle Measures

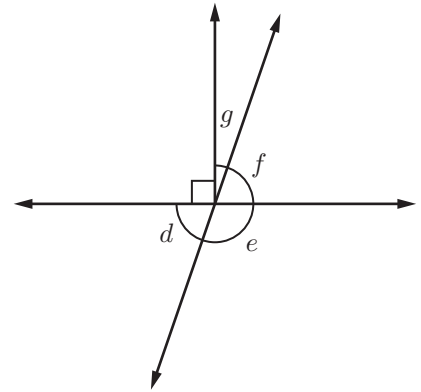
Here is a challenge card from Activity 1.

$d = \underline{\hspace{2cm}}$

$e = \underline{\hspace{2cm}}$

$f = 71^\circ$

$g = \underline{\hspace{2cm}}$



Use the given angle measure and the angle relationships you have identified to determine the missing angle measures.

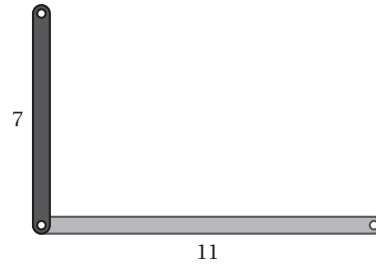
| What angle relationship do you see? | What does this tell you about the angle pair? | Show your work |
|-------------------------------------|---|----------------|
| $f$ and $g$ are _____ angles.       |   |                |
| $f$ and $e$ are _____ angles.       |   |                |
| $f$ and $d$ are _____ angles.       |   |                |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Not Too Long, Not Too Short

To make a triangle . . .

- Diamond thinks the third side is 19 units long.
- Mohamed thinks that a third side of 19 units is too long.



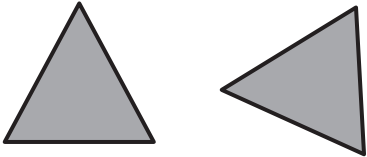

Do you agree with Diamond or Mohamed? Use pictures, diagrams, words, and/or numbers to support your thinking.

Be prepared to defend your thinking.

| Decide ( <i>decidir</i> ) | Defend ( <i>defender</i> )          |
|---------------------------|-------------------------------------|
| I agree with . . . _____. | The claim makes sense because . . . |

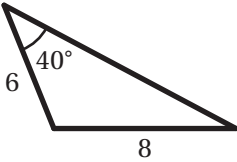
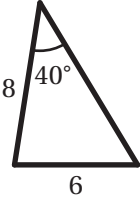
| Word bank      |          |           |          |           |             |
|----------------|----------|-----------|----------|-----------|-------------|
| <b>English</b> | connect  | greater   | length   | long      | measurement |
| <b>Español</b> | conectar | mayor que | longitud | largo     | medición    |
| <b>English</b> | segment  | short     | sum      | triangle  | units       |
| <b>Español</b> | segmento | corto     | suma     | triángulo | unidades    |

# Uniqueness

| Definition (in your own words)  | Facts   |
|---|---|
| <b><u>identical</u></b><br><b><u>copies</u></b>                                     |   |
|  |  |
| Examples  | Non-examples  |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Side Angle Side

| Triangle   | Questions to Guide Writing  | Answers |
|--|---|---------|
|   | <p>What is the measure of the side length <i>next</i> to the given angle?</p> <p>What is the measure of the given angle?</p> <p>What is the <i>location</i> of the other given length?</p>  |         |
|  | <p>What is the measure of the side length <i>next</i> to the given angle?</p> <p>What is the measure of the given angle?</p> <p>What is the measure of the <i>other</i> given length?</p> <p>What is the <i>location</i> of the other given length?</p> |         |

Isabelle claims these triangles are identical copies and belong in the same group.

Isabelle's claim is \_\_\_\_\_ because . . .  
(correct / incorrect)

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

## Drawing Challenges

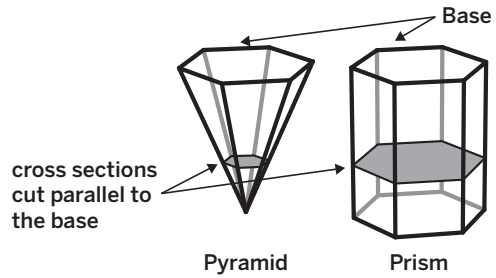
|  |  |
|--|--|
| <b>6. Two 3-centimeter sides and one <math>50^\circ</math> angle.</b>  | <p>I can make _____ unique triangle(s) because . . .</p> <p>(Think about: <i>Where can you put the angle in relation to the 3-centimeter sides? How do the words between and opposite help you?</i>)</p> |
| <b>7. Two 3-centimeter sides with a <math>50^\circ</math> angle between them.</b>                                | <p>I can make _____ unique triangle(s) because. . .</p> <p>(Think about: <i>Where can you put the angle in relation to the 3-centimeter sides? How do the words between and opposite help you?</i>)</p>  |
| <b>8. One <math>30^\circ</math> angle, one <math>60^\circ</math> angle, and one <math>90^\circ</math> angle.</b> | <p>I can make _____ unique triangle(s) because. . .</p> <p>(Think about: <i>Where can you put the three angles? What do you know about the sides?</i>)</p>   |
| <b>9. One <math>60^\circ</math> angle, one <math>90^\circ</math> angle, and one 3-centimeter side.</b>           | <p>I can make _____ unique triangle(s) because. . .</p> <p>(Think about: <i>Where can you put the 3-centimeter side in relation to the angles? How do the words between and opposite help you?</i>)</p>  |
| <b>10. Two <math>90^\circ</math> angles and one 3-centimeter side.</b>   | <p>I can make _____ unique triangle(s) because. . .</p> <p>(Think about: <i>What shapes have at least two right angles?</i>)</p>   |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

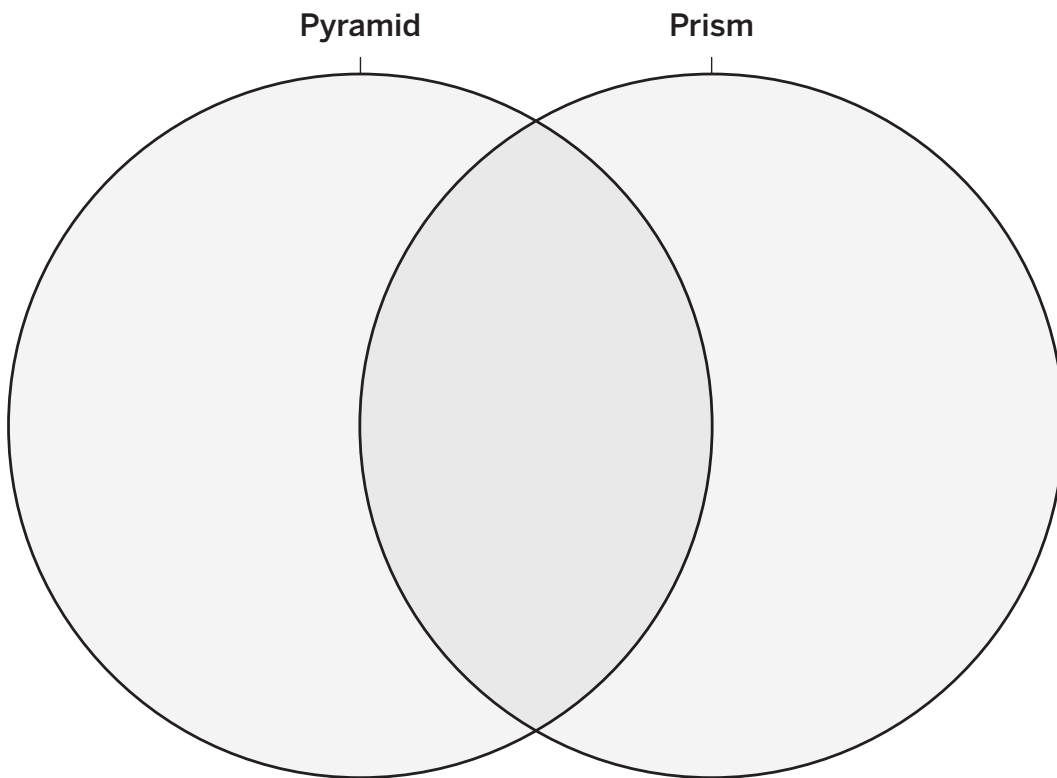
# Prisms and Pyramids

Here is a pyramid and a prism with identical hexagon bases.

Consider the cross sections that will be created if you cut the solids parallel to their bases.



Create a Venn diagram to compare and contrast their cross sections.

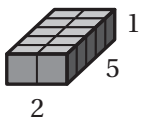
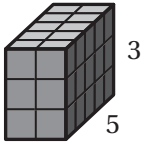
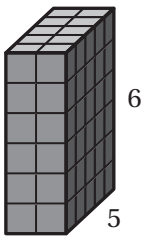


Compare your noticings with a partner and update your Venn diagram to be stronger and clearer.

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Volume of Prisms

Consider each of the three rectangular prisms: *A*, *B*, and *C*. They all have the same base. Complete the statements and determine the volume of each prism.

| Prism   | Explain your thinking  | Show your thinking                          | Volume (cubic units) |
|---|--|---|----------------------|
|  <p>2<br/>5<br/><i>A</i></p>   | <p>The area of the base is ___ square units.</p> <p>The height of the prism is ___ unit(s).</p> <p>I can calculate the volume by . . .</p> | <p><i>Area</i> =</p> <p><i>Volume</i> =</p> |                      |
|  <p>2<br/>5<br/><i>B</i></p> | <p>The area of the base is ___ square units.</p> <p>The height of the prism is ___ unit(s).</p> <p>I can calculate the volume by . . .</p> | <p><i>Area</i> =</p> <p><i>Volume</i> =</p> |                      |
|  <p>2<br/>5<br/><i>C</i></p> | <p>The area of the base is ___ square units.</p> <p>The height of the prism is ___ unit(s).</p> <p>I can calculate the volume by . . .</p> | <p><i>Area</i> =</p> <p><i>Volume</i> =</p> |                      |

What is the relationship between the volume of a prism, the area of its base, and its height?

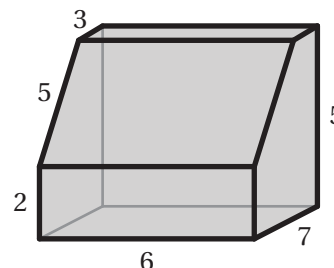
Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Prisms With Other Bases

1. Decide if the student is correct.
2. Show or explain your thinking in writing. Use pictures, diagrams, words, and/or numbers to support your thinking.
3. Be prepared to defend your position.

Jaylin says the volume of this prism is  $29 \cdot 5$ , 145 cubic units.

Kimaya claims that it's  $29 \cdot 6$  or 174 cubic units.



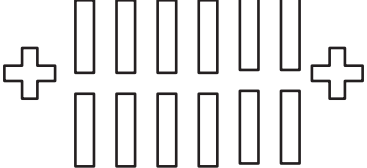
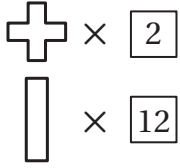
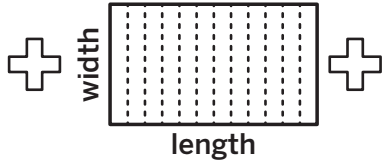
|  |  |
|--|--|
| Jaylin is _____<br><i>(correct / incorrect)</i><br>because . . . |  |
| Kimaya is _____<br><i>(correct / incorrect)</i><br>because . . . |  |

| Word bank      |      |      |        |           |        |         |
|----------------|------|------|--------|-----------|--------|---------|
| <b>English</b> | area | base | height | pentagon  | prism  | volume  |
| <b>Español</b> | área | base | altura | pentágono | prisma | volumen |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Examining Different Strategies

Use the images and word bank to describe each student's strategy in your own words in the second row of the table.

| Amoli   | Nyanna  | Miko  |
|---|---|---|
|  |  |  |
| <br><br><br><br><br><br><br><br><br><br>  | <br><br><br><br><br><br><br><br><br><br>  | <br><br><br><br><br><br><br><br><br><br>  |

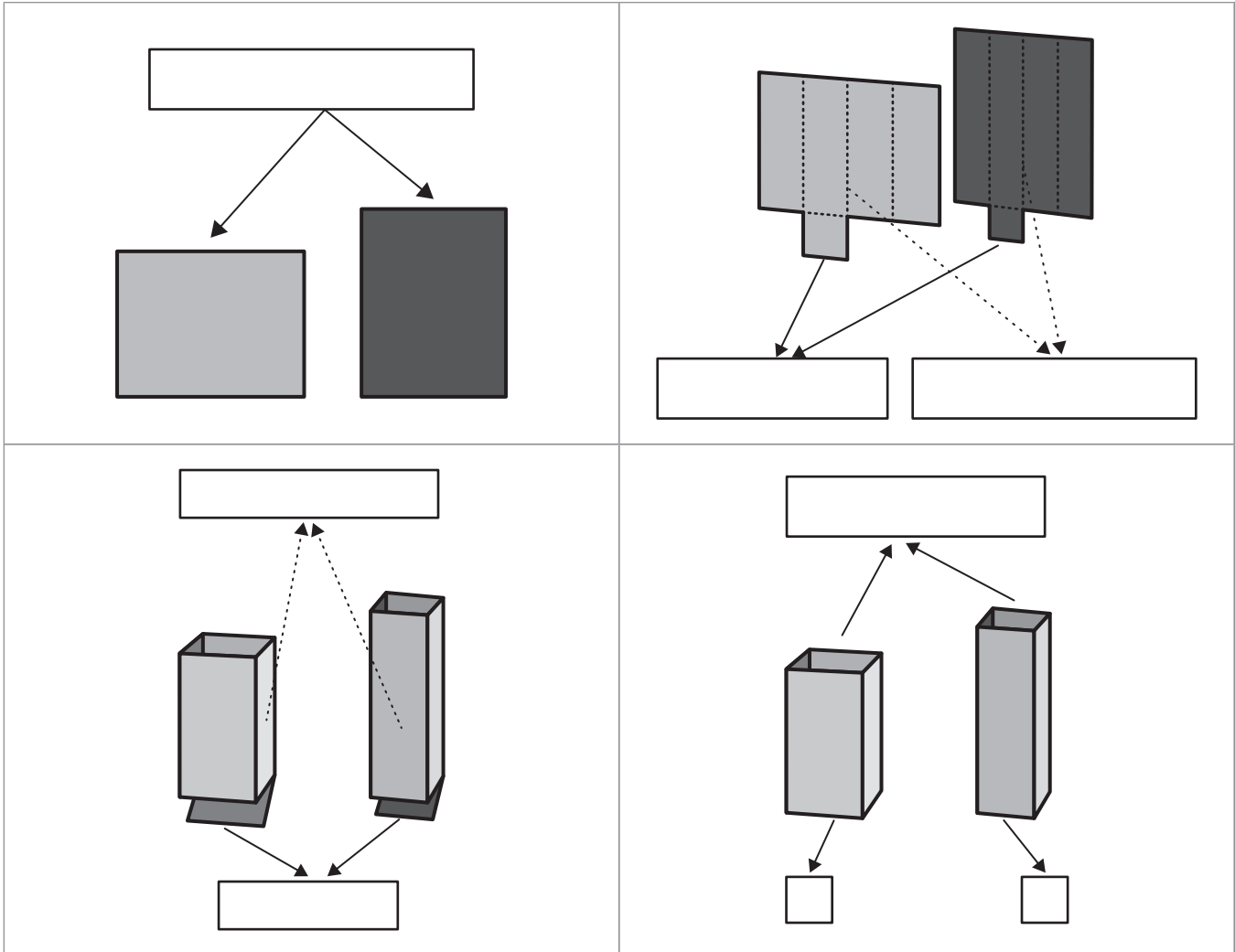
How are the strategies alike (*similar*)? How are they different (*diferente*)?

| Word bank |         |      |        |             |      |              |            |
|-----------|---------|------|--------|-------------|------|--------------|------------|
| English   | add     | area | fold   | multiply    | net  | plus sign    | rectangle  |
| Español   | agregar | área | doblar | multiplicar | neto | signo de más | rectángulo |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Which Uses More Paper?

Label each diagram. Then use the completed diagrams to write a response to the prompt. Underline or highlight each word from the diagram as you use it in your response.



Which container do you think uses more paper?

I think \_\_\_\_\_ because . . .  
(Container A / Container B / they use the same amount)

# Words With Multiple Meanings

Draw a picture or write in words to show one or more math meanings and another meaning of the term.

**Math meaning(s)**

event

**Another meaning**

# Words With Multiple Meanings

Draw a picture or write in words to show one or more math meanings and another meaning of the term.

**Math meaning(s)**

mean

**Another meaning**

# Words With Multiple Meanings

Draw a picture or write in words to show one or more math meanings and another meaning of the term.

**Math meaning(s)**

median

**Another meaning**

# Math Habits of Mind: Hábitos mentales matemáticos

I can slow down and first make sense of a challenging problem before trying to solve it.

Puedo ir más despacio y primero comprender un problema difícil antes de intentar resolverlo.

I can represent real-world problems using equations and inequalities and interpret their solutions within the context of the problem.

Puedo representar problemas del mundo real usando ecuaciones y desigualdades e interpretar sus soluciones dentro del contexto del problema.

I can justify my thinking and ask questions to help me understand the thinking of others.

Puedo justificar mi razonamiento y hacer preguntas que me ayuden a comprender el razonamiento de los demás.

I can apply the math that I know to solve real-world problems, make assumptions and revise my thinking as needed.

Puedo poner en práctica mis conocimientos matemáticos para resolver problemas del mundo real, formulando hipótesis y modificando mi razonamiento según sea necesario.

I can select an appropriate tool to help me solve problems.

Puedo seleccionar una herramienta adecuada que me ayude a resolver problemas.

I can communicate my thinking and solutions clearly to others.

Puedo comunicar mi razonamiento y soluciones claramente a los demás.

I can look for structure or patterns to help me solve problems.

Puedo buscar estructuras o patrones que me ayuden a resolver problemas.

I can look for repeated calculations and other repeated steps to make generalizations.

Puedo buscar cálculos y otros pasos repetidos para hacer generalizaciones.

Name: ..... Date: ..... Period: .....

## Questions and Sentence Frames

Why did you choose this habit of mind?

Did you choose any others? Why or why not?

What part of the Activity reminded you of this habit of mind?

Can you tell me more?

I chose this habit of mind because . . .

I also chose \_\_\_\_\_ because . . .




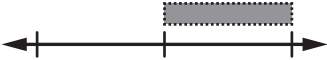

In the Activity, I . . .

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Experiment Stations

Use the image in the visual column to make meaning for the terms: *impossible*, *unlikely*, *equally likely as not*, *likely*, and *certain* by matching using the choices. Then write the meaning of each in your own words.

- a. 50%
- b. 0%
- c. More than 0%, less than 50%
- d. 100%
- e. More than 50%, less than 100%

|                       | Visual  | Description | In your own words |
|-----------------------|---|-------------|-------------------|
| impossible            |    |             |                   |
| unlikely              |   |             |                   |
| equally likely as not |  |             |                   |
| likely                |  |             |                   |
| certain               |  |             |                   |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Prob-bear-ly Mismatched

Complete the table if it helps with your thinking.

**Bear**



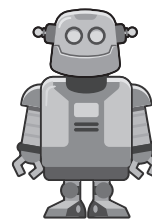
**Dinosaur**



**Scarecrow**



**Robot**



|                       |                           |                            |  |
|-----------------------|---------------------------|----------------------------|--|
| bear + bear body      | dinosaur + dinosaur body  | scarecrow + scarecrow body |  |
| bear + dinosaur body  | dinosaur + bear body      | _____ + _____              |  |
| bear + scarecrow body | dinosaur + scarecrow body |                            |  |
| bear + robot body     | dinosaur + robot body     |                            |  |

How many different characters are in this randomizer's sample space?

Explain your thinking.

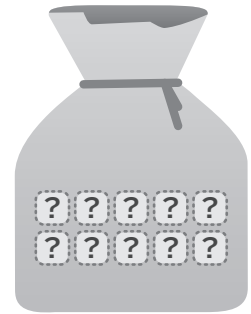
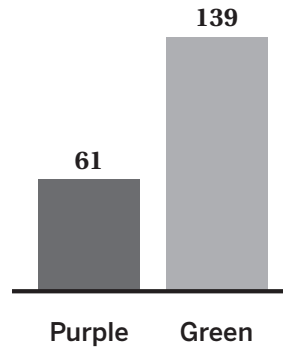
| Word bank |            |              |                |
|-----------|------------|--------------|----------------|
| English   | Español    | English      | Español        |
| bear      | oso        | randomizer   | aleatorizador  |
| body      | cuerpo     | robot        | robot          |
| character | personaje  | sample space | robot          |
| different | diferente  | scarecrow    | espantapájaros |
| dinosaur  | dinosaurio |              |                |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# What's in the Bag?

How many of the 10 blocks do you think are green?

I think \_\_\_\_ of the 10 blocks are green because . . .



| Nasir's Work                             | What did Nasir do? | Explanation |
|--|--------------------|-------------|
| $\frac{139}{200} = \frac{g}{10}$         |                    |             |
| $0.695 = \frac{g}{10}$                   |                    |             |
| $10 \cdot 0.695 = \frac{g}{10} \cdot 10$ |                    |             |
| $7 \approx g$                            |                    |             |

Use these statements if it helps with your thinking.

|         |                            |                                  |                          |
|---------|----------------------------|----------------------------------|--------------------------|
| Divided | Rounded the final solution | Multiplied to solve the equation | Set up equivalent ratios |
|---------|----------------------------|----------------------------------|--------------------------|

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Graphs of Repeated Experiments


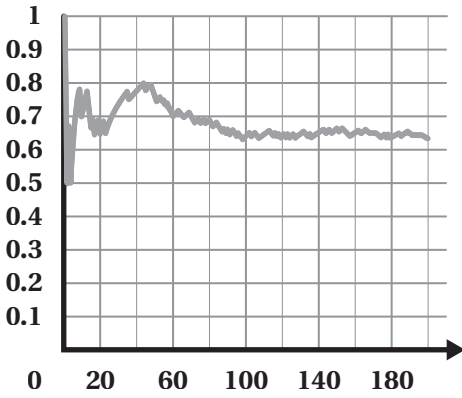
Study the graph of the results from Amari and Nathan's spinner. Use the questions in the middle column to help you with your thinking.

|                  | Questions to Guide Writing   | Your Written Response |
|------------------|--|-----------------------|
| <b>Alike</b>     | <ul style="list-style-type: none"><li>• What numbers on the <math>x</math>-axis do the graphs start at? End?</li><li>• What do these numbers represent?</li><li>• What do the graphs look like in the beginning? Toward the end?</li><li>• After 200 spins, what number do the graphs begin to reach?</li><li>• What does that number represent?</li></ul> |                       |
| <b>Different</b> | <ul style="list-style-type: none"><li>• Do all the graphs look the same?</li><li>• Do the graphs overlap the entire time?</li><li>• Do all the graphs end near the same place?</li></ul>   |                       |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Fair or Not?

Complete the table and use the information from the table to write a response to the prompt.

|  |   |
|--|---|
| <p>Image of fair coin</p>  |   |
| <p>Description of a fair coin</p>  | <p>Landing heads up or tails up is <i>equally likely</i>.</p>   |
| <p>Description of an unfair coin</p>   | <p>Landing _____ up or _____ up is not equally likely.</p>  |
| <p>Probability of landing heads up</p>   |   |
| <p>Probability of landing tails up</p>   |   |
| <p>Draw a dotted line on the graph to show the probability of a coin after more flips.</p> | <p style="text-align: center;"><b>Fraction of Flips That Land Heads Up</b></p>  |

Based on these results, is the coin fair?

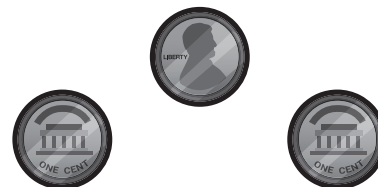
I think the coin is \_\_\_\_\_ because as the number of flips increased . . .  
(fair/unfair)

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Coins, Lists, and Tree Diagrams

Here's a twist on the original game.

- There are 3 coins to flip.
- Player 1 wins if the coins land all heads up or all tails up.
- Otherwise, Player 2 wins.



After completing each screen, answer whether you think the game is fair. Then explain your thinking, making your response stronger and clearer each time.

|          | Do you think the game is fair? | Description  |
|----------|--------------------------------|--|
| Screen 4 |                                | I think the game _____ fair because . . .<br>(is / is not) |
| Screen 6 |                                | I think the game _____ fair because . . .<br>(is / is not) |

Did your response change throughout this Activity?

How did the game, organized list, and tree diagram help you determine whether the game is fair?

| Word bank |           |          |        |       |              |        |
|-----------|-----------|----------|--------|-------|--------------|--------|
| English   | compound  | diagram  | event  | list  | probability  | rules  |
| Español   | compuesto | diagrama | evento | lista | probabilidad | reglas |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Make a Simulation

Consider the weather forecast for each day. Describe the situation. Then describe and make a simulation to help estimate the probability that it rains at least once on Ivan's vacation.



|                          |  |  |  |
|--------------------------|--|--|--|
| Describe the situation   | The probability that it rains is ____%. This is the same as the fraction ____.   | The probability that it rains is ____%. This is the same as the fraction ____. | The probability that it rains is ____%. This is the same as the fraction ____. |
| Describe your simulation | I can use...<br>____ rain block<br>____ sunny blocks<br>because...   | I can use...<br>____ rain blocks<br>____ sunny blocks<br>because...            | I can use...<br>____ rain blocks<br>____ sunny blocks<br>because...            |
| Estimate the probability | <p>The probability that it rains at least once on Ivan's vacation is ____% because...</p> <p>Designing and using a simulation helped me determine the probability because...</p> |  |  |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Design a Simulation & Perform a Simulation

Situation: \_\_\_\_\_

|   |  |
|---|--|
| <p><b>What information do you know?</b></p>   | <ul style="list-style-type: none"> <li>• I know . . .</li> <li>• I know . . .</li> <li>• I know . . .</li> <li>• I know . . .</li> </ul>   |
| <p><b>What are you trying to determine?</b></p>                                     | <ul style="list-style-type: none"> <li>• I am trying to determine . . .</li> </ul>   |
| <p><b>What simulation could you design to help you?</b></p>                         | <ul style="list-style-type: none"> <li>• I would use a cube / coin / spinner / bag.</li> <li>• Using this, I will create the simulation by . . .</li> <br/> <li>• Here is a sketch of my design:</li> <br/> <li>• To perform the simulation, I will . . .</li> </ul> |
| <p><b>What happened when you performed the simulation?</b></p>                      | <ul style="list-style-type: none"> <li>• When I performed the simulation, I found . . .</li> </ul>   |
| <p><b>How do these results help you answer the question for your situation?</b></p> | <ul style="list-style-type: none"> <li>• My simulation tells me that . . .</li> <li>• This helps me answer my question because . . .</li> </ul>  |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

## Word Banks

### Situation A: Animal Hospital

| Word bank |        |          |                  |         |
|-----------|--------|----------|------------------|---------|
| English   | animal | hospital | overnight        | typical |
| Español   | animal | hospital | durante la noche | típica  |

### Situation B: DinoSocks

| Word bank |         |         |          |         |            |
|-----------|---------|---------|----------|---------|------------|
| English   | offer   | order   | purchase | shoes   | socks      |
| Español   | ofrecer | ordenar | comprar  | zapatos | calcetines |

### Situation C: Blood Types

| Word bank |                |        |          |
|-----------|----------------|--------|----------|
| English   | blood type     | donate | special  |
| Español   | tipo de sangre | donar  | especial |

### Situation D: Power the Flashlight

| Word bank |         |         |        |                       |            |           |
|-----------|---------|---------|--------|-----------------------|------------|-----------|
| English   | battery | camp    | cheap  | dud (doesn't work)    | flashlight | work      |
| Español   | batería | acampar | barato | fracaso (no funciona) | linterna   | funcionar |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Decisions

How should Marco get to school? Circle your answer.



Why should Marco use this mode of transportation to get to school? Provide two different pieces of evidence to support your claim. Use the word bank to help with your thinking.

• First, I recommend Marco use the \_\_\_\_\_ to get to school because . . .

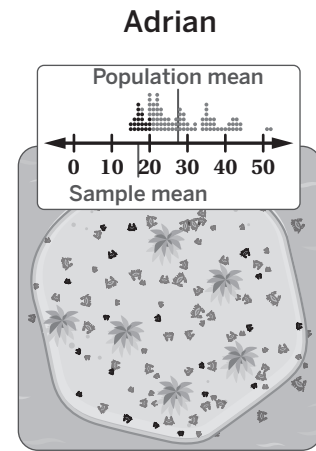
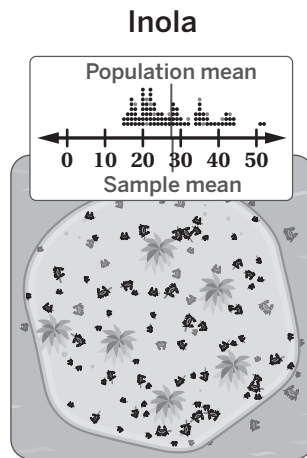
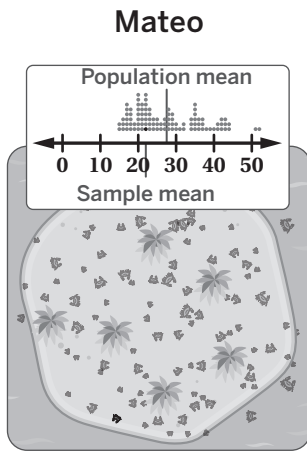
• Second, I recommend Marco use the \_\_\_\_\_ to get to school because . . .

| Word bank |                        |         |             |        |
|-----------|------------------------|---------|-------------|--------|
| English   | bicycle                | car     | consistent  | minute |
| Español   | bicicleta              | auto    | consistente | minuto |
| English   | mode of transportation | school  | traffic     | train  |
| Español   | modo de transporte     | escuela | tráfico     | tren   |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

## Explore More Samples

Mateo, Inola, and Adrian decided to collect samples of the crabs. Select a sample and share your responses with a partner. Then, discuss the third sample together with your partner.



|   |  |  |
|---|--|--|
| <p>What did Mateo do well?<br/>I agree / I like that he ...</p>       | <p>What did Inola do well?<br/>I agree / I like that she ...</p>       | <p>What did Adrian do well?<br/>I agree / I like that he ...</p>       |
| <p>What advice do you have for Mateo?<br/>I recommend that he ...</p> | <p>What advice do you have for Inola?<br/>I recommend that she ...</p> | <p>What advice do you have for Adrian?<br/>I recommend that he ...</p> |

| Word bank |            |           |             |         |             |
|-----------|------------|-----------|-------------|---------|-------------|
| English   | close      | crabs     | larger      | mean    | larger      |
| Español   | cerca      | cangrejos | más grande  | media   | más grande  |
| English   | population | random    | represent   | sample  | smaller     |
| Español   | población  | aleatorio | representar | muestra | más pequeño |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Graduation Rates

This sample claims \_\_\_ % of people have graduated high school in the \_\_\_\_\_.

Does this seem reasonable? Yes / No

The sample included . . .

\_\_\_ of the \_\_\_\_\_ students said they graduated high school.

What do you notice about the claim and the sample?

Des-News Online

**0% of people have graduated high school in the United States!**

---

We sampled 30 middle school students in the United States and 0 said they graduated high school.

Is this a representative sample of the population? Yes / No

This sample claims \_\_\_\_\_ % of people have graduated high school in the \_\_\_\_\_.

Does this seem reasonable? Yes / No

The sample included . . .

\_\_\_\_\_ of the \_\_\_\_\_ students said they graduated high school.

What do you notice about the claim and the sample?

Des-News Online

**90% of people have graduated high school in the United States!**

---

We sampled 57,000 random census surveys from Americans 25 and older. 51,300 reported graduating high school.

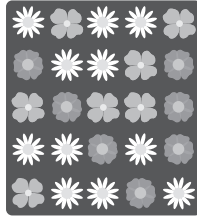
Is this a representative sample of the population? Yes / No

Which claim do you think is most **representative** of the number of people who have graduated high school in the United States?

- A. 0% of people                      B. 90% of people

Explain your thinking.

# Estimating the Marigolds



**Eliza**

Marigolds are 28% of the sample.

Marigolds are probably 28% of the garden.

28% of 600 is 168 marigolds.

**Javier**

In the sample, 7 of 25 are marigolds.

| Marigolds | Total |
|-----------|-------|
| 7         | 25    |
| 168       | 600   |

$\cdot 24$  (arrow pointing to 168)       $\cdot 24$  (arrow pointing to 600)

|   |   |
|---|---|
| <p><b>Compare:</b> How are these strategies different?<br/><i>Comparar: ¿En qué se diferencian estas estrategias?</i></p> | <p><b>Connect:</b> How are these strategies alike?<br/><i>Conectar: ¿En qué se parecen estas estrategias?</i></p> |
|   |   |

| Word bank      |           |                      |        |            |            |            |                           |         |
|----------------|-----------|----------------------|--------|------------|------------|------------|---------------------------|---------|
| <b>English</b> | calculate | equivalent ratios    | garden | marigolds  | percentage | population | proportional reasoning    | sample  |
| <b>Español</b> | calcular  | razones equivalentes | jardín | caléndulas | porcentaje | población  | razonamiento proporcional | muestra |

# Gathering Samples

**I think the median represents . . .**

**Our class definition:**

**Median**

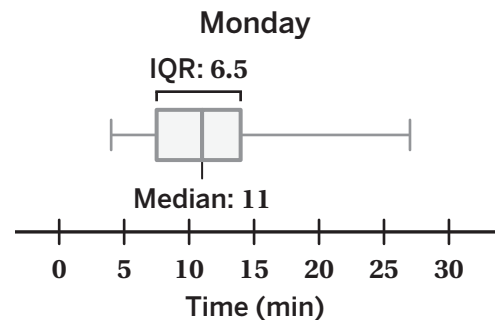
**I think the interquartile range (IQR) represents. . .**

**Our class definition:**

**Interquartile Range (IQR)**

• In this context, the median of 11 tells me that . . .

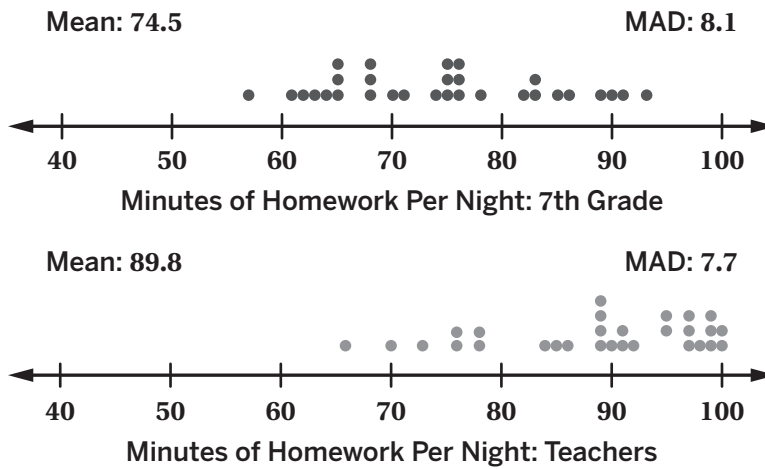
• In this context, the interquartile range of 6.5 tells me that . . .



| Word bank      |      |       |           |        |         |         |             |
|----------------|------|-------|-----------|--------|---------|---------|-------------|
| <b>English</b> | car  | half  | interval  | middle | minutes | school  | students    |
| <b>Español</b> | auto | mitad | intervalo | medio  | minutos | escuela | estudiantes |

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Homework Headline



|   |   |
|---|---|
| Calculation of how many MADs apart the means are  |   |
| What your calculation tells you (circle one)  | Big Difference      Small Difference  |
| Visual comparison of dot plots<br><i>(Where do you see the points? Left? Middle? Right? Is there a lot of overlap?)</i> |   |
| What your visual comparison tells you (circle one)  | Big Difference      Small Difference  |
| Headline (circle one)   | <p>“Survey Finds That Teachers Do a Lot More School Work Than Students After School!”</p> <p>“Survey Finds That Teachers and Students Spend the Same Time Doing Work After School!”</p> |

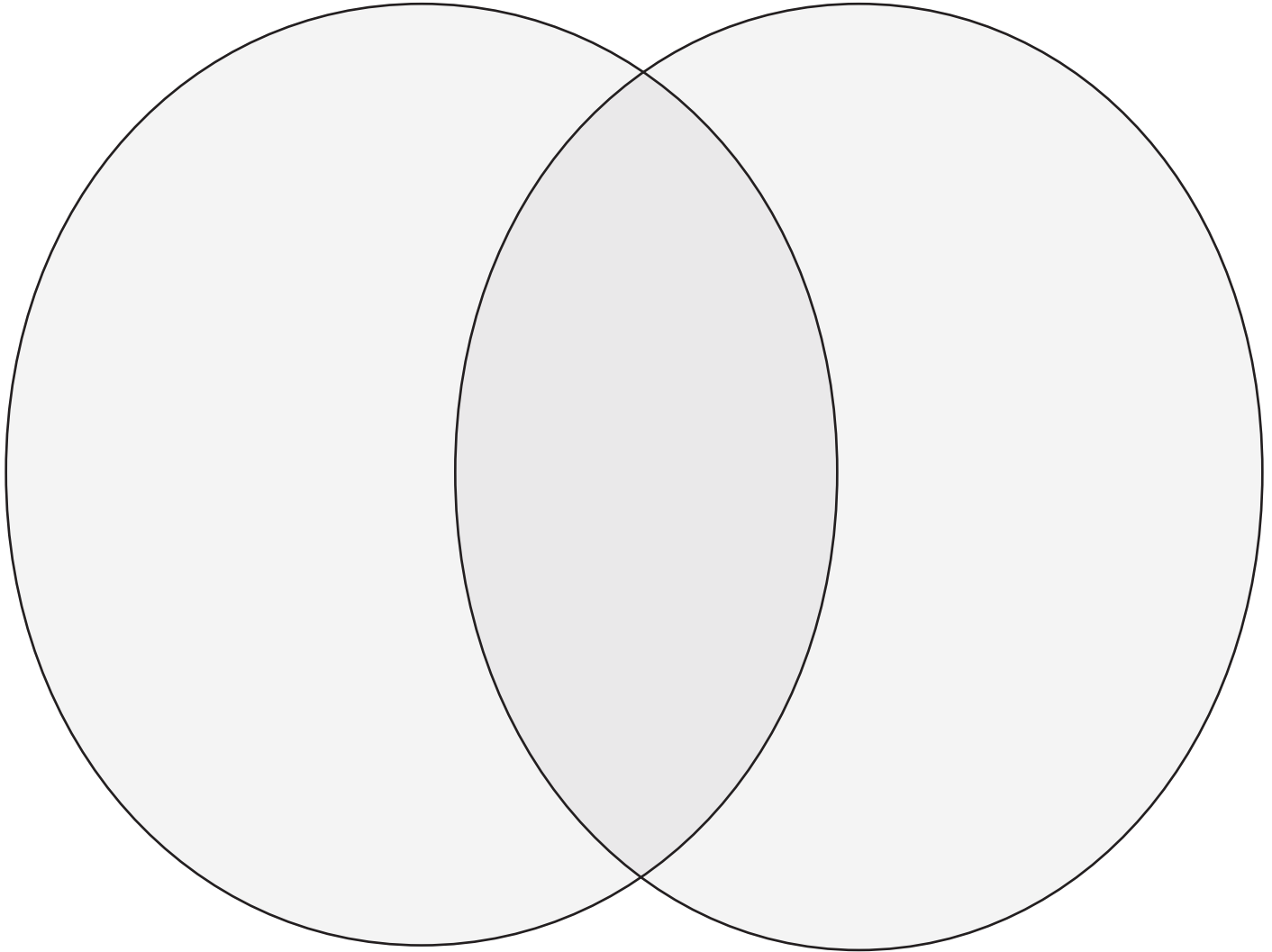
How does the data representing the teachers’ homework time compare to the 7th graders’ data? Use your calculation and visual comparison to support your thinking.

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

# Comparing Locations

8b. Select two locations and collect your samples. Compare and connect using the Venn diagram.

**Location 1:** \_\_\_\_\_ **Location 1:** \_\_\_\_\_



| Word bank      |           |            |               |                   |         |          |           |           |
|----------------|-----------|------------|---------------|-------------------|---------|----------|-----------|-----------|
| <b>English</b> | air       | airport    | city          | desert            | factory | fire     | freeway   | hazardous |
| <b>Español</b> | aire      | aeropuerto | ciudad        | desierto          | fábrica | incendio | autopista | peligroso |
| <b>English</b> | healthy   | moderate   | pollution     | power plant       | quality | sensor   | unhealthy | wooded    |
| <b>Español</b> | saludable | moderado   | contaminación | central eléctrica | calidad | sensor   | insalubre | boscosa   |