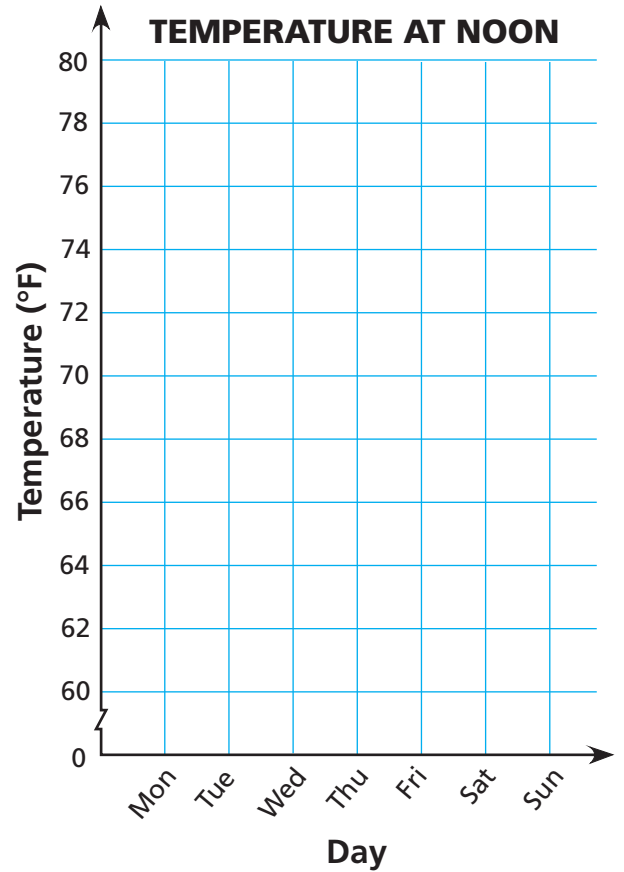


Graphing

NCTM Standards 1, 3, 6, 7, 8, 9, 10

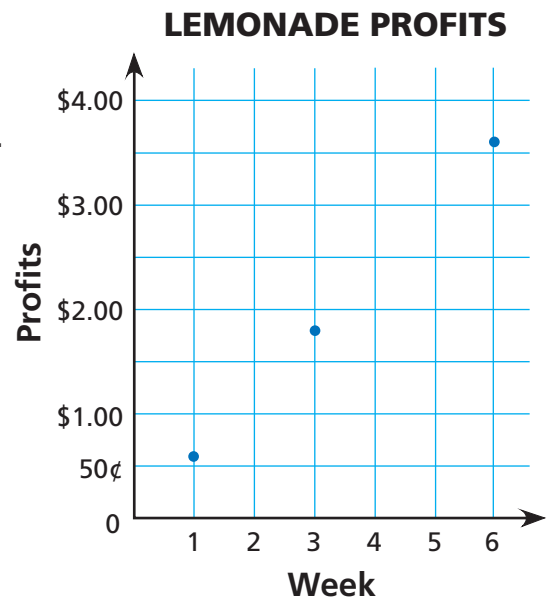
Make a graph to solve each problem.

- Deb checks the temperature every day at noon. She noticed that the temperature has been dropping at a constant rate all week. On Tuesday it was 72°F and on Friday it was 63°F . What was the temperature on Monday?

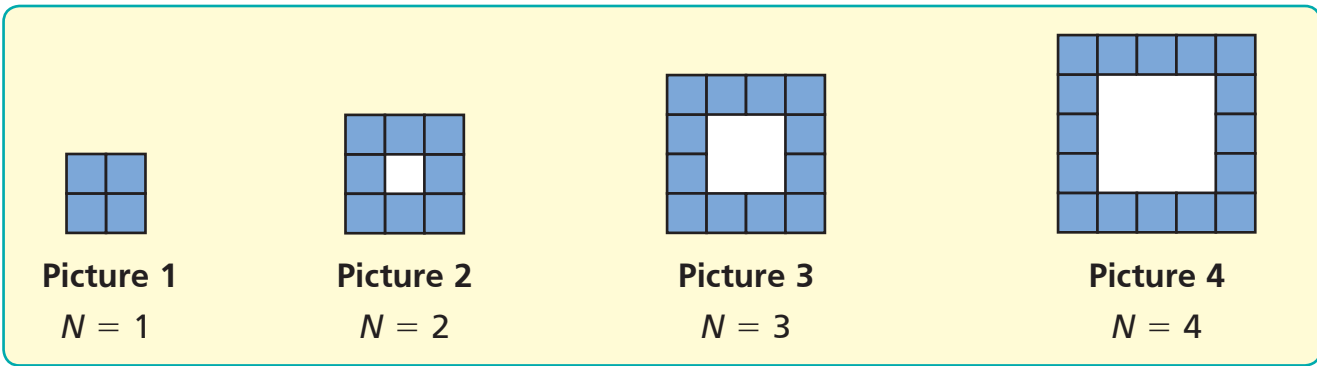


- Jayne cannot remember her profits from selling lemonade, but she remembers she had a constant increase in profits for each week. Fill in the table of her weekly profits.

Week	Profits
1	60¢
2	
3	\$1.80
4	
5	
6	\$3.60

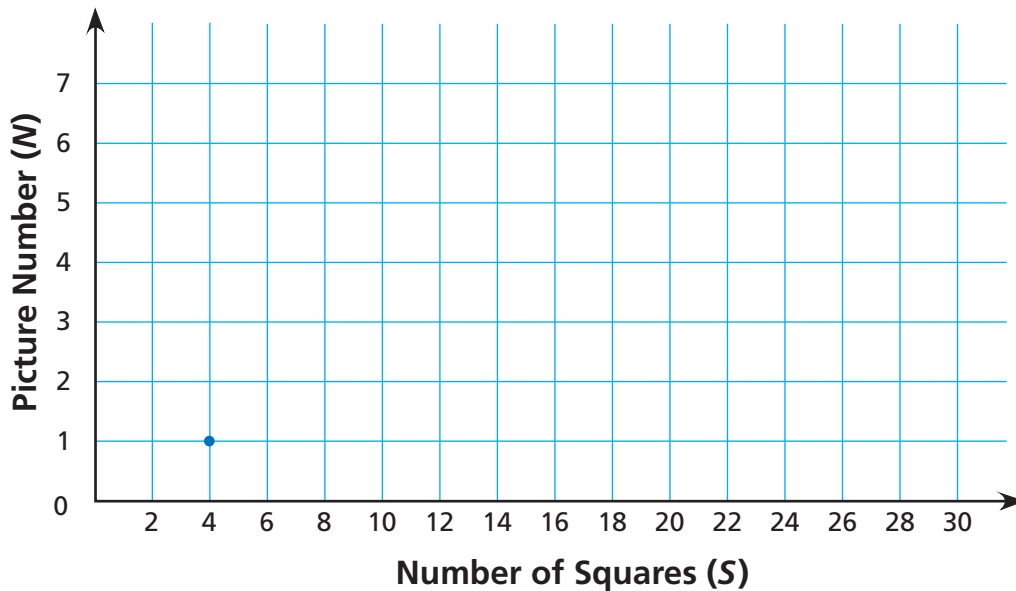


Find a rule to describe this pattern by making a graph.



3 Make a graph using the number of small squares as the first coordinate and the picture number as the second coordinate.

A SEQUENCE OF SQUARES



4 Circle a rule that correctly describes the number of squares, S , in the N th picture. (Note: There is more than one correct rule.)

$S = 4(N + 1)$

$S = N \times N - N$

$S = N + N + N + N$

$S = N + (N + 1) + (N + 1)$

$S = 4N$

$S = 2 \times (N + 1) + 2 \times (N - 1)$

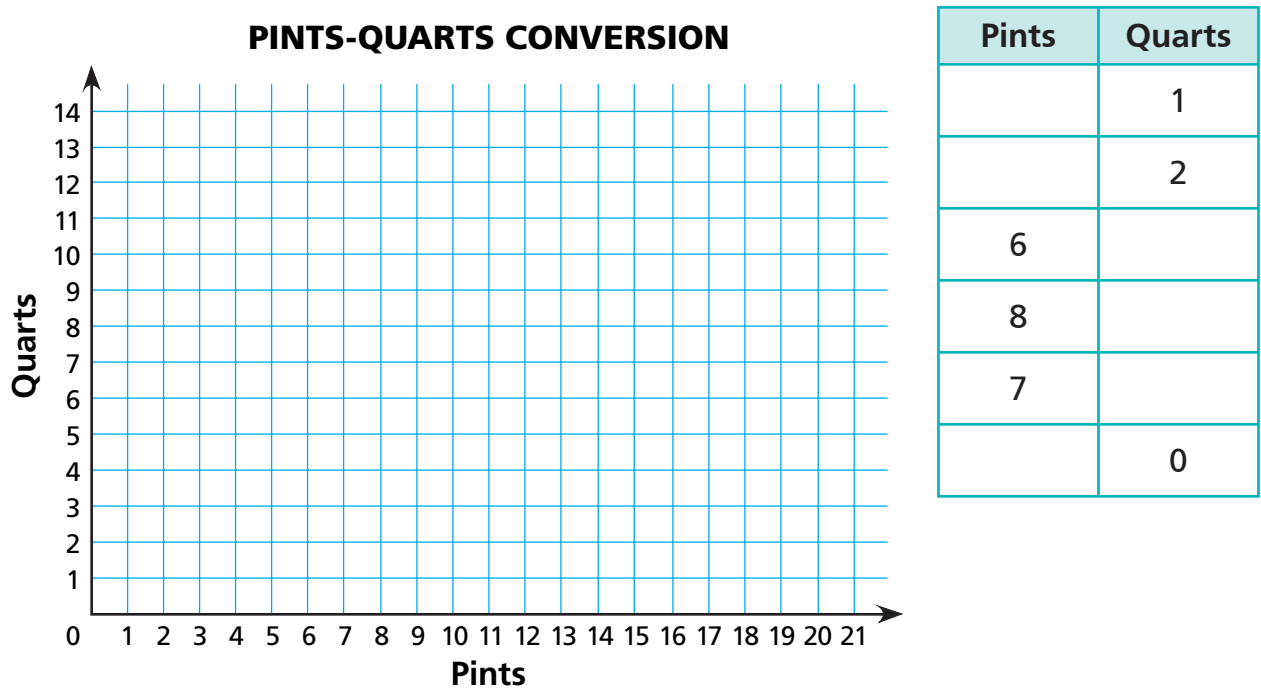


5 **Challenge** How many squares would the 100th picture have? How do we know? _____

Graphing Capacity Conversions

NCTM Standards 2, 3, 4, 5, 6, 7, 8, 9, 10

- 1 Complete the table and make a conversion graph.

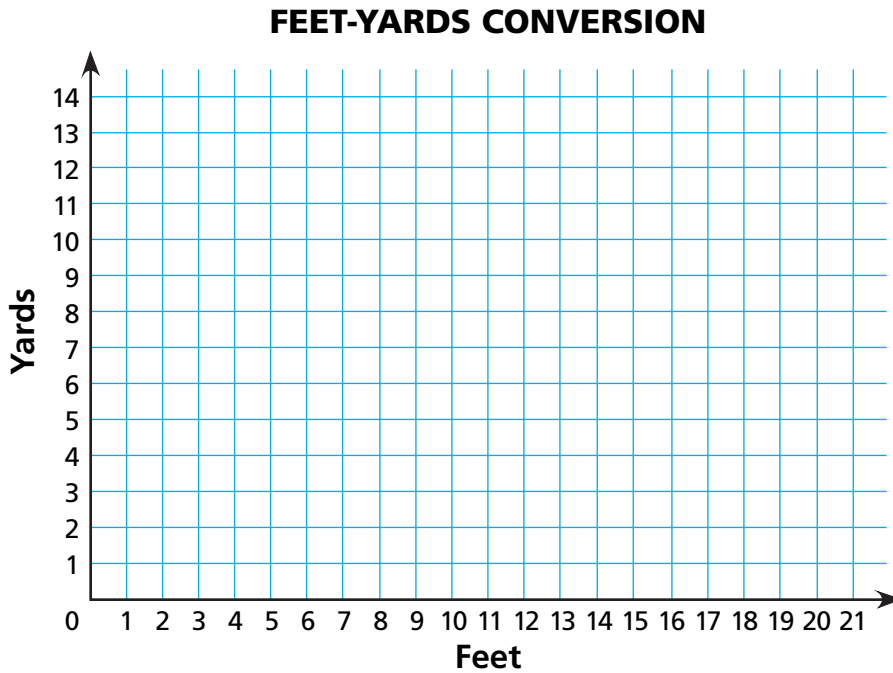


- 2 Describe any patterns you notice about the points you graphed. Can you find a rule to describe this conversion?



- 3 Explain how someone could use the graph to figure out how many pints are in 5 quarts.

- 4 Fill in the table and make a graph showing the conversion between feet and yards.



Feet	Yards
3	
	2
0	
	3
1	
4	

Kendra is building sets for the school play.

- 5 One piece of scenery requires a frame made of 2 pieces of wood that are each 6 feet long and 2 pieces of wood that are each 3 feet long. The wood comes in pieces that are 1 yard long. How many pieces does Kendra need? _____ pieces
- 6 The backdrop curtain needs to be 24 feet long and 6 feet high. How many yards of 6-foot-wide cloth does Kendra need? _____ yards
- 7 Kendra has a piece of trim 3 yards long. How many 1-foot pieces can she cut from it? _____ pieces

8 Challenge Kendra cut seven 1-foot lengths of rope from a single piece. How many yards of rope did she use? _____ yards

Changing the Scale of Graphs

NCTM Standards 2, 3, 4, 5, 6, 7, 8, 9, 10

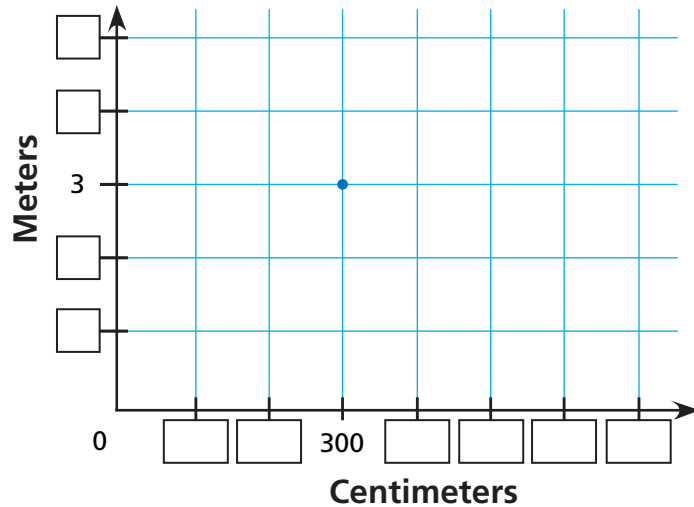
1 Complete the conversion table.

Centimeters			300	400	50	175	
Meters	1	2	3				$\frac{1}{10}$

These graphs are two different ways to show the conversion from centimeters to meters. Finish scaling the graphs, and then draw the graphs using information in the table.

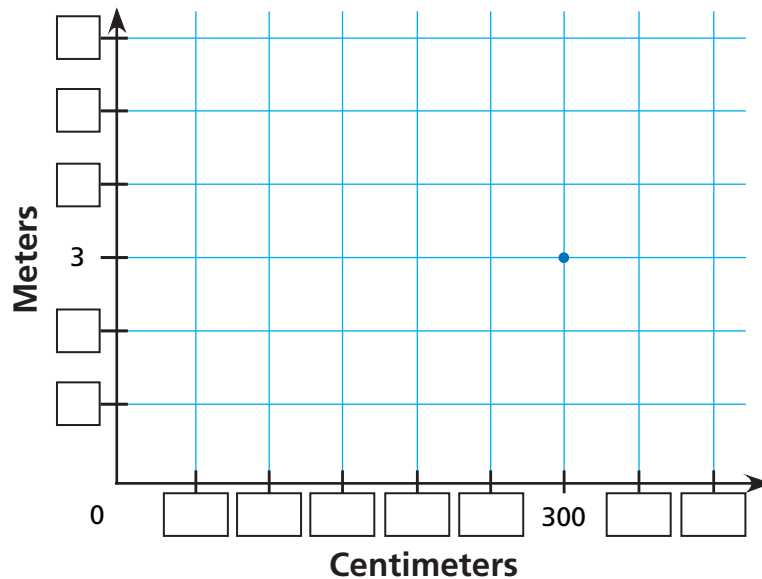
2

CENTIMETERS-METERS CONVERSION



3

CENTIMETERS-METERS CONVERSION



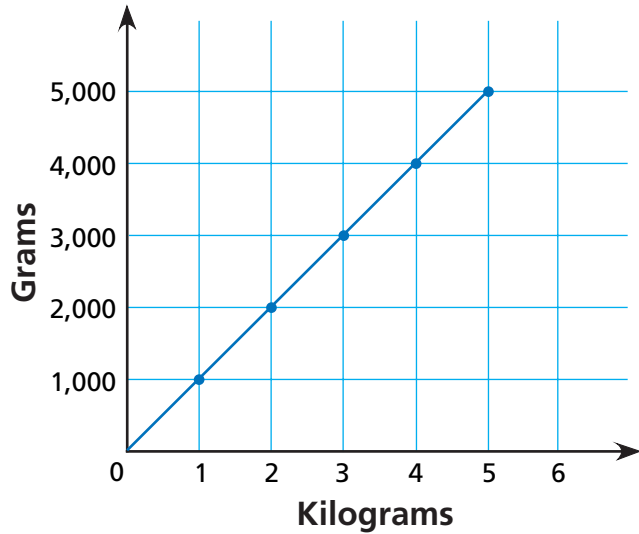


4 In science class, Boon and Hongyi made this graph showing how to convert between grams and kilograms. Next, they needed to make a graph showing how to convert between liters and milliliters.

Boon said, "We don't have to do all that work. We can just copy this graph and change the labels." Is Boon correct?

Explain how they can reuse the graph or why that will not work.

KILOGRAMS-GRAMS CONVERSION



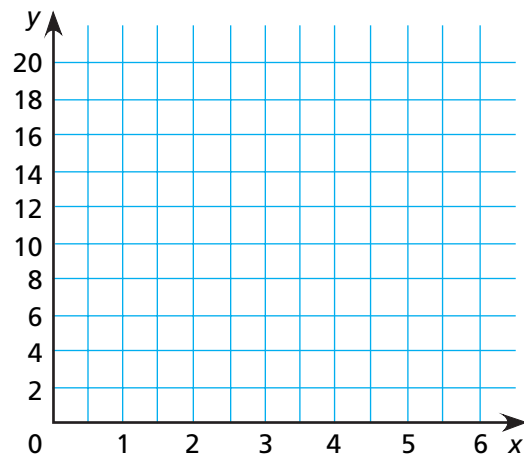
5 **Challenge** All of the points in the table below must follow the rule.

$$y = x^2 \div 2$$

Complete the table and graph the points.

x	2	4	6	5	
y					0

Do all these points lie on one straight line?



Graphing Change Over Time

NCTM Standards 2, 3, 4, 5, 6, 7, 8, 9, 10

- 1 Mr. Kim drove on the highway at 60 miles per hour. How far had he gone at each time?

START 20 miles _____ miles _____ miles _____ miles _____ miles

3:00 _____ _____ _____ _____ _____

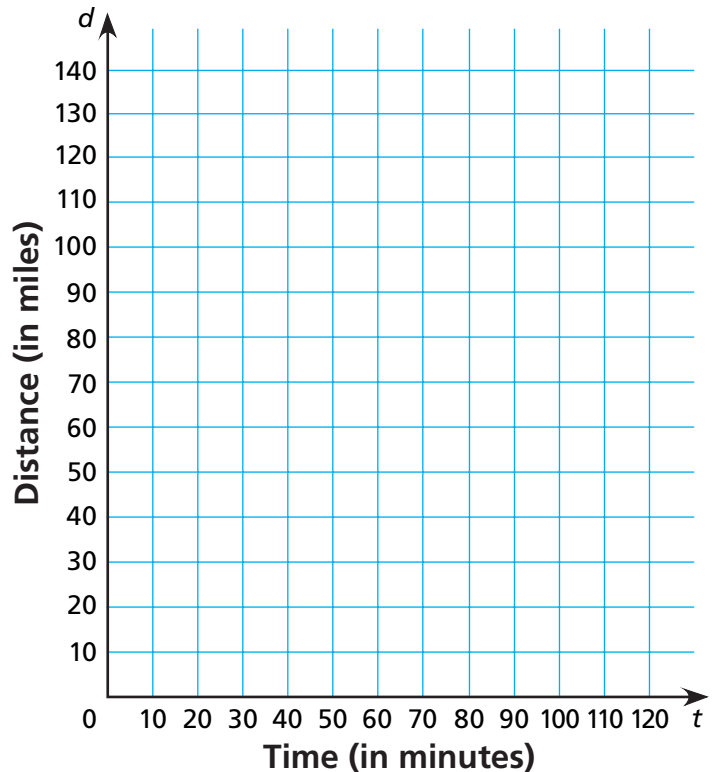
- 2 How much time did it take him to drive 40 miles? _____

- 3 Graph Mr. Kim's travel times and distances.

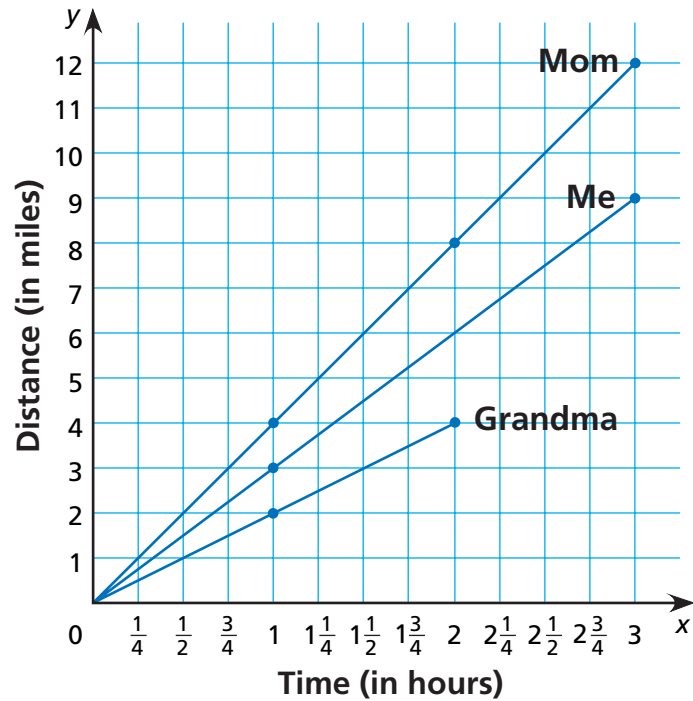
- 4 If he kept driving at the same speed, how far would he have gone 2 hours after he started?

- 5 How far had he traveled 30 minutes after starting?

MR. KIM'S TRIP



SUNDAY WALKS



Sabra, her mother, and her grandmother each took a walk on Sunday. None of them changed speed for the whole walk. They recorded how far they walked and how long it took. Afterward, Sabra made this graph.

Use the graph to answer these questions. If you do not have enough information to answer a question, write "cannot tell."

- 6 Who walked farthest? _____
- 7 Who spent more time walking, Sabra or her grandmother? _____
- 8 Who went farther in two hours, Sabra or her mother? _____
- 9 Did they all start at the same time? _____
- 10 Who stopped walking first? _____
- 11 What was Sabra's speed? _____
- 12 Who walked slowest? _____

13 Challenge Sabra's sister walked 5 miles per hour for two hours. Add a line to the graph for Sabra's sister.

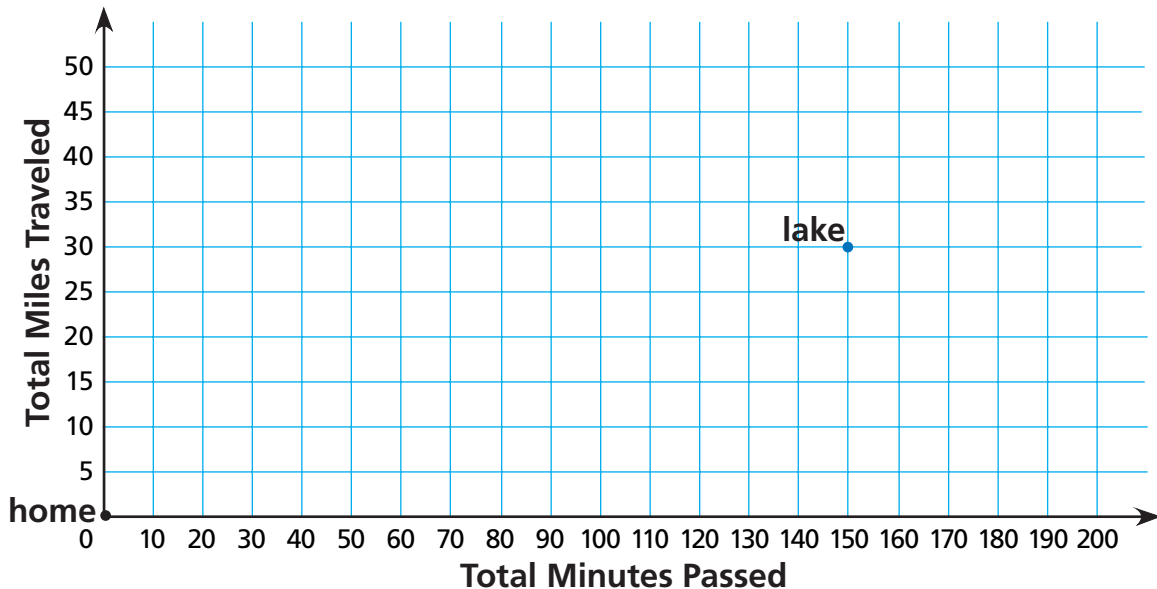
Graphing the Story of a Trip

NCTM Standards 2, 3, 4, 5, 6, 7, 8, 9, 10

- As you read the story of Matthew’s bike ride, use the grid to record how far he had gone by that time. Label points on the graph with the names of the landmarks they correspond to. Assume that Matthew kept a constant speed all the way from one landmark to the next so that you can connect each point to the next with a line segment.

Matthew went on a bike ride. He recorded the time when he passed certain landmarks. He started from home at noon. At 12:30, he reached the courthouse, having ridden a total of 10 miles. At 1:30, he passed the shopping center, 15 miles from home. It took him another hour to ride to the lake, a 15-mile trip from the shopping center. At 3:00, he stopped at the museum, having ridden a total of 35 miles since he was home.

MATTHEW’S BIKE RIDE

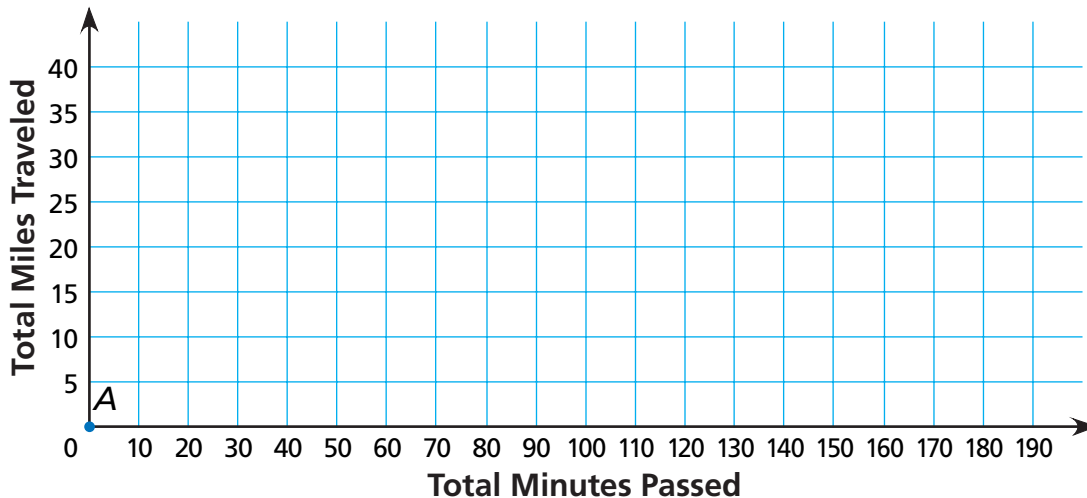


- Between which two landmarks was he going slowest? Explain how you know.

Natasha went for a bike ride. She rode 5 miles in the first 20 minutes, then she rode up a hill for 5 miles. That took her 40 minutes. The next 10 miles were easy and took her only 40 minutes. She took a 20 minute break for lunch. The next hill was really steep; it took her 50 minutes to go 5 miles. She rode the last 5 miles in 20 minutes.

- 3 Make a graph to describe Natasha's traveling. Assume that her speed did not change except for the times mentioned in the story.

NATASHA'S BIKE RIDE



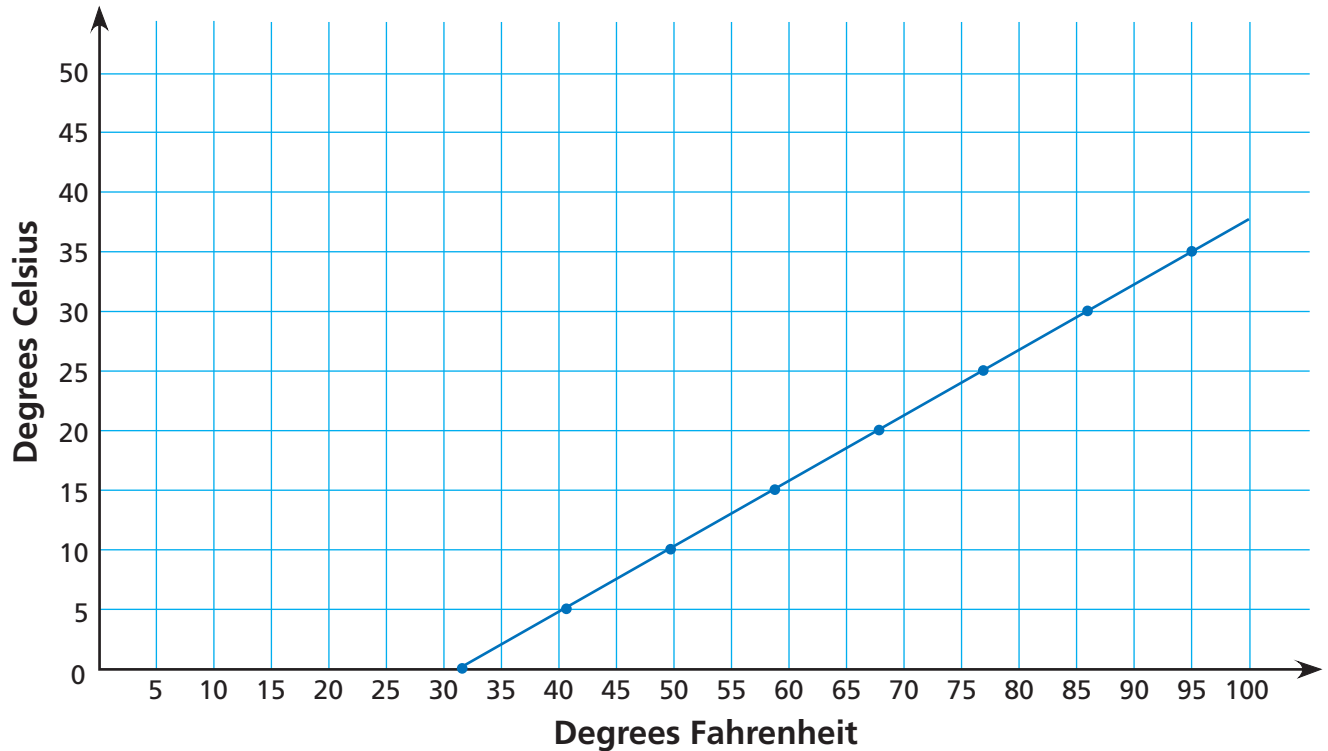
- 4 How many miles did Natasha ride? _____
- 5 How long did the whole trip take? _____
- 6 Was Natasha riding more quickly when she had gone 15 miles, or when she had gone 22 miles? _____
- 7 On the graph, label each point you drew with a letter from B to G. What does the line segment between D and E show about how far Natasha rode during that part of her day?

8 Challenge List the segments in order from the one showing the slowest speed to the fastest.

Graphing Temperature Conversions

NCTM Standards 1, 3, 7, 8, 9, 10

FAHRENHEIT-CELSIUS CONVERSION



- 1 Complete the table.

°F		41	50	59	68	77		95	104
°C	0	5		15	20		30		

- 2 The temperature changed by 5°C. How many °F did it change by? _____

- 3 Mr. Hsung set his thermostat to 41°F while he was away on vacation.

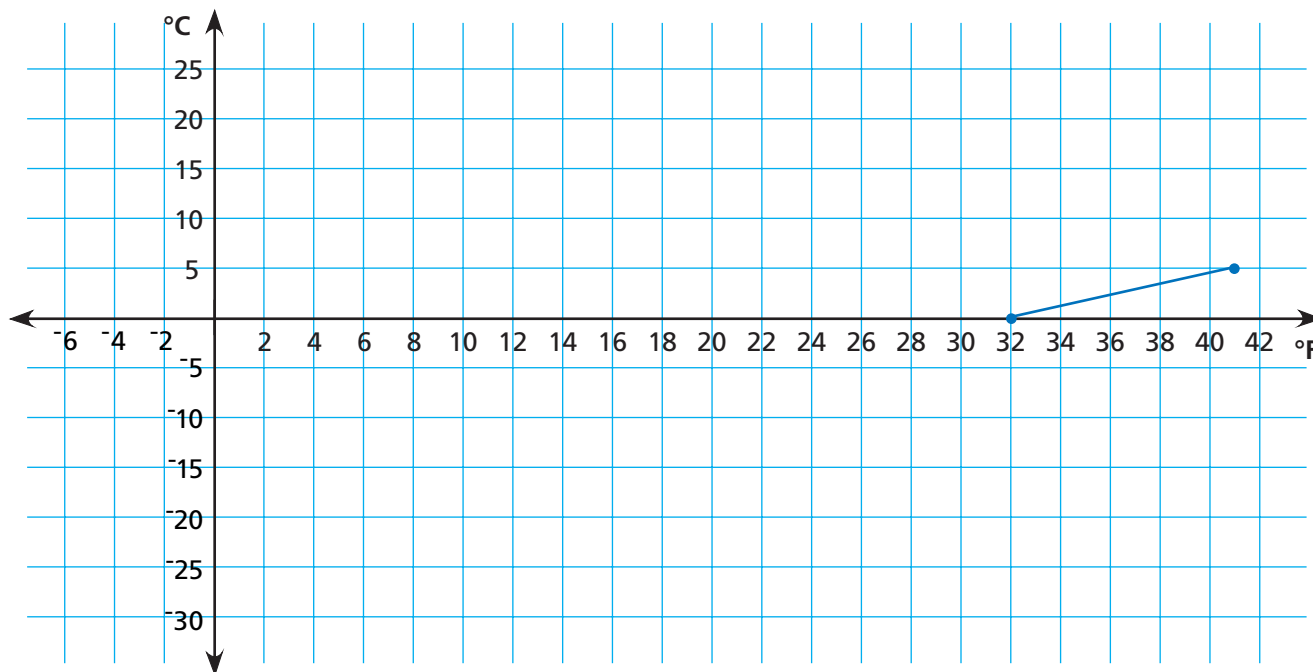
That is the same as _____°C. When he got home, he turned up the heat, and the temperature rose by 27°F, or _____°C.

What was the temperature in the house then? _____°F, or _____°C

- 4 Yesterday, it was 95°F outside! Today it is 77°F. It is _____°F cooler today.

In Celsius, that is a change of _____°C from yesterday.

FAHRENHEIT-CELSIUS CONVERSION



- 5** Complete the table and use it to add more points to the conversion graph.

°F		32			5	
°C	5		-5	-10		-20

- 6** It is cold today! At noon, the temperature was -10°C , or _____ $^{\circ}\text{F}$.

That is 10°C warmer than it was at 6:00 this morning.

What was the temperature at 6:00? _____ $^{\circ}\text{C}$ or _____ $^{\circ}\text{F}$.

- 7** About how many degrees Celsius is 0°F ? _____ $^{\circ}\text{C}$.

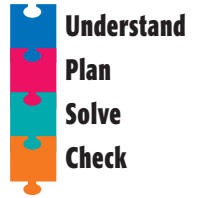


- 8 Challenge** How did you estimate the answer to Problem 7?

Problem Solving Strategy

Make a Table

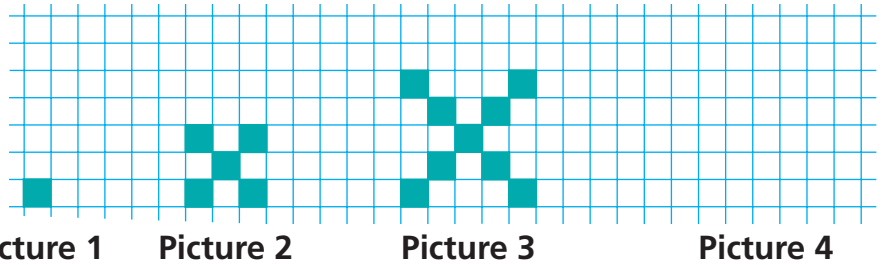
NCTM Standards 1, 2, 6, 7, 8, 10



Find a rule to describe this pattern by making a graph.

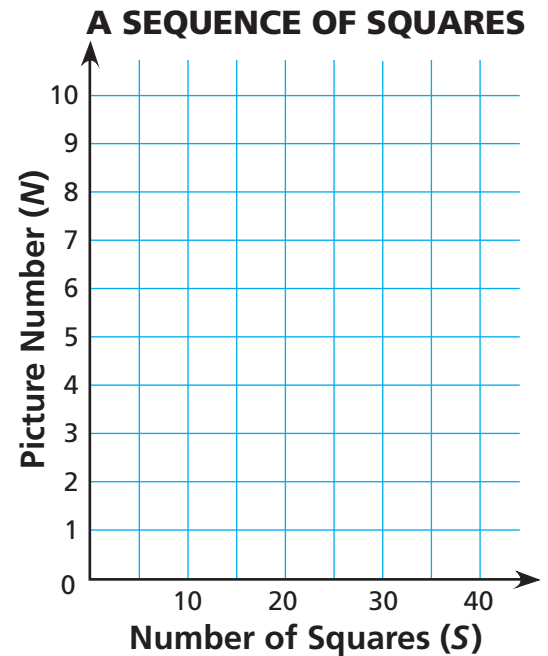
1 Draw the next picture in this sequence.

2 Complete the table below.



3 Make a graph using the picture number as the first coordinate and the number of small squares as the second coordinate. Draw a line to connect the points.

Picture Number	Number of Squares
1	
2	
3	
4	
5	
10	
N	



4 Use the graph to find the number of squares in Picture 6 and in Picture 8.

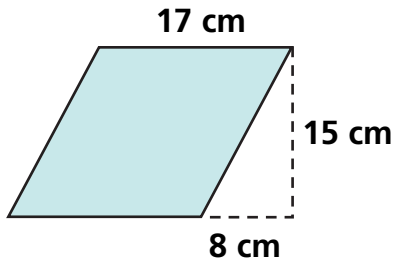
Picture 6: _____ squares Picture 8: _____ squares

5 Describe in words how to predict the number of squares in Picture N .

Problem Solving Test Prep

Choose the correct answer.

- 1 What is the perimeter of the rhombus?



- A. 40 cm C. 68 cm
B. 64 cm D. 72 cm

- 2 What is the rule for the table?

x	1	4	2	7	5
y	4	13	7	22	16

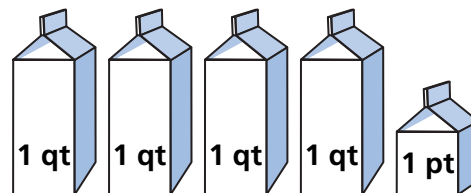
- A. $y = x + 3$ C. $y = 5x - 1$
B. $y = 3x + 1$ D. $y = 2x + 2$

- 3 What number completes the number puzzle?

×	30	8	38
7	210	56	■

- A. 56 C. 256
B. 210 D. 266

- 4 Which measure is equivalent?



- A. 7 pt C. 9 pt
B. 8 pt D. 10 pt

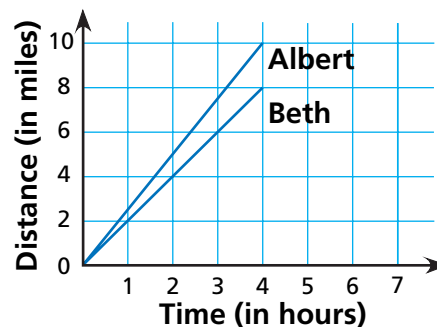
Show What You Know

Solve each problem. Explain your answer.

- 5 Will a graph of the points be a straight line? Explain how you know.

x	1	3	6	2	5
y	0	8	35	3	24

- 6 The graph describes walks taken by Albert and Beth. How much farther did Albert walk than Beth? Explain.

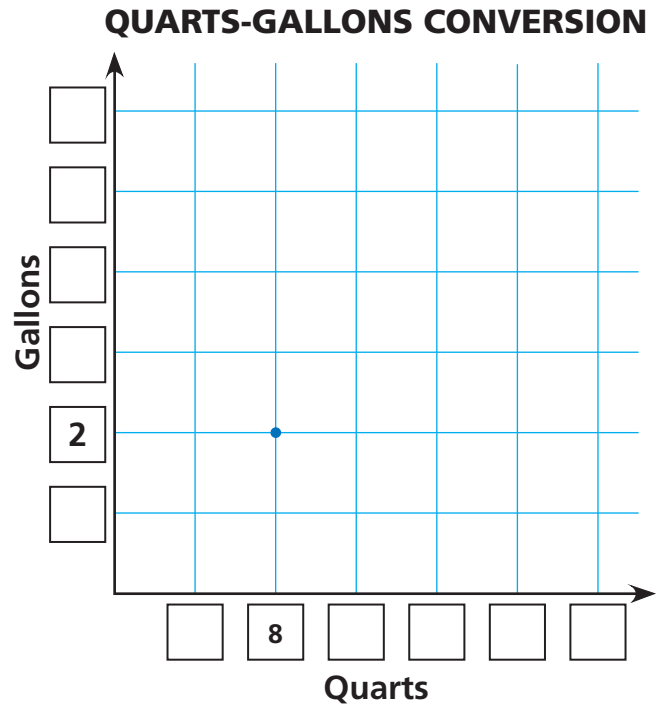


Review/Assessment

NCTM Standards 2, 4, 5, 6, 7, 9, 10

In 1 gallon, there are 4 quarts.

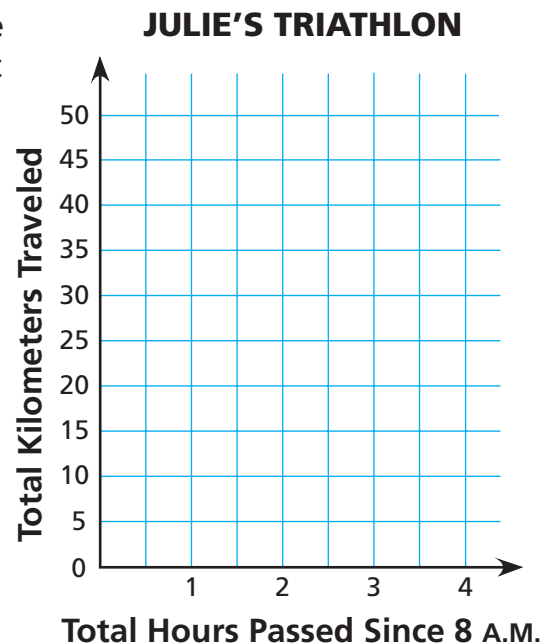
Quarts	Gallons
	1
8	2
16	
	6
	5
12	



- 1 Complete the Quarts-Gallons conversion table. [Lessons 1, 2, and 3](#)
- 2 Number the axes so that you can graph all the points in the table. [Lesson 3](#)
- 3 Make a Quarts-Gallons conversion graph. [Lessons 1, 2, and 3](#)

- 4 As you read the story about Julie's triathlon, use the grid to record how far she had gone by that time. Assume that Julie kept a constant speed during each part of the race. Connect each point to the next with a line segment. [Lessons 4, 5](#)

The race started at 8 A.M.
First, Julie swam 1.5 km in 30 minutes.
Second, she biked 30 km in $1\frac{1}{2}$ hours.
Third, she ran 10 km in 1 hour.

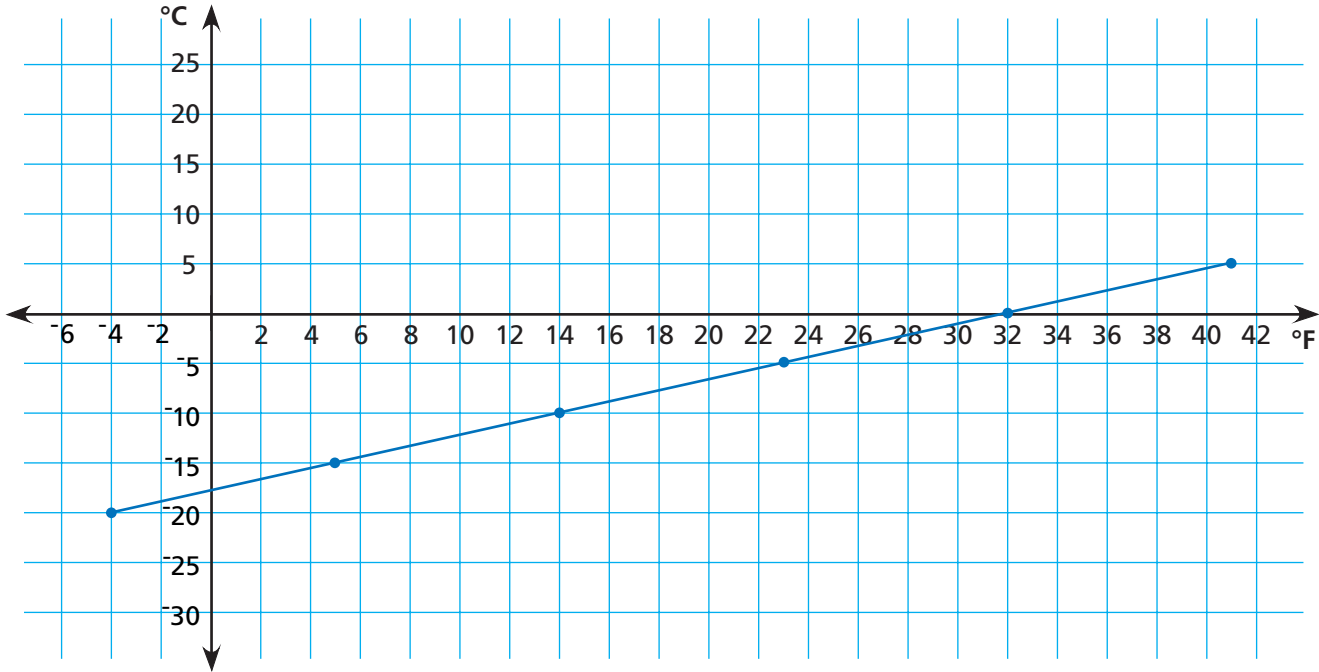


- 5 What was her total race time?

- 6 In which event did she go fastest?

For 7 and 8, use the Fahrenheit-Celsius Conversion graph. [Lesson 6](#)

FAHRENHEIT-CELSIUS CONVERSION



7 At midnight, it was 5°F . What was the temperature in Celsius degrees?

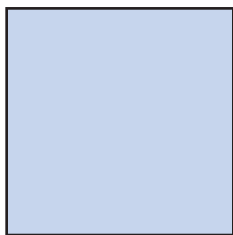
_____ $^{\circ}\text{C}$

8 How many degrees Fahrenheit is 0°C ?

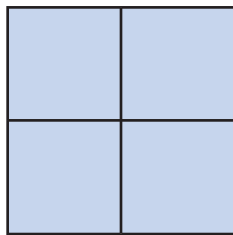
_____ $^{\circ}\text{F}$

For 9–11, use the sequence of pictures. [Lesson 7](#)

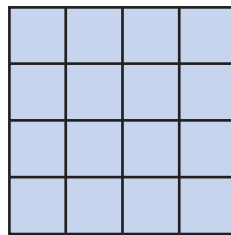
9 Draw lines to complete Picture 4 in the sequence.



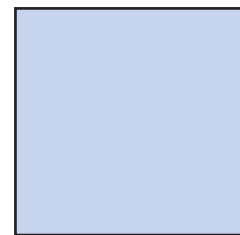
Picture 1



Picture 2



Picture 3



Picture 4

10 Complete the table.

Picture Number	1	2	3	4
Number of Squares	1	4	16	

11 How many small squares are in Picture 4?

_____ squares