Name _____ Date _____

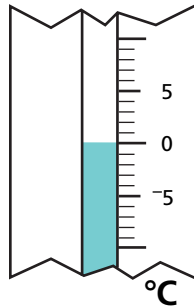# Introducing Negative Numbers

NCTM Standards 1, 4, 6, 7, 8, 9, 10

Brrr! It's very cold this week. Every day at 6 A.M. Nina went outside and measured the temperature. Here's the information that she recorded. Fill in the missing information.
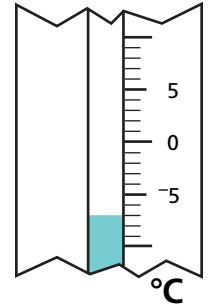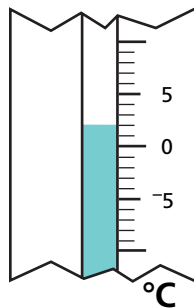
1

Monday

___0 C___

2

Tuesday

_____

Change from Monday ___7 lower___

3

Wednesday

_____

Change from Tuesday _____

4

Thursday

_____
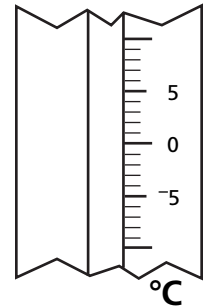
Change from Wednesday ___6 higher___

5

Friday

___3 C___

Change from Thursday _____
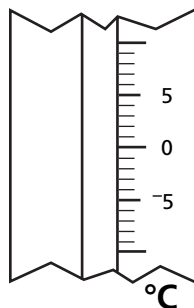
6

Saturday

___8 C___

Change from Friday _____

© Education Development Center, Inc.
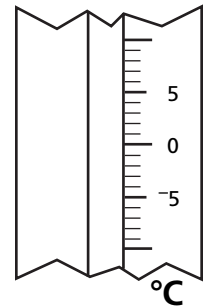
Fill in the missing temperatures on each thermometer.

7
—
—
— 20
— 10
— 0
—
—
—
°C

8
—
—
— 0
— ⁻2
—
—
°C

9
—
— 2
— 0
—
— ⁻4
—
—
°C

10
— 0
—
— ⁻6
— ⁻9
—
—
— ⁻18
—
°C

---
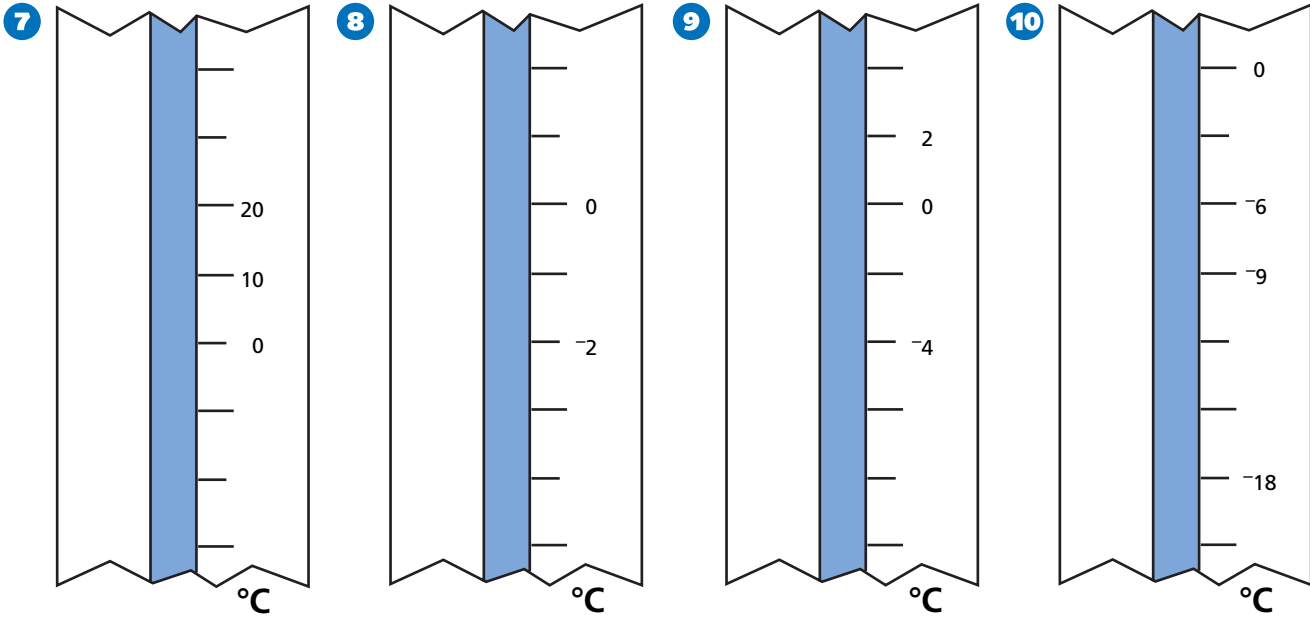
11 The lowest temperature this March was 5 Celsius.

In June, the lowest temperature was 13 C warmer than in March.

In January, the lowest temperature was 30 C colder than in June.

What was the lowest temperature in January?   _____

12 Challenge
—
— ⁻31
—
—
—
— ⁻35
—
—
°C

13 Challenge
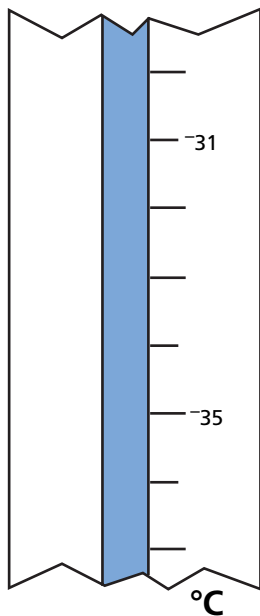—
— ⁻54
—
— ⁻58
—
—
—
°C

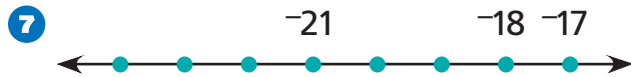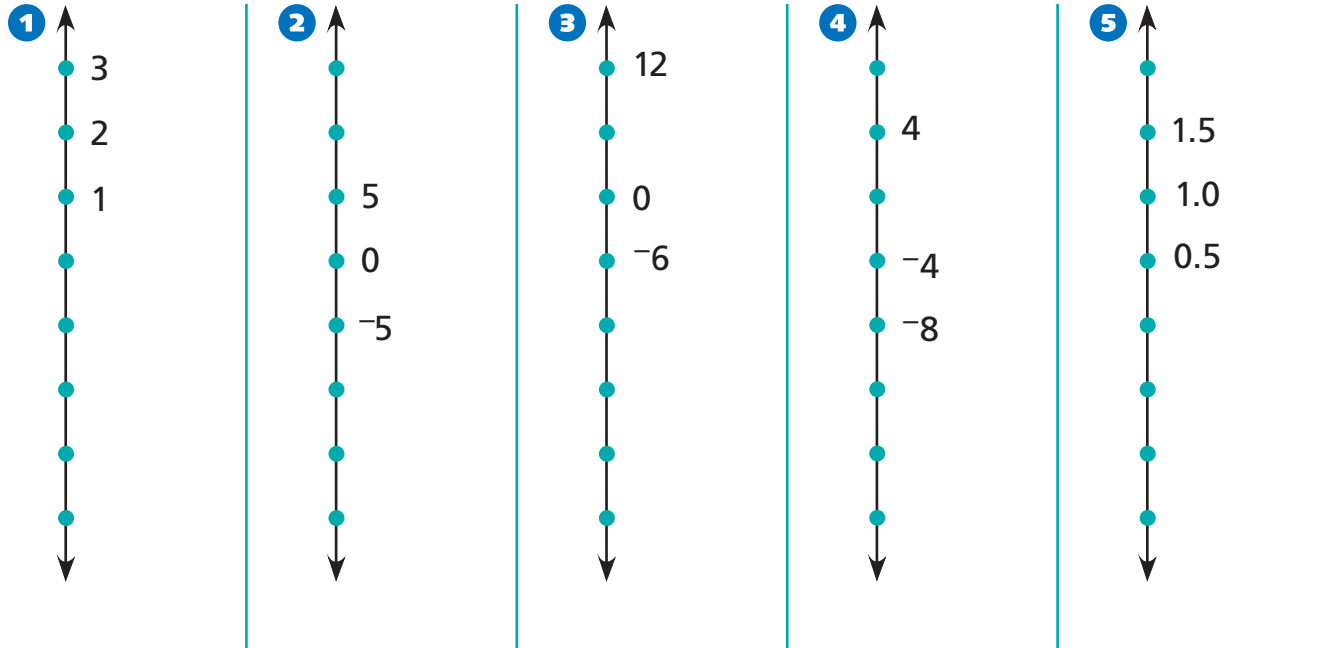Name _____   Date _____
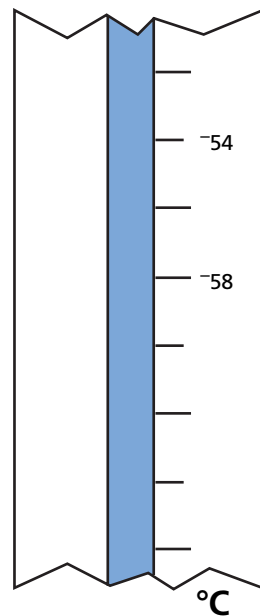
Negative Numbers on the Number Line

NCTM Standards 1, 4, 6, 7, 8, 9, 10

Fill in the missing numbers on each number line.

1 3 2 1

2 5 0 ⁻5

3 12 0 ⁻6

4 4 ⁻4 ⁻8

5 1.5 1.0 0.5

6 ⁻7 ⁻6 ⁻5

7 ⁻21 ⁻18 ⁻17

8 ⁻3.3 ⁻3.0

9 ⁻24 ⁻18 ⁻6 ⁻3

10 ⁻34 ⁻32

Use this number line to help answer the questions.

11 Start at 2. Jump backward
4 spaces.

Where are you? _____

12 Start at ⁻7. Jump forward
3 spaces.

Where are you? _____

13 Start at ⁻5. Jump forward
6 spaces.

Where are you? _____

14 Start at 4. Jump backward 4 spaces.
Then jump backward 3 spaces.

Where are you? _____

15 Start at ⁻11. Jump forward
5 spaces. Then jump forward
1 space.

Where are you? _____

16 Start at ⁻4. Jump forward 2 spaces.
Then jump forward 3 spaces. Then
jump backward 4 spaces.

Where are you? _____

17 Yesterday's highest temperature was 10 Celsius.
Today's high temperature was 15 colder than
yesterday's. The forecast says tomorrow's high will
be 3 warmer than today's.

What is the predicted high temperature for tomorrow? _____

18 **Challenge**

Start at $2\frac{1}{2}$. Jump forward
3 spaces. Then jump backward
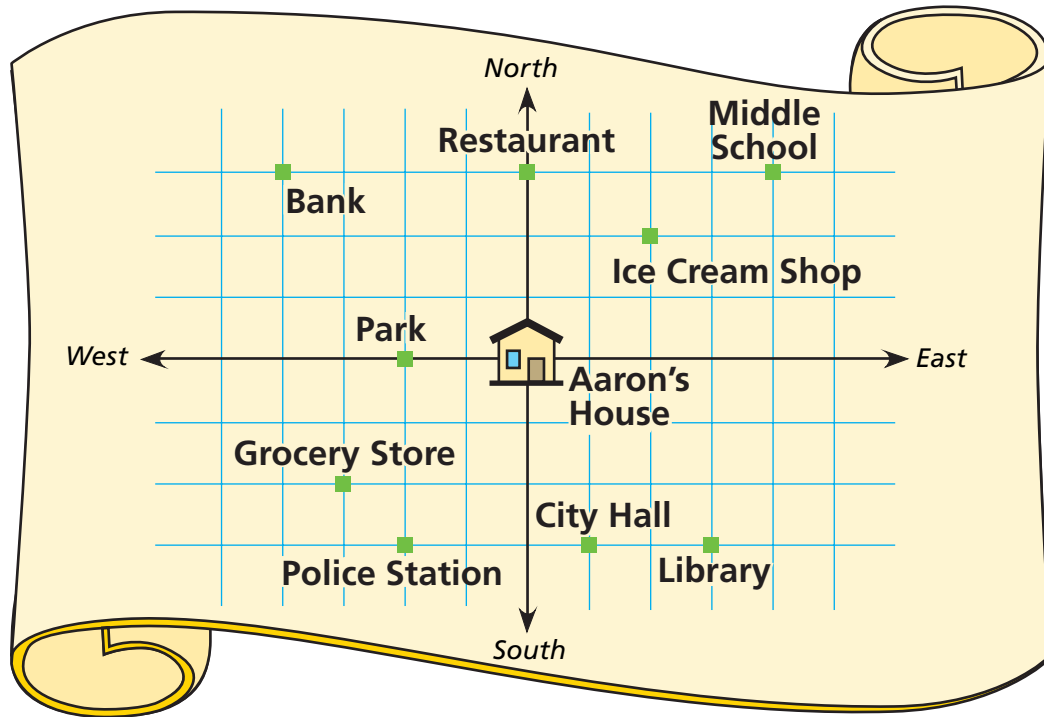10 spaces.

Where are you? _____

19 **Challenge**

Start at 1. Jump forward 1 half
space. Then jump backward
4 half spaces.

Where are you? _____

Chapter 12
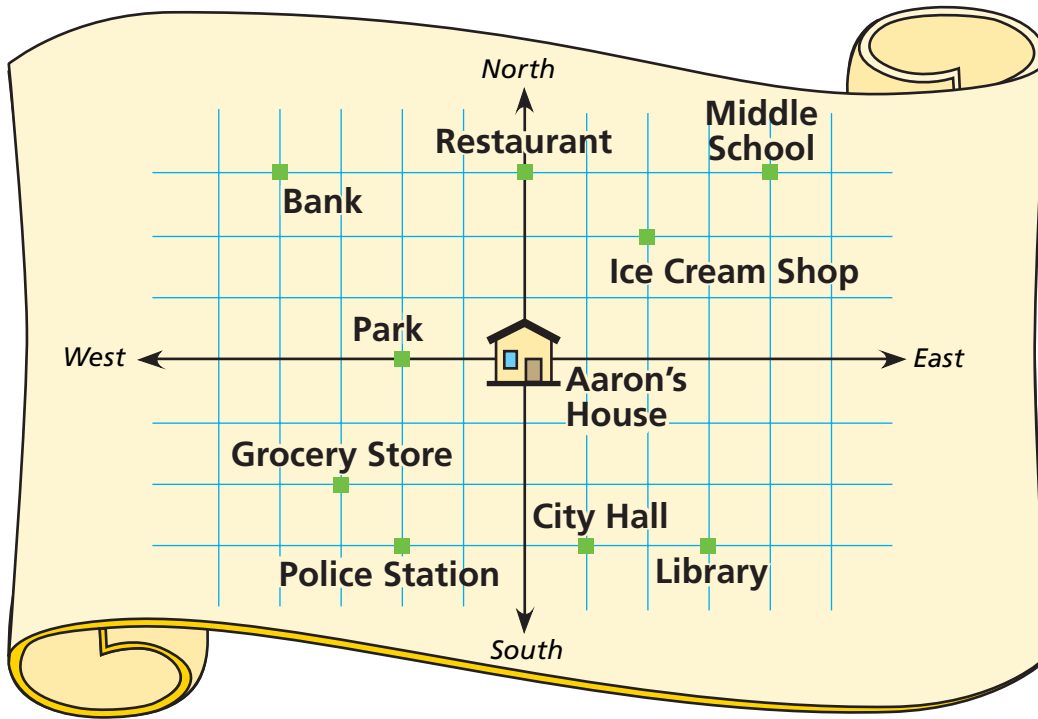**Lesson 3**

Navigating on a Coordinate Grid

NCTM Standards 1, 4, 6, 7, 8, 9, 10

Aaron's house is in the center of the map. The lines on the map are the streets in his neighborhood.

Aaron is new in town. He started making some cards to remind him how to get to different places from his house. Because the streets in town form a grid, he recorded each building the way mathematicians would. Complete each card.

❶ School	❷ Library	❸ Bank	❹ Grocery Store	❺ Home
(4,3)	(3, 3)	(___,___)	(3, 2)	(0,___)

❻ Ice Cream shop	❼ Park	❽ Restaurant	❾ _____	❿ Police Station
(___,___)	(___,0)	(___,___)	(1, 3)	(___,___)

Some of the places Aaron likes to go are not printed on the map.

11 Aaron's sister goes to high school. Draw a star on the map to show where the high school is.

★ High School
(5,3)

12 Sometimes Aaron visits his friend Mark. Draw a triangle on the map to show where Mark's house is.

▲ Mark's House
(5, 3)

In these questions, "How far" always means "How many blocks, walking along the streets."

13 How many blocks is the middle school from the restaurant? _____

14 How many blocks is Aaron's home from the park? _____

15 How far is City Hall from the library? _____

16 How far is the police station from City Hall? _____

17 How far is Mark's house from the library? _____

18 How far is the police station from the park? _____

19 How far is the bank from the middle school? _____

20 **Challenge** How many blocks is the shortest route from the high school to Mark's house? _____

Name _____ Date _____

Points and Lines on a Grid

Follow the directions below.
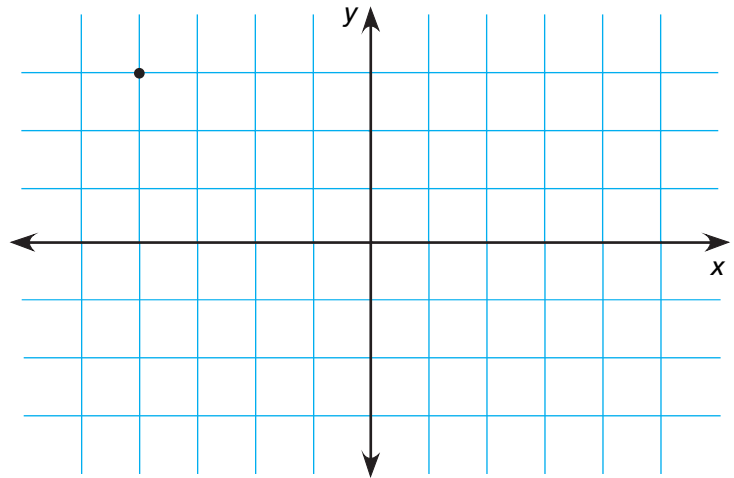
1 Mark *A* at (4,3).

Mark *B* at (3,3).

Mark *C* at (4, 2).

Draw $\overline{AB}$.

Draw $\overline{BC}$.

Draw $\overline{AC}$.

What shape did you draw? _____

2 Mark *D* at (3, 2).

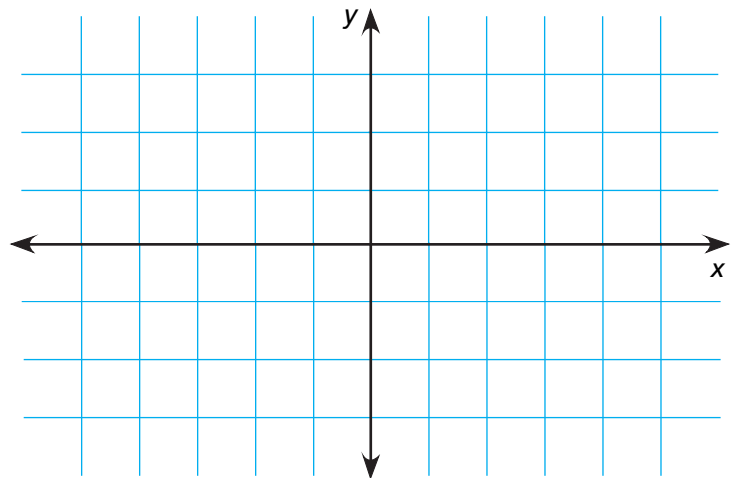Mark *E* at (3,2).

Mark *F* at (3,2).

Mark *G* at (3, 2).

Draw $\overline{DE}$.

Draw $\overline{EF}$.

Draw $\overline{FG}$.

Draw $\overline{GD}$.

What shape did you draw? _____

What is its perimeter? _____

What is its area? _____
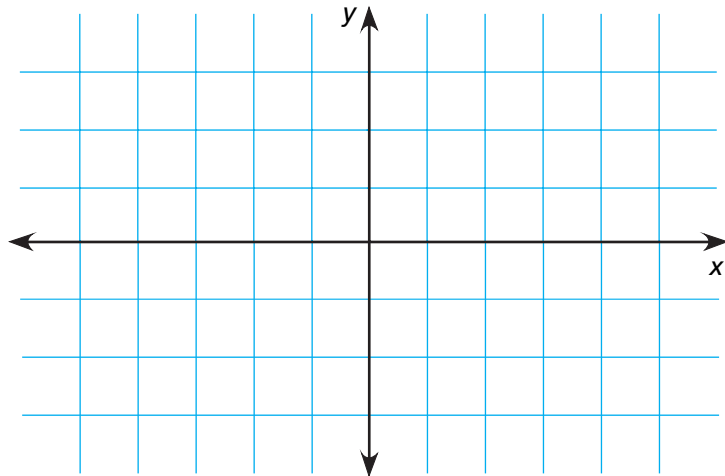
3 Mark *H* at (3,1).

Mark *I* at (1, 3).

Mark *J* at (3, 1).

Mark *K* at (1,3).

Draw $\overline{HI}$.   Draw $\overline{JK}$.

Draw $\overline{IJ}$.   Draw $\overline{HK}$.

What shape did you draw?

_____

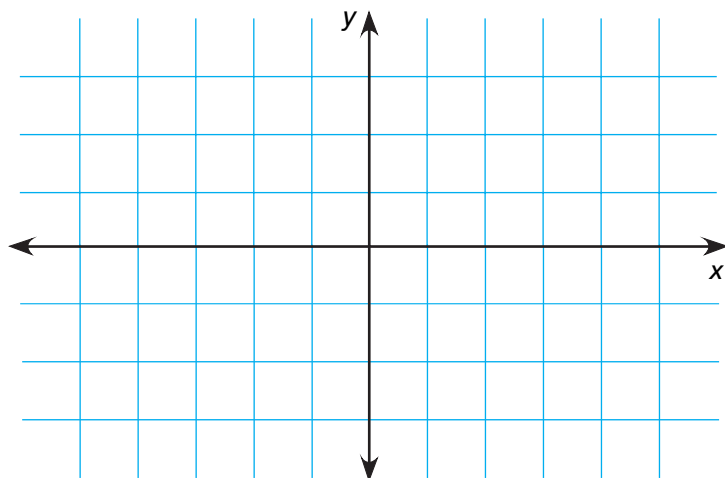**4** Mark *L* at (3,1).

Mark *M* at (1,3).

Mark *N* at (3,3).

Mark *O* at (3, 1).

Mark *P* at (1, 1).

Draw $\overline{LM}$, $\overline{MO}$, $\overline{ON}$, $\overline{NP}$, and $\overline{PL}$.

What shape did you draw?

_____

5 **Challenge**

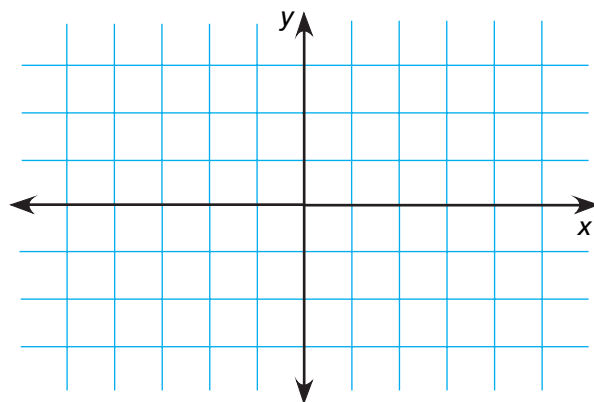Mark *Q* at (2,3).   Mark *U* at (3,0).

Mark *R* at (2,3).   Mark *V* at (0, 1).

Mark *S* at (0,2).   Mark *W* at (3,0).

Mark *T* at (4,1).   Mark *X* at (4,1).

Draw $\overline{TU}$, $\overline{VW}$, $\overline{WX}$, and $\overline{VU}$.

What did you draw?
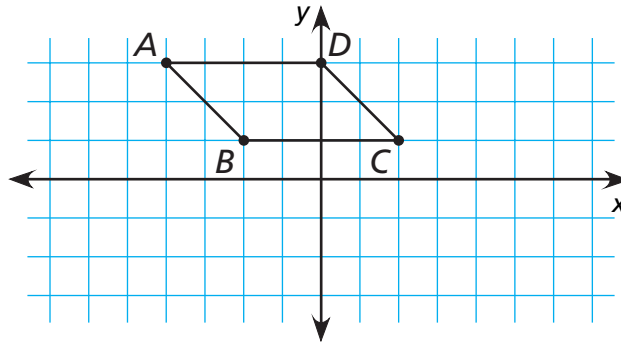
_____

Chapter 12

Lesson 5

Drawing Figures on a Coordinate Grid

NCTM Standards 1, 4, 6, 7, 8, 9, 10
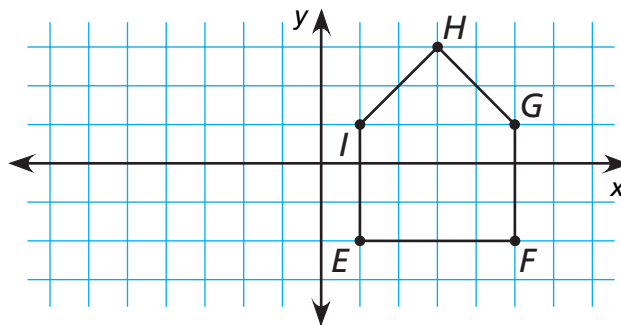
Write the directions for drawing each of the pictures below. Tell which points to mark and which connecting line segments to draw.
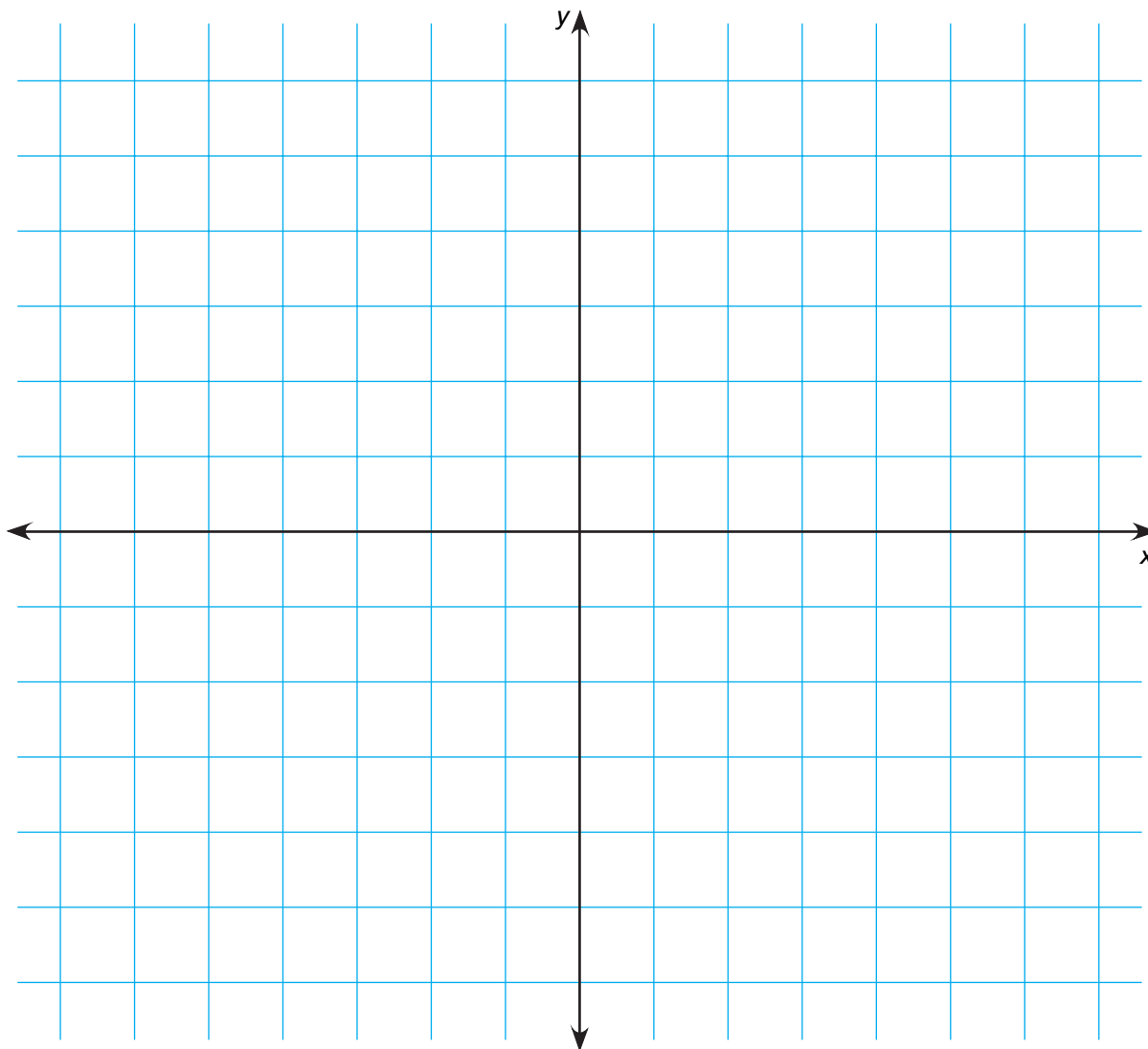
1

Mark *A* at **(____,____)**. Mark *B* at **(____,____)**.

_____

_____

2

_____

_____

_____

3 **Challenge** Draw a star like this one ⭐ on the grid.
Write directions describing how to draw it.

_____

_____

_____

_____

Lesson 6

Name _____   Date _____

Moving Figures on a Coordinate Grid

NCTM Standards 1, 2, 3, 6, 7, 8, 9, 10

1 Complete the table and draw and label figures H, I, and J.

A	H	I	J
(x,y)	(x 5,y)	(x,y 5)	(x 4,y 4)
(6,6)	(11,6)		
(6,9)			(2,13)
(8,6)		(8,1)	
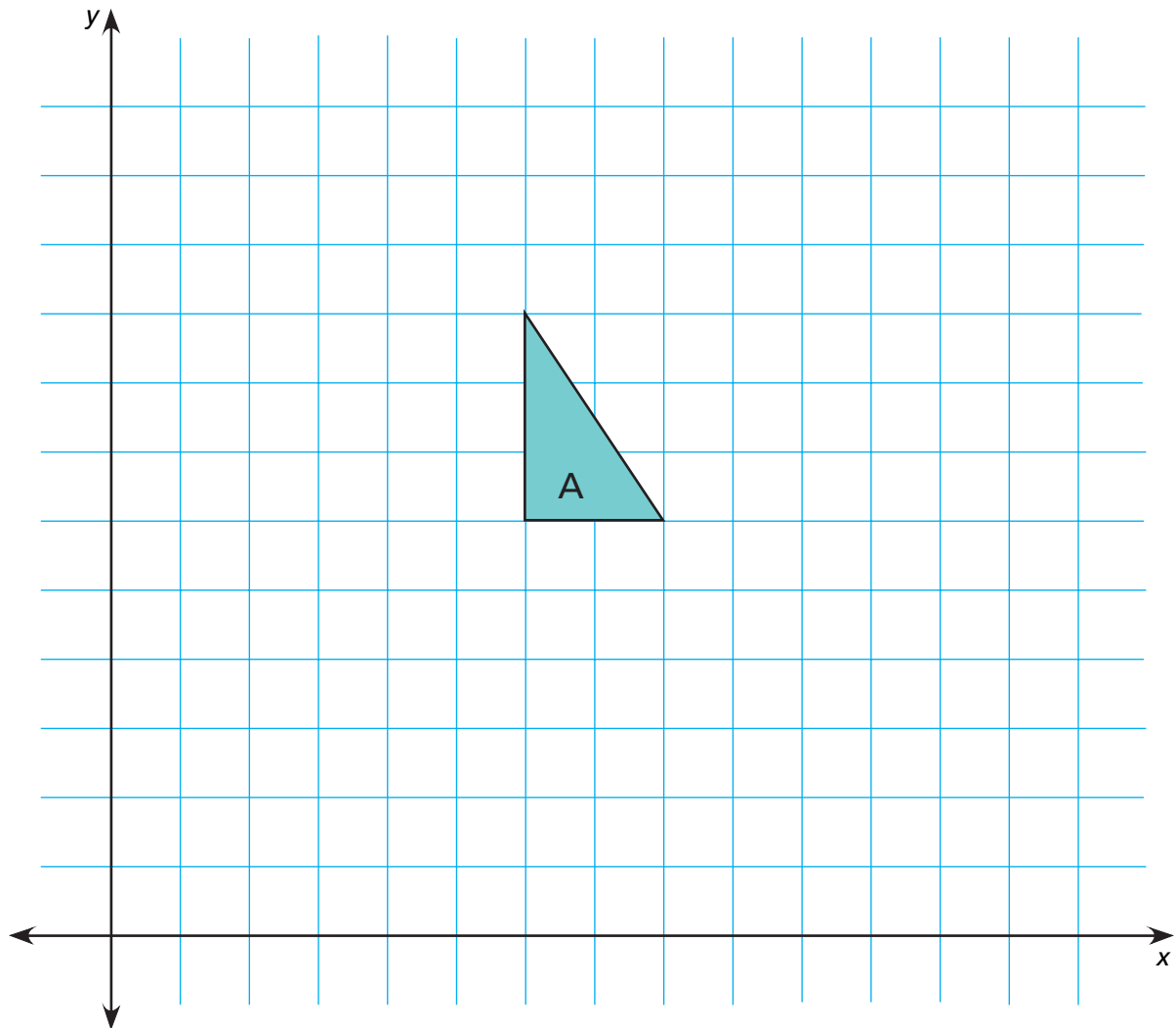
2 Slide this figure 4 spaces to the right.
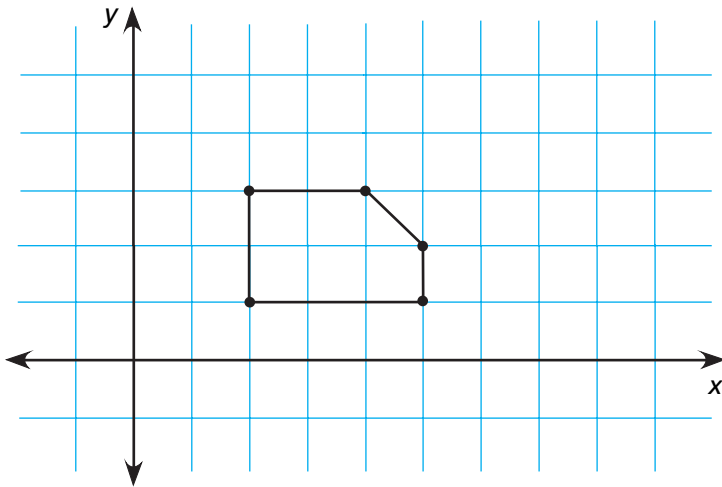
Original Points	New Points

3 Follow the rule to fill in the pairs of coordinates in the table. Then place and connect the new points to make a new version of the figure.

How did the figure move?

_____
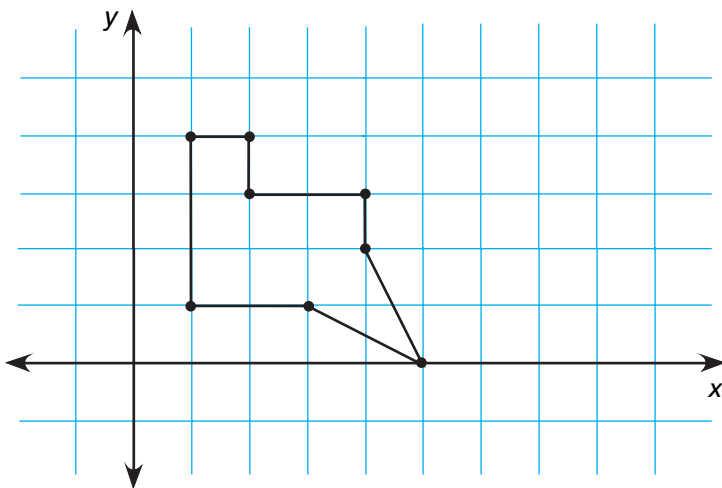
Original Points	New Points
(x,y)	(10 x,y)
(1,1)	(9,1)
(1,4)	
(2,4)	
(2,3)	(8,3)
(3,1)	
(4,3)	
(4,2)	(6,2)
(5,0)	

4 Challenge Describe how you think a figure would move if, for each point, you subtracted 3 from the first coordinate and added 2 to the second coordinate.

_____

_____

_____

Chapter 12

Lesson 7

Number Sentences and Straight Lines

NCTM Standards 1, 2, 3, 6, 7, 8, 9, 10

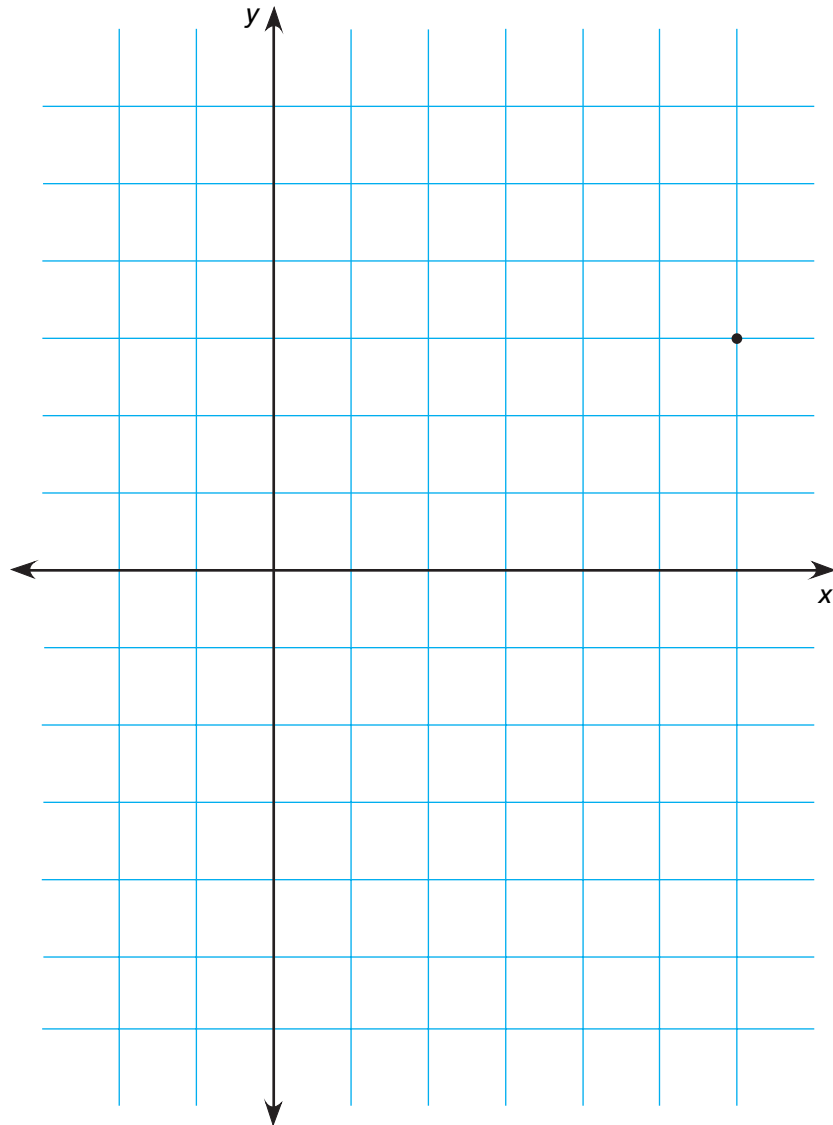**1** Graph the line whose points all fit the sentence y x 3.

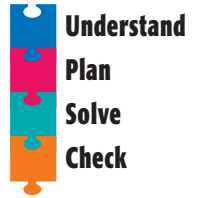Fill in and use the table to help you find some points on the line.

(x,y)
(6,3)
(0,___)
(___,0)
(5,___)
(___,4)
(3,___)
(___, 1)
(___, 5)

2 Mark the points and draw the line connecting them. Then, fill in the line table and write a number sentence to describe the rule.

y _____

(x,y)
(1,3)
(0,2)
(___,0)
(4,___)
(3,___)
(___,4)
(___,1)
(5,___)

3 Challenge Sometimes the Generous Bakery delivers more cookies than a customer orders.

The clerks use this graph to tell how many cookies to send to a customer.

Suenita ordered 8 cookies.

How many cookies did the bakery send her? _____

When will you get more cookies than you order?

_____

_____

COOKIE DELIVERIES

Number of Cookies Sent

Number of Cookies Ordered

Name _____ Date _____

Problem Solving Strategy
Draw a Picture
NCTM Standards 1, 2, 6, 7, 8, 9, 10

Understand
Plan
Solve
Check

1 Jessica looked at the thermometer every three hours and recorded how the temperature changed. At 6:00 A.M., the temperature was 10 C. At 9:00 A.M., it was 9 warmer. At noon, it was 3 warmer than at 9:00. At 3:00 P.M., it was 5 colder than at noon. At 6:00 P.M., it was 8 colder than at 3:00.

What was the temperature at 6:00 P.M.? _____

2 Ian and Jenwa played a card game in which you score points for combinations of cards and lose points for cards left in your hand. They played 6 rounds. Here is their score sheet:

	Ian	Jenwa
Round 1	6	4
Round 2	7	6
Round 3	5	3
Round 4	4	5
Round 5	6	9
Round 6	3	5

What was Ian's final score? _____

What was Jenwa's final score? _____

Who had the higher final score? _____

3 A snail fell down a hole and is crawling up to the surface. Every day the snail crawls up 3 feet, but every night it slides back down 2 feet. On Monday morning, the snail is 5 feet under ground.

On what day will the snail get out of the hole? _____

Problem Solving Test Prep

Choose the correct answer.

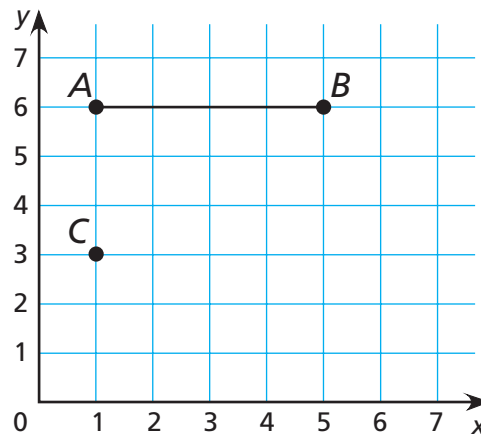**1** What will the temperature be if the temperature drops 9 C?
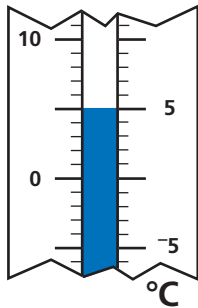
A. 5 C   **C.** 4 C

B. 4 C   **D.** 5 C

2 A rectangular prism is 8 cm long, 4 cm wide, and 2 cm high. What are the length, width, and height of a cube with the same volume?

A. 8 centimeters
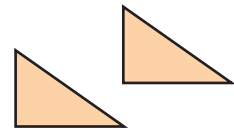
B. 4 centimeters

C. 3 centimeters

D. 2 centimeters

3 Line segment $\overline{AB}$ is parallel to $\overline{CD}$. Which could be the coordinates of point *D*?

A. (5,6)   **C.** (6,1)

B. (1,6)   **D.** (5,3)

4 Which transformation is shown?

A. reflection

B. rotation

C. translation

D. translation and rotation

✏️ Show What You Know

Solve each problem. Explain your answer.

**5** A game spinner has 6 equal sections labeled 1–6. Name an outcome that would give two players an equal a chance of winning. Explain.

_____

_____

_____

6 A bar graph shows that the Tigers won 9 baseball games in April, 3 more than that in May, and 2 fewer in June than in April. How many games did the team win in the 3 months? Explain.

_____

_____

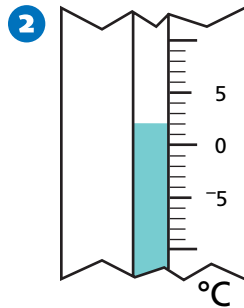# Review/Assessment

Every day at 6 A.M., Ming went outside and measured the temperature. Here's the information that she recorded. Fill in the missing information. Lesson 1
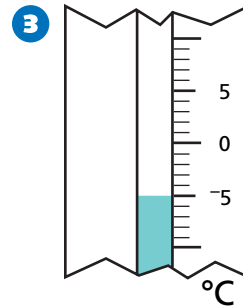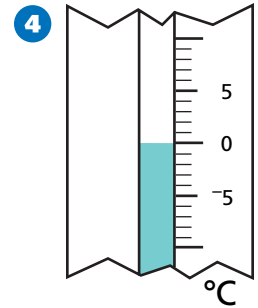
1

5
0
−5

°C

Monday

_____ C

2

5
0
−5
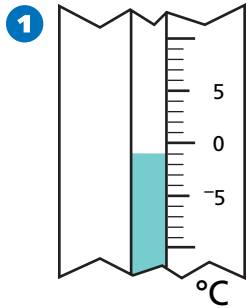
°C

Tuesday

_____

Change from
Monday

__3__ higher

3

5
0
−5

°C

Wednesday

__5__ C

Change from
Tuesday

_____

4

5
0
−5

°C

Thursday

_____

Change from
Wednesday

__5__ higher

Use this number line to help answer the questions below. Lesson 2

−12 −11 −10 −9 −8 −7 −6 −5 −4 −3 −2 −1 0 1 2 3 4 5 6 7 8 9 10 11 12 13

5 Start at 5. Jump backward
6 spaces. Then jump forward
3 spaces.

Where are you? _____

6 Start at 10. Jump backward
8 spaces. Then jump backward
5 spaces.

Where are you? _____

7 Start at 3. Jump forward
3 spaces. Then jump backward
7 spaces.

Where are you? _____

8 Start at 8. Jump forward
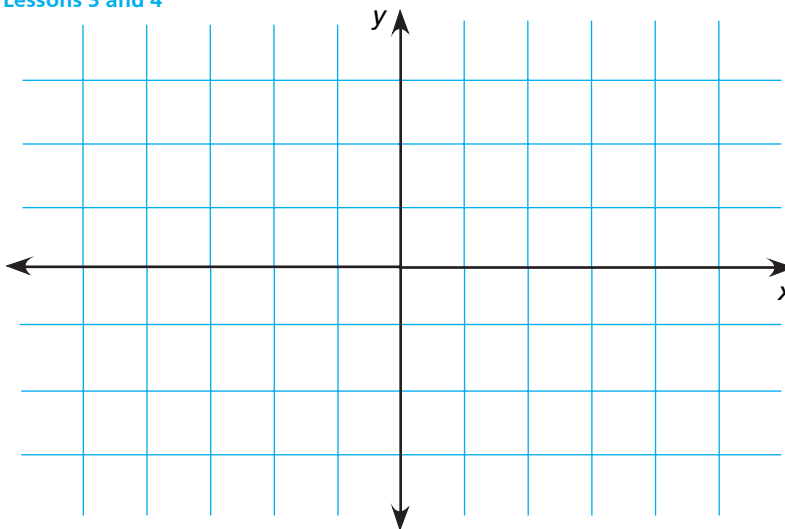10 spaces. Then jump backward
6 spaces.

Where are you? _____

9 Mark *A* at (0,2)   Draw $\overline{AC}$ Lessons 3 and 4

10 Mark *B* at (2,0)   Draw $\overline{AD}$

11 Mark *C* at (2, 2)   Draw $\overline{BD}$

12 Mark *D* at (2, 2) Draw $\overline{CE}$

13 Mark *E* at (2,0)   Draw $\overline{BE}$

What shape did you draw?

_____

---

14 Write the directions for drawing the figure below.
Tell which point to mark and which connecting lines
to draw. **Lesson 5**

_____

_____

_____

_____