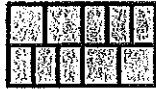# Unit 2, Lesson 6: Using Equations to Solve Problems

5.1: Missing Figures

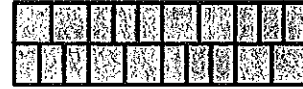Here are the second and fourth figures in a pattern.

figure 1   figure 2   figure 3   figure 4

1. What do you think the first and third figures in the pattern look like?

2. Describe the 10th figure in the pattern.

6.2: Concert Ticket Sales

A performer expects to sell 5,000 tickets for an upcoming concert. They want to make a total of $311,000 in sales from these tickets.

1. Assuming that all tickets have the same price, what is the price for one ticket?

2. How much will they make if they sell 7,000 tickets?

3. How much will they make if they sell 10,000 tickets? 50,000? 120,000? a million? x tickets?

4. If they make $379,420, how many tickets have they sold?

5. How many tickets will they have to sell to make $5,000,000?

Unit 2, Lesson 7: Comparing Relationships with Tables

1. Based on the information in the table, is the cost of the apples proportional to the weight of apples?

pounds of apples	cost of apples
2	$3.76
3	$5.64
4	$7.52
5	$9.40

2. Based on the information in the table, is the cost of the pizza proportional to the number of toppings?

number of toppings	cost of pizza
2	$11.99
3	$13.49
4	$14.99
5	$16.49

3. Write an equation for the proportional relationship.

NAME   DATE   PERIOD
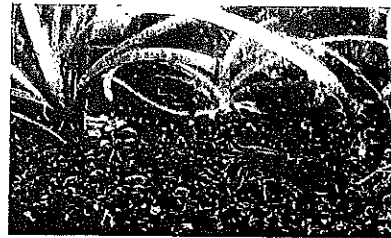
5.4: Feeding Shrimp

At an aquarium, a shrimp is fed $\frac{1}{5}$ gram of food each feeding and is fed 3 times each day.

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

2. Complete the table to show how many grams of food the shrimp is fed over different numbers of days.

number of days	food in grams
1	
7	
30	

3. What is the constant of proportionality? What does it tell us about the situation?

4. If we switched the columns in the table, what would be the constant of proportionality? Explain your reasoning.

5. Use d for number of days and f for amount of food in grams that a shrimp eats to write *two* equations that represent the relationship between d and f.

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

7. If the aquarium manager has 300 grams of shrimp food for this tank of 10 shrimp, how many days will it last? Explain or show your reasoning.
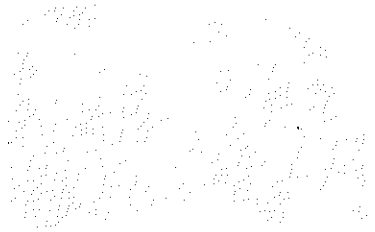
NAME   DATE   PERIOD
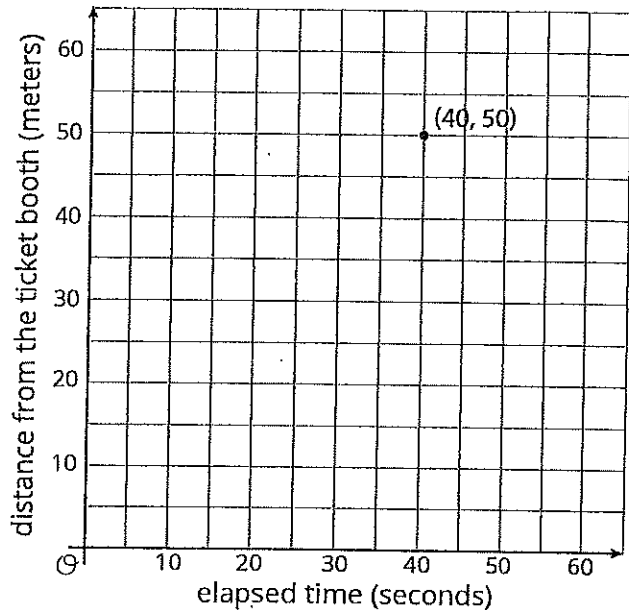
11.2: Tyler's Walk

Tyler was at the amusement park. He walked at a steady pace from the ticket booth to the bumper cars.

1. The point on the graph shows his arrival at the bumper cars. What do the coordinates of the point tell us about the situation?

2. The table representing Tyler's walk shows other values of time and distance. Complete the table. Next, plot the pairs of values on the grid.

3. What does the point $(0, 0)$ mean in this situation?

time (seconds)	distance (meters)
0	0
20	25
30	37.5
40	50
1	

4. How far away from the ticket booth was Tyler after 1 second? Label the point on the graph that shows this information with its coordinates.

5. What is the constant of proportionality for the relationship between time and distance? What does it tell you about Tyler's walk? Where do you see it in the graph?

Unit 2, Lesson 6: Using Equations to Solve Problems

1. A car is traveling down a highway at a constant speed, described by the equation $d = 65t$, where d represents the distance, in miles, that the car travels at this speed in t hours.

   a. What does the 65 tell us in this situation?

   b. How many miles does the car travel in 1.5 hours?

   c. How long does it take the car to travel 26 miles at this speed?

2. Elena has some bottles of water that each holds 17 fluid ounces.

   a. Write an equation that relates the number of bottles of water (b) to the total volume of water (w) in fluid ounces.

   b. How much water is in 51 bottles?

   c. How many bottles does it take to hold 51 fluid ounces of water?

3. There are about 1.61 kilometers in 1 mile. Let x represent a distance measured in kilometers and y represent the same distance measured in miles. Write two equations that relate a distance measured in kilometers and the same distance measured in miles.
   (from Unit 2, Lesson 5)

4. In Canadian coins, 16 quarters is equal in value to 2 toonies.

number of quarters	number of toonies
1	
16	2
20	
24	

NAME   DATE   PERIOD

a. Fill in the table.

b. What does the value next to 1 mean in this situation?

5. Each table represents a proportional relationship. For each table:

a. Fill in the missing parts of the table.
b. Draw a circle around the constant of proportionality.

x	y
2	10
	15
7	
1	

a	b
12	3
20	
	10
1	

m	n
5	3
10	
	18
1	