# Today's Materials:

- calculator
- pencil
- notebook
- glue
- highlighter

# Two Equations for Each Relationship

## Lesson 5

| | |
|---|---|
| CCSS Standards: Building on | • 5.OA.B |
| CCSS Standards: Addressing | • 7.RP.A<br>• 7.RP.A.2<br>• 7.RP.A.2.b<br>• 7.RP.A.2.c |

Let's investigate the **equations that** represent **proportional relationships!**

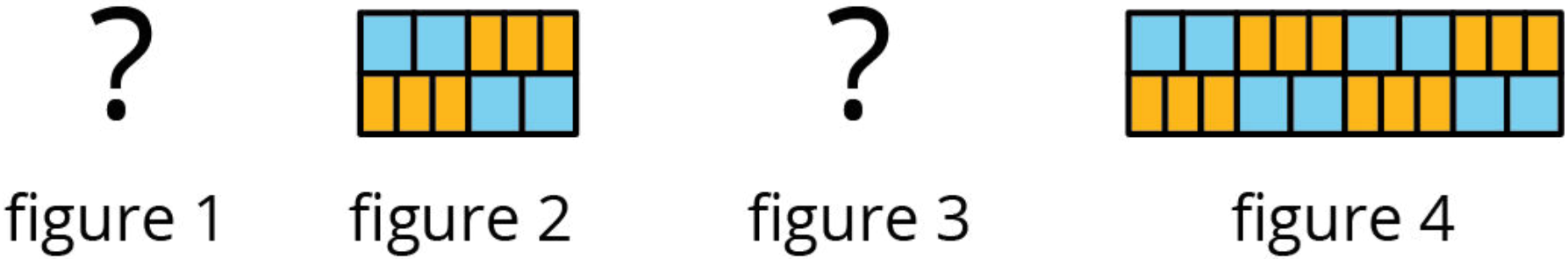
# Today's Goals

- I can find two constants of proportionality for a proportional relationship.
- I can write two equations representing a proportional relationship described by a table or story.

# Missing Figures

## Warm Up

**Here are the second and fourth figures in a pattern.**




1. What do you think the first and third figures in the pattern look like?
2. Describe the 10th figure in the pattern.

# Meters and Centimeters

## Activity 5.2

- How can we find an equation for each table?
- Where does the constant of proportionality occur in the table and equation?
- What is the relationship between the two constants of proportionality? How can you use the equations to see why this should be true?

| length (m) | length (cm) |
|---|---|
| 1 | 100 |
| 0.94 | |
| 1.67 | |
| 57.24 | |
| x | |

| length (cm) | length (m) |
|---|---|
| 100 | 1 |
| 250 | |
| 78.2 | |
| 123.9 | |
| y | |

# Filling a Water Cooler

Activity 5.3

- 5 Practices
- Think, Pair, Share

It took Priya 5 minutes to fill a cooler with 8 gallons of water from a faucet that was flowing at a steady rate.

Let $w$ be the number of gallons of water in the cooler after $t$ minutes.

**Start working with Quiet Think Time.**

**Share your thinking with a partner.**

**Let *w* be the number of gallons of water in the cooler after *t* minutes.**

1. Which of the following equations represent the relationship between w and t?

   a. $w = 1.6t$

   b. $w = 0.625t$

   c. $t = 1.6w$

   d. $t = 0.625w$

2. What does 1.6 tell you about the situation?

3. What does 0.625 tell you about the situation?

**Let $w$ be the number of gallons of water in the cooler after $t$ minutes.**

4. Priya changed the rate at which water flowed through the faucet. Write an equation that represents the relationship of w and t when it takes 3 minutes to fill the cooler with 1 gallon of water.

5. Was the cooler filling faster before or after Priya changed the rate of water flow? Explain how you know.

# Feeding Shrimp

(optional)

**Activity 5.3**

- **5 Practices**
- **Think, Pair, Share**

**At an aquarium, a shrimp is fed ⅕ gram of food each feeding and is fed 3 times a day.**

How much food does a shrimp get fed in one day?

1

**At an aquarium, a shrimp is fed ⅕ gram of food each feeding and is fed 3 times a day.**

Complete the table.

| # of days | food in grams |
|---|---|
| 1 | |
| 7 | |
| 30 | |

What is the constant of proportionality?

If we switched columns in the table, what would be the constant of proportionality?

**2-4**

**At an aquarium, a shrimp is fed ⅕ gram of food each feeding and is fed 3 times a day.**

Write *two* equations that represent the relationship between days ($d$) and food ($f$).

5

**At an aquarium, a shrimp is fed ⅕ gram of food each feeding and is fed 3 times a day.**

If a tank has 10 shrimp in it, how much food is added to the tank each day?

6

**At an aquarium, a shrimp is fed ⅕ gram of food each feeding and is fed 3 times a day.**

If the aquarium manager has 300 grams of shrimp food for this tank of 10 shrimp, how many days will it last?

7

## We examined the proportional relationship between meters and centimeters.

- Why were we able to write 2 equations for this situation?
- What were they?
- What were the constants of proportionality?

**We examined a proportional relationship where we knew how long it took to fill a water cooler with a certain amount of water.**

- What were the constants of proportionality for this relationship?
- What equations did we determine would represent this situation?

# Flight of the Albatross

## Cool Down