

LESSON 1.4 Skills Practice

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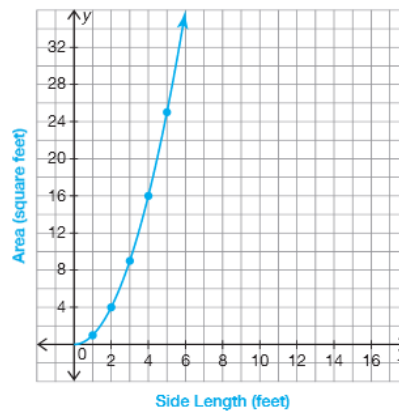
Water Under the Bridge
Modeling with Functions

Problem Set

Complete each table, then graph the function. Label the axes.

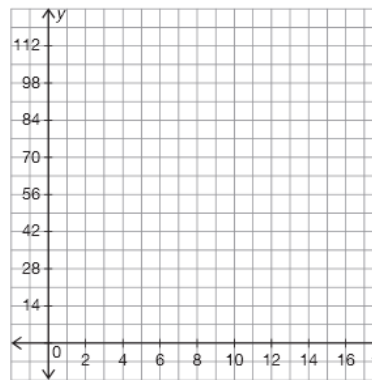
1. The area of a square is the side length squared.

Side Length (feet)	Area (square feet)
1	1
2	4
3	9
4	16
5	25



2. The volume of a cube is the side length cubed.

Side Length (inches)	Volume (cubic inches)
	1
	8
3	
4	
5	



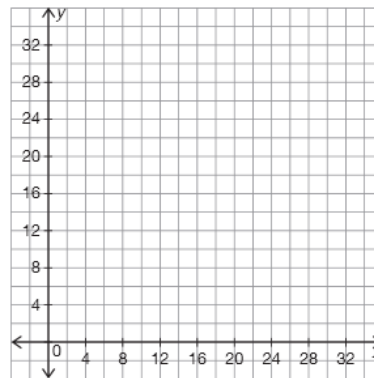
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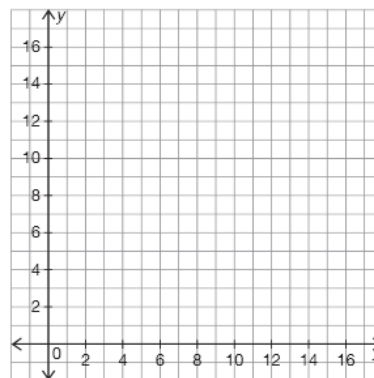
3. Malcolm plants a vegetable garden in the spring. The number of plants that grow is 4 less than the number of seeds. The table lists the number of seeds he planted and the number of plants that grew from those seeds.

Number of Seeds Planted	Number of Plants That Grow
	1
	6
15	
20	
25	



4. Shayla spends 3 hours studying for each quiz in her math class. She also spends 2 hours working on a project. The table lists the amount of time she spends studying for quizzes or working on a project for class.

Number of Quizzes	Total Time Spent (hours)
	5
	8
3	
4	
5	



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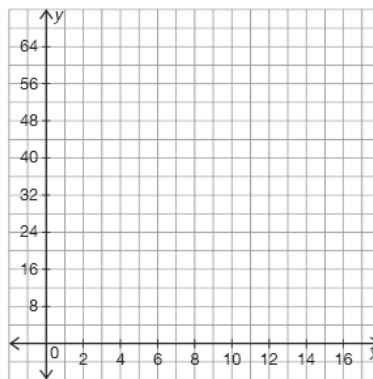
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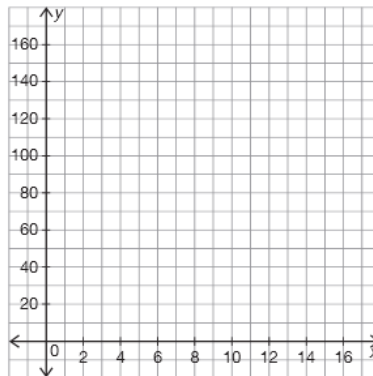
5. The photography club tracks the number of photos its members have published in the school paper over the course of one year. The total number of photos published can be represented by the expression, $2m^2 - 5$. The table lists the total number of photos published.

Time Since Start of Year (months)	Total Number of Photos Published
	3
	13
4	
5	
6	



6. An editor for the school newspaper keeps track of the number of words per article that are written by the newspaper staff. The total number of words per article can be modeled by the expression $4x^2 + 50$. The table lists the total number of words used per article since the beginning of the year.

Time Since Start of Year (months)	Total Number of Words Per Article
	54
	66
3	
4	
5	



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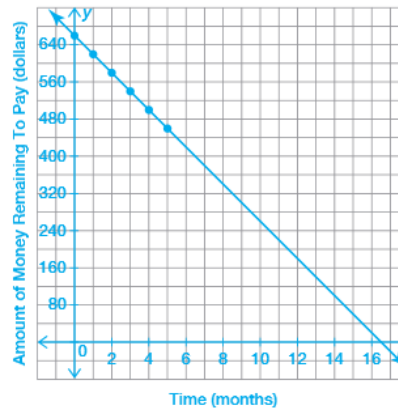
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Define a function to represent each problem situation. Then graph the function and answer each question.

7. Latashia used a store's layaway program to purchase a laptop computer. Every month, Latashia makes a payment on the computer. The table shows the number of months that have passed and the amount of money she has remaining to pay. How much money is remaining to pay after the 5th month?

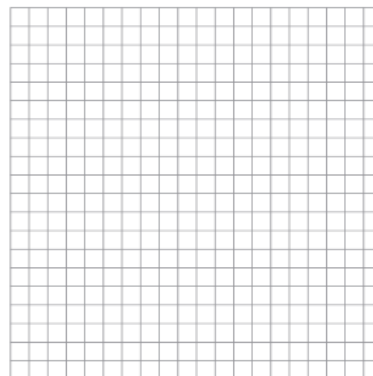
Time (months)	Amount of Money Remaining to Pay (dollars)
1	620
2	580
3	540
4	500
5	460



The amount of money left to pay can be represented by the function $f(x) = 660 - 40x$. The amount of money left to pay after 5 months is \$460.

8. Deloise wasn't feeling well, but went to work sick on Monday. When she gets there, she realizes that Jayme is also sick. On Tuesday, 4 other employees were sick. On Wednesday, 8 employees were sick. The pattern continued for 5 days. The table lists the number of sick employees. How many employees are sick on the 5th day?

Time Since Sunday (days)	Number of Sick Employees
1	2
2	4
3	8
4	16
5	



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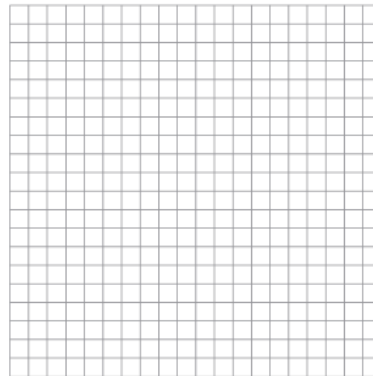
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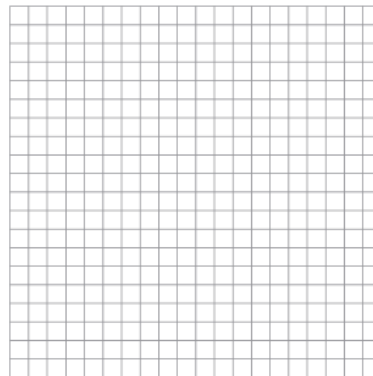
9. An airline has a flight crew that travels a jet airline across the United States. The jet carries 180 passengers plus the 9 crewmembers. The table lists the number of passengers and crew who traveled with the airline over several flights. How many passengers and crew traveled with the airline after 4 flights?

Number of Flights	Number of People Traveling
1	189
2	369
3	549
4	
5	909



10. Garry is cooking appetizers to prepare for a party. For each appetizer, Garry needs 20 minutes to prepare. The table lists the amount of preparation time Garry will need for different numbers of appetizers. How many minutes of preparation time does Garry need for 5 appetizers?

Number of Appetizers	Amount of Preparation Time (minutes)
1	20
2	40
3	60
4	80
5	



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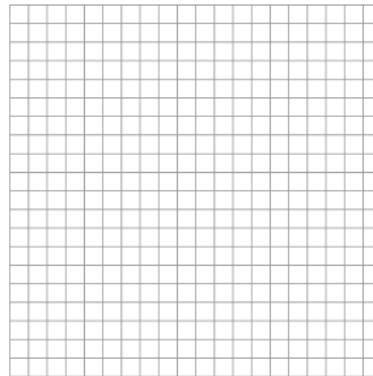
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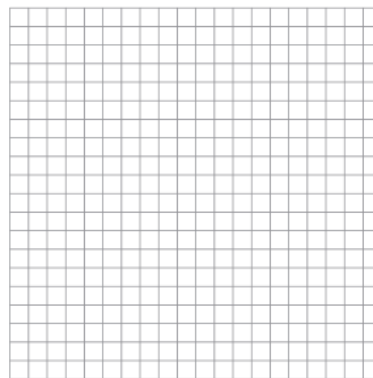
11. A company uses shipping boxes that are cubes. They have a variety of sizes to accommodate all of the different items that are shipped. The volume of a box with a side length of 1 foot is 1 cubic foot. The volume of a box with a side length of 2 feet is 8 cubic feet. What is the volume of a box with a side length of 5 feet?

Side Length (feet)	Volume (cubic feet)
1	1
2	8
3	27
4	64
5	



12. Toby is looking at frames to help decide the size of his next art project. He needs to consider both the side length of the frame and the area of the art project. A 1-inch frame results in an area of 1 square inch for the art project. A 2-inch frame results in an area of 4 square inches for the art project. The table lists the side lengths of the frames and the areas of the frames. What is the area of a frame with a side length of 5 inches?

Side Length (inches)	Area (square inches)
1	1
2	4
3	9
4	16
5	



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