BRIDGES IN MATHEMATICS 4

GRADE 4 SUPPLEMENT

Set C2 Geometry: 2- & 3-Dimensional Shapes

Includes

Skills & Concepts

- ★ analyze the quadrilaterals, such as squares, rectangles, trapezoids, rhombuses, and parallelograms, according to their properties
- ★ analyze the relationship between three-dimensional geometric shapes in the form of cubes, rectangular prisms, and cylinders and their two-dimensional nets
- ★ represent the two-dimensional shapes trapezoids, rhombuses, and parallelograms and the three-dimensional shapes cubes, rectangular prisms, and cylinders
- ★ represent points, lines, line segments, rays, angles, and polygons
- ★ illustrate possible paths from one point to another along vertical and horizontal grid lines in the first quadrant of the coordinate plane
- ★ use appropriate tools to measure objects to the nearest unit: quarter and eighth inches, centimeters, and millimeters.
- ★ compare angle measures with referent angles of 45 degrees, 90 degrees, and 180 degrees to estimate angle measures

Published by The MATH LEARNING CENTER *Salem, Oregon*

P0509

Bridges in Mathematics Grade 4 Supplement
Set C2 Geometry: 2- & 3-dimensional Shapes

The Math Learning Center, PO Box 12929, Salem, Oregon 97309. Tel. 1 800 575–8130.

Prepared for publication on Macintosh Desktop Publishing system.
Printed in the United States of America.

P0509

Bridges in Mathematics is a standards-based K–5 curriculum that provides a unique blend of concept development and skills practice in the context of problem solving. It incorporates the Number Corner, a collection of daily skill-building activities for students.

The Math Learning Center is a nonprofit organization serving the education community. Our mission is to inspire and enable individuals to discover and develop their mathematical confidence and ability. We offer innovative and standards-based professional development, curriculum, materials, and resources to support learning and teaching. To find out more, visit us at www.mathlearningcenter.org.

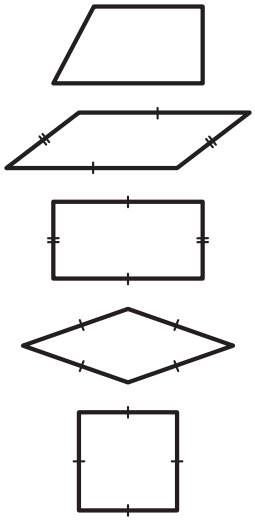
NAME _____ DATE _____

Set C2 ★ Independent Worksheet 1

INDEPENDENT WORKSHEET

Analyzing Quadrilaterals & Drawing Figures

A quadrilateral is any polygon that has 4 sides. There are many kinds of quadrilaterals, including:



trapezoid a quadrilateral with exactly 1 pair of parallel sides

parallelogram a quadrilateral with 2 pairs of parallel sides

rectangle a parallelogram with 4 right angles

rhombus a parallelogram with 4 congruent sides

square a parallelogram with 4 congruent sides and 4 right angles

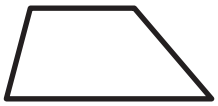
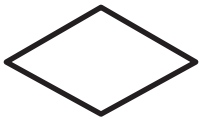
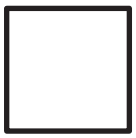
1 Use a ruler marked in inches to draw the following figures in the boxes below.

a A trapezoid with one side that is $1\frac{1}{8}$ inches long	**b** A parallelogram with two sides that are each $1\frac{3}{4}$ inches long

(Continued on back.)

Independent Worksheet 1 Analyzing Quadrilaterals & Drawing Figures (cont.)

2 Look carefully at the figures below. Decide how many right angles, pairs of parallel sides, and pairs of congruent sides each has. Then circle the words that describe what kind of figure it is. You might circle more than one word for some figures.

Figure	Right angles	Pairs of congruent sides (Measure to nearest milimeter to be sure.)	Pairs of parallel sides	Word(s) that describe(s) the figure
a 				trapezoid square parellelogram, rectangle rhombus
b 				trapezoid square parellelogram, rectangle rhombus
c 				trapezoid square parellelogram, rectangle rhombus
d 				trapezoid square parellelogram, rectangle rhombus
e 				trapezoid square parellelogram, rectangle rhombus

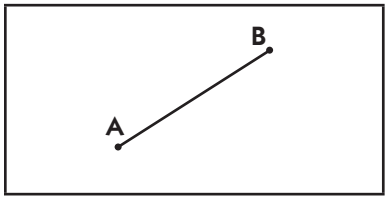
(Continued on next page.)

NAME _____ **DATE** _____

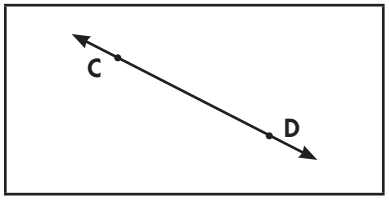
Independent Worksheet 1 Analyzing Quadrilaterals & Drawing Figures (cont.)

3 Use a ruler marked in centimeters and millimeters to draw the line segments, lines, and rays described below. For each one, mark the two points and make sure to use arrows correctly for rays and lines.

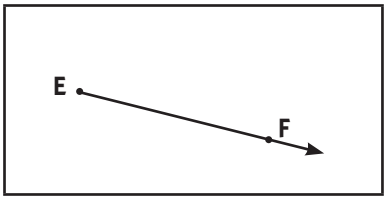
A **line segment** connects two points.



A **line** passes through two points and keeps going in both directions.



A **ray** begins at one point and keeps going in just one direction.



a A line segment that is 3 cm long.	**b** A line segment that is 45 mm long.
c A line that passes through two points that are 4 cm apart.	**d** A ray that starts at one point and passes through another point that is 35 mm away from the first point.

NAME _____ DATE _____

Set C2 ★ Independent Worksheet 2

INDEPENDENT WORKSHEET

Quadrilaterals & Transformations

1a Draw a line from each description to the quadrilateral it describes.

b Write each word below in the space beside the figure it best describes. Use each word only once.

rectangle parallelogram trapezoid rhombus

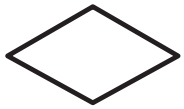
It has 4 congruent sides and no right angles.

_____

It has 2 pairs of congruent sides and no right angles.

_____

It has 1 pair of parallel sides.



_____

It has 2 pairs of congruent sides and 4 right angles.

_____

2 Use a ruler marked in inches to draw each figure described below.

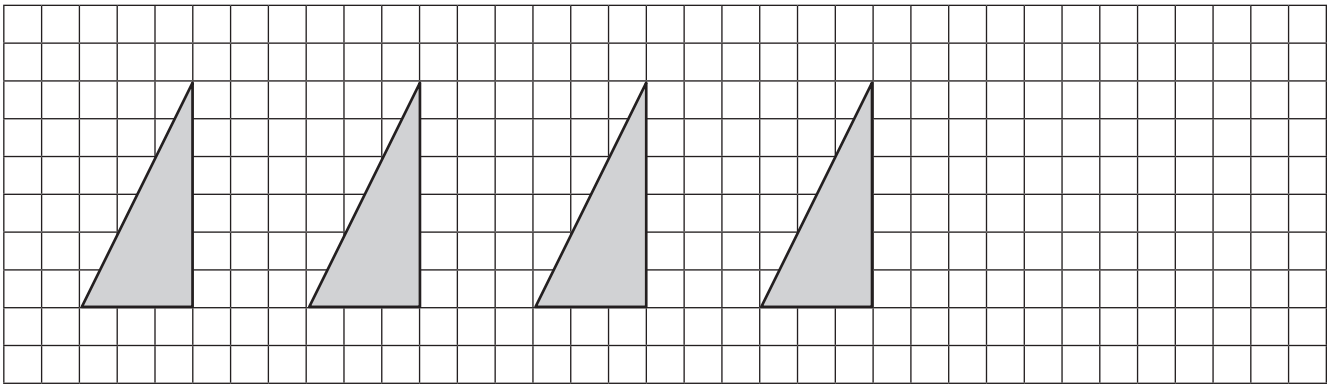
a A parallelogram with 2 sides that are each $2\frac{3}{8}$ inches long	**b** A trapezoid with 1 side that is $2\frac{3}{4}$ inches long

(Continued on back.)

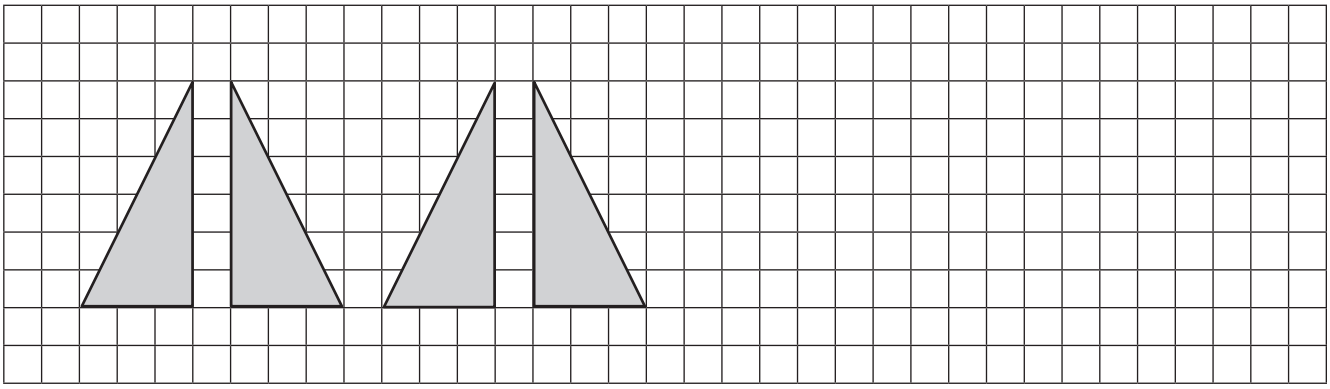
Independent Worksheet 2 Quadrilaterals & Transformations (cont.)

3 The triangles below have been reflected (flipped), rotated (turned), or translated (slid) to make a sequence. Look at each one carefully, and then continue the pattern.

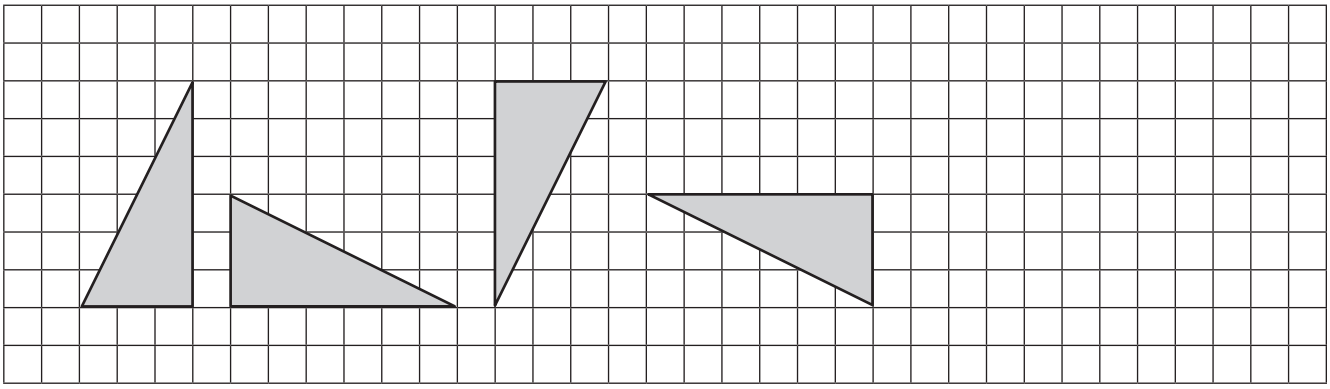
a



b



c



4 Write the letter of the sequence above to answer each question below.

a Which sequence shows reflections (flips)? _____

b Which sequence shows rotations (turns)? _____

c Which sequence shows translations (slides)? _____

(Continued on next page.)

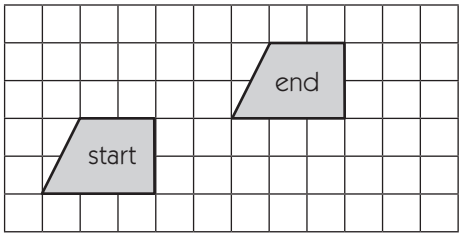
NAME _____ DATE _____

Independent Worksheet 2 Quadrilaterals & Transformations (cont.)

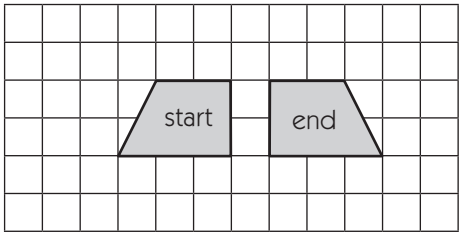
CHALLENGE

5 The trapzoid in each picture has been reflected (flipped), rotated (turned), or translated (slid) three times. Draw a line from each description to the picture it best describes.

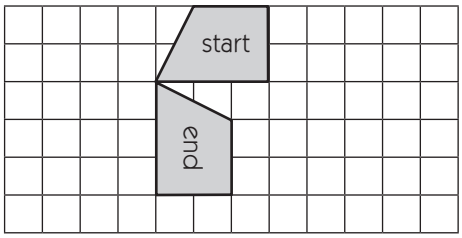
a The trapezoid has been reflected horizontally three times.



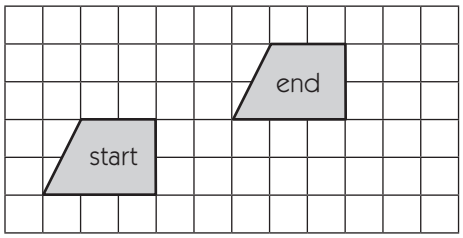
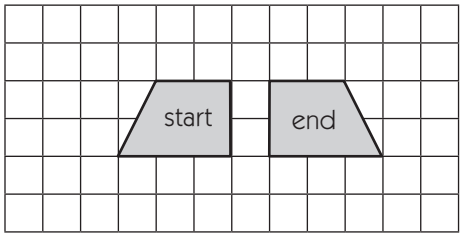
b The trapezoid has been rotated 90 degrees three times, going counter-clockwise.



c The trapezoid has been translated horizontally, vertically, and then horizontally again.



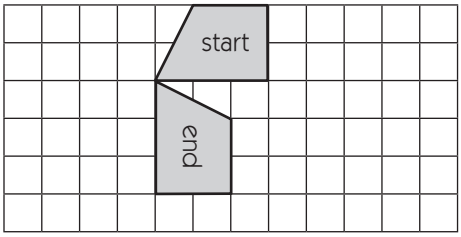
6 Each transformation above could have been done in just one move instead of three. Describe how you could get the trapezoid from its start position to its end position with just one flip, slide, or turn. Write in the space next to each picture and draw on the picture to help explain your thinking.

a 	
b 	

(Continued on back.)

Independent Worksheet 2 Quadrilaterals & Transformations (cont.)

6c



NAME _____ DATE _____

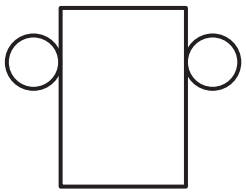
Set C2 ★ Independent Worksheet 3

INDEPENDENT WORKSHEET

Nets & Quadrilaterals

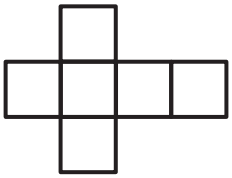
1 Draw a line from each net to the figure it could make if you cut it out and turned it into a 3-dimensional shape.

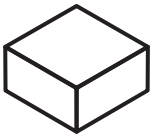
a



cube

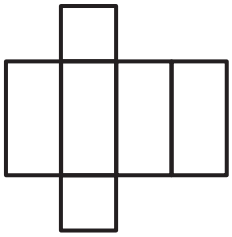
b

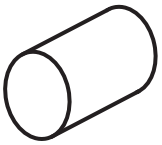




rectangular prism

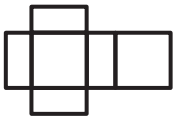
c

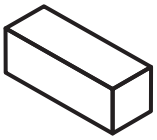




cylinder

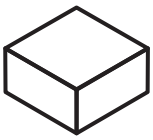
d



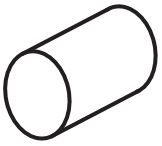


rectangular prism

2 Look carefully at the nets for these two figures.



rectangular prism



cylinder

a Write two things about them that are similar.

b Write two things about them that are different.

(Continued on back.)

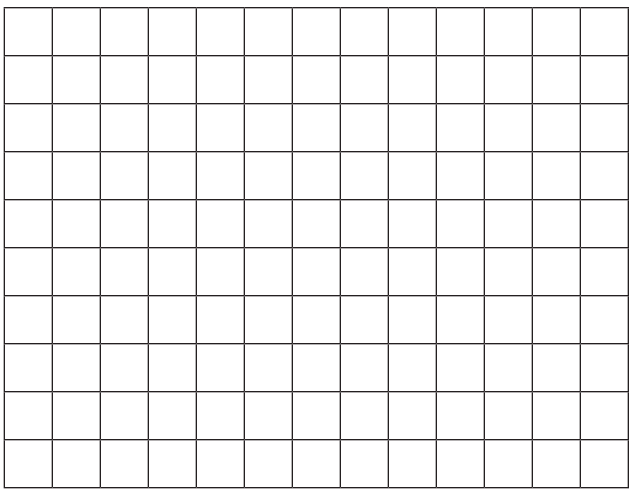
Independent Worksheet 3 Nets & Quadrilaterals (cont.)

3 Use a ruler marked in inches to draw the following figures in the boxes below.

a A rhombus that is not a square with 4 sides that are each $1\frac{1}{4}$ inch long.	**b** A parallelogram that is not a rectangle with 2 sides that are each $2\frac{7}{8}$ inch long.

CHALLENGE

4 Raven says it's impossible for a trapezoid to have parallel sides that are also the same length. Remember that a trapzoid is any quadrilateral with exactly 1 pair of parallel sides. Explain why you agree or disagree with her. Draw on the grid to help explain your answer.



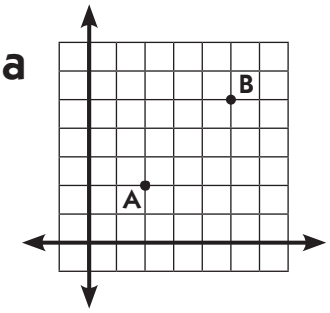
NAME _____ DATE _____

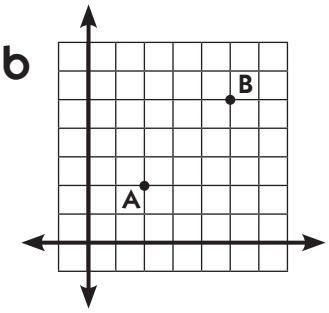
Set C2 ★ Independent Worksheet 4

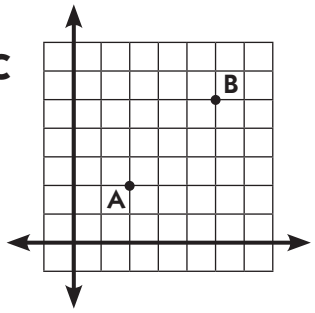
INDEPENDENT WORKSHEET

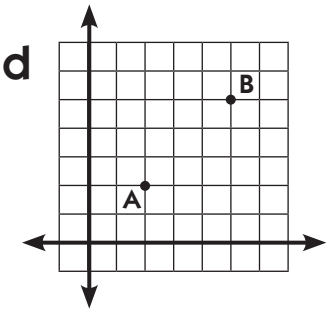
Illustrating Paths & Angles

1 Draw four different paths from point A to point B along the grid lines (no diagonals).

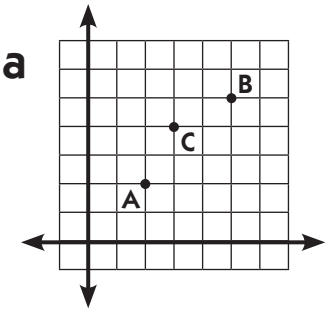
a 

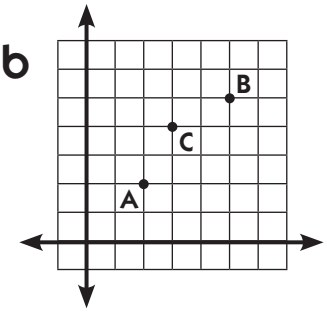
b 

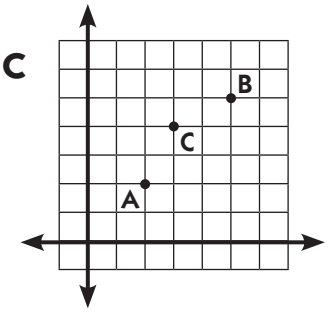
c 

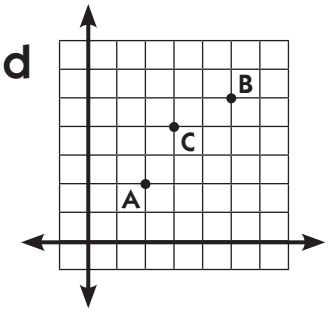
d 

2 Draw four different paths from point A to point B that also pass through point C. Move along the grid lines only. Do not use diagonals.

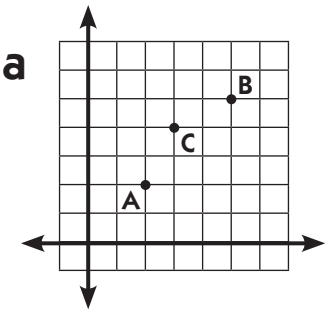
a 

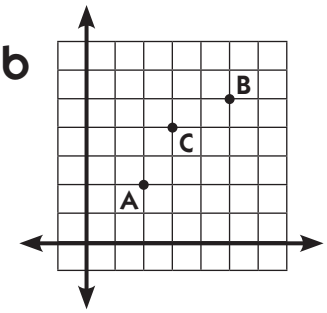
b 

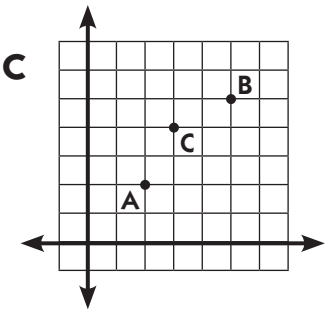
c 

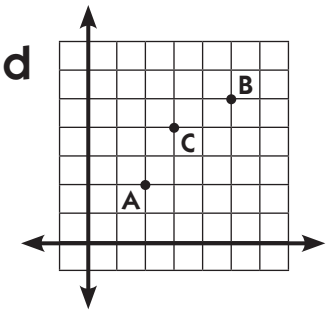
d 

3 Draw four different paths from point A to point B that do not pass through point C. Move along the grid lines only. Do not use diagonals.

a 

b 

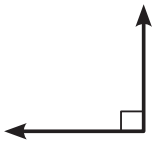
c 

d 

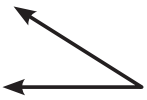
(Continued on back.)

Independent Worksheet 4 Illustrating Paths & Angles (cont.)

4 The lines on the grids can help you see right angles and straight angles. Use them to help you estimate and draw some other angle measures. The first side of each angle is drawn for you. Then circle whether the angle you drew is *acute* or *obtuse*.

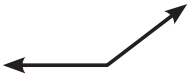


A **right angle** measures exactly 90 degrees.



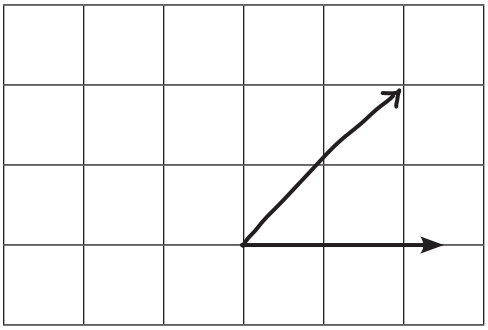
An **acute angle** measures less than 90 degrees.

A **straight angle** measures exactly 180 degrees.



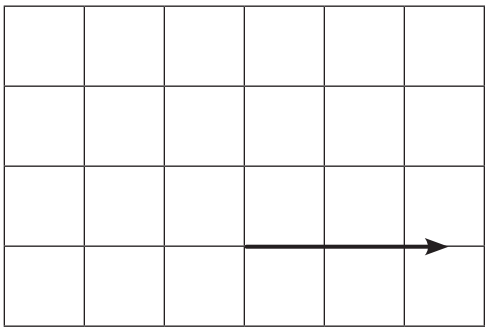
An **obtuse angle** measures more than 90 degrees and less than 180 degrees.

example Draw an angle that is *about* 45 degrees.



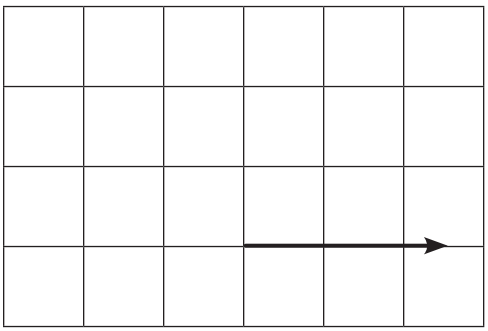
acute obtuse

a Draw an angle that is *about* 30 degrees.



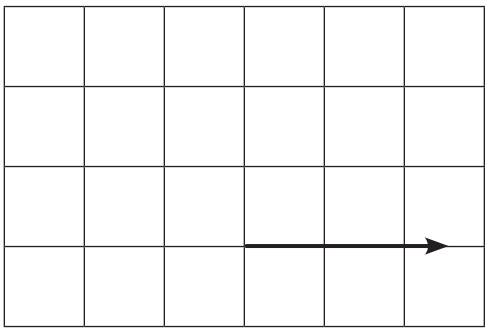
acute obtuse

b Draw an angle that is *about* 135 degrees.



acute obtuse

c Draw an angle that is *about* 170 degrees.



acute obtuse