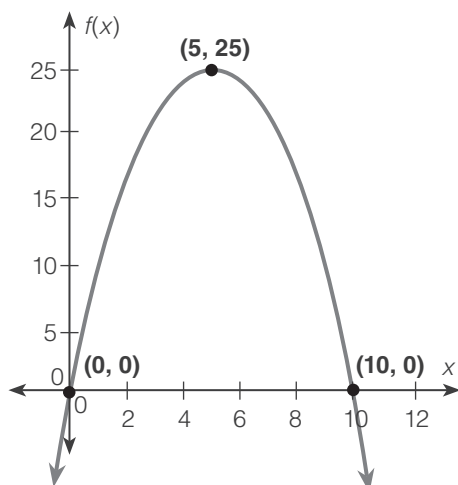


Tasks for Activity 1.3

Water Fountain Task (Algebra)

The spray from a water fountain is modeled by the quadratic functions $f(x) = -(x - 5)^2 + 25$ and $f(x) = -x^2 + 10x$.



Which form of the quadratic equation would you use to determine the following information if the graph was not provided? Why would you choose that form?

1. The maximum height reached by the spray
2. The distance between the starting point and the ending point of the spray

Multistep Equations Task (Grade 7)

In problems 1–8, solve the following equations. Show your work!

1. $x - 17 = 31 - 2x$
2. $(n - 31) = 108$
3. $97 = w - 15 + 3w$
4. $17 + b = 37 - 3b$
5. $6(2a - 1) = 54$
6. $4d = 3d - (6d - 21)$
7. $5y - (2y + 3) = -33$
8. $10 - 3z = 5z - 6$

Division Story Problems Task (Grade 5)

Use division to solve the following word problems. Write the equation you used to solve the problem. Write your answer in a complete sentence.

1. There are 124 craft sticks in a package. You have one package of craft sticks. It takes 4 craft sticks to make a picture frame. How many picture frames can you make?
2. The deli has 175 slices of turkey. Each sandwich uses 5 slices of turkey. How many sandwiches can the deli make?
3. The Office Supply Store receives bulk boxes of 200 pencils. They make smaller packages of 8 pencils each to sell. How many packages of pencils can they make?

Science Quiz Task (Grade 7)

Mr. Richards and Ms. Chutto decide to compare the grades in their two science classes on the last quiz.

The grades in Mr. Richards's class on the twenty-point quiz were:

15	16	15	18	17	11	16	14	12	15	7	14
16	8	7	17	6	8	15	13	14	11	14	

The grades in Ms. Chutto's class on the twenty-point quiz were:

13	12	9	10	9	20	8	16	10	11	17	12
13	12	14	12	11	15	15	18	15	19	14	

Whose class did better on the quiz? How do you know?

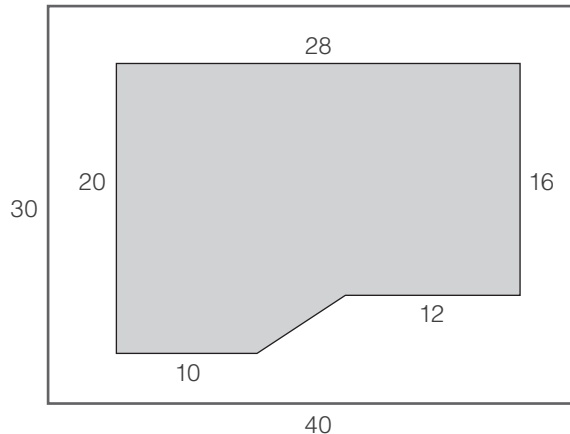
Shapes Pattern Task (Grade 2)

Imagine the following pattern continues:



- What shapes will be at steps 9, 10, 11, and 12?
- What will the shape be at step 17?
- What will the shape be at step 39?
- What is special about the step numbers that have a sun?
- Make some conjectures about the shapes that will be at really large step numbers, even step numbers, and odd step numbers. List any other things you notice about the pattern.

Swimming Pool Deck Task (Grade 6)



Erik is building a swimming pool in his backyard. He wants to tile the deck around the pool. The picture above shows the dimensions (in feet) of the deck and pool. How much area will need to be tiled?

Properties of Multiplication Task (Grade 5)

Indicate whether each statement is an example of the commutative property, associative property, identity property, or zero property of multiplication:

- $(3 \times 5) \times 4 = 3 \times (5 \times 4)$
- $13 \times 0 = 0$
- $17 \times 3 = 3 \times 17$
- $1 \times 13 = 13$

Fraction Pizza Task (Grade 3)

Problem 1: Marc and Larry each bought a small cheese pizza for lunch but neither of them was very hungry. Marc ate $\frac{1}{6}$ of his pizza and Larry ate $\frac{1}{5}$ of his pizza. Who ate more pizza?

Problem 2: Riley and Paige each bought a small cheese pizza for lunch. They were both very hungry. Riley ate $\frac{5}{6}$ of her pizza and Paige ate $\frac{6}{7}$ of her pizza. Who ate more pizza?

Source: Questions adapted from Dixon, Nolan, Adams, Tobias, & Barmoha, 2016, p. 84; Nolan, Dixon, Roy, & Andreasen, 2016, pp. 128, 133; Nolan, Dixon, Safi, & Haciomeroglu, 2016, p. 46.