

# 7-1 Practice

Ratios and Proportions

Form G

Write the ratio of the first measurement to the second measurement.

- diameter of a salad plate: 8 in.      diameter of a dinner plate: 1 ft
- weight of a cupcake: 2 oz      weight of a cake: 2 lb 2 oz
- garden container width: 2 ft 6 in.      garden container length: 8 ft
- width of a canoe: 28 in.      length of a canoe: 12 ft 6 in.
- height of a book: 11 in.      height of a bookshelf: 3 ft 3 in.
- The perimeter of a rectangle is 280 cm. The ratio of the width to the length is 3 : 4. What is the length of the rectangle?
- The ratio of country albums to jazz albums in a music collection is 2 : 3. If the music collection has 45 albums, how many are country albums?
- The lengths of the sides of a triangle are in the extended ratio 3 : 6 : 8. The triangle's perimeter is 510 cm. What are the lengths of the sides?

Algebra Solve each proportion.

- $\frac{x}{4} = \frac{13}{52}$
- $\frac{x}{2x+1} = \frac{16}{40}$
- $\frac{9}{10} = \frac{9x}{70}$
- $\frac{2}{7} = \frac{b+1}{56}$
- $\frac{11}{y} = \frac{9}{27}$
- $\frac{3}{34} = \frac{m}{51}$

Use the proportion  $\frac{x}{z} = \frac{6}{5}$ . Complete each statement. Justify your answer.

- $\frac{x}{6} = \frac{\square}{\square}$
- $\frac{x+z}{z} = \frac{\square}{\square}$
- $\frac{z}{x} = \frac{\square}{\square}$
- $5x = \square$

- The measures of two consecutive angles in a parallelogram are in the ratio 4 : 11. What are the measures of the four angles of the parallelogram?

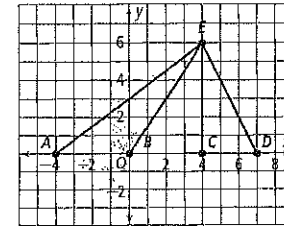
# 7-1 Practice (continued)

Ratios and Proportions

Form G

Coordinate Geometry Use the graph. Write each ratio in simplest form.

- $\frac{AB}{BD}$
- $\frac{AE}{EC}$
- $\frac{EC}{BC}$
- $\frac{\text{slope of } \overline{BE}}{\text{slope of } \overline{AE}}$



- A band director needs to purchase new uniforms. The ratio of small to medium to large uniforms is 3 : 4 : 6.
  - If there are 260 total uniforms to purchase, how many will be small?
  - How many of these uniforms will be medium?
  - How many of these uniforms will be large?
- The measures of two complementary angles are in the ratio 2 : 3. What is the measure of the smaller angle?
- The measures of two supplementary angles are in the ratio 4 : 11. What is the measure of the larger angle?
- The means of a proportion are 4 and 17. List all possible pairs of positive integers that could be the extremes of the proportion.
- The extremes of a proportion are 5 and 14. List all possible pairs of positive integers that could be the means of the proportion.

Algebra Solve each proportion.

- $\frac{x-1}{x+1} = \frac{10}{14}$
- $\frac{7}{50} = \frac{x}{30}$

- Writing Explain why solving proportions is an important skill for solving geometry problems.
- Draw a triangle that satisfies this condition: The ratio of the interior angles is 7 : 11 : 12.

# 7-2

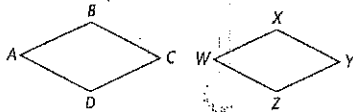
## Practice

Form G

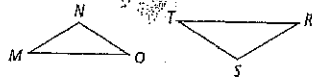
### Similar Polygons

List the pairs of congruent angles and the extended proportion that relates the corresponding sides for the similar polygons.

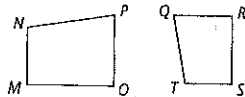
1.  $ABCD \sim WXYZ$



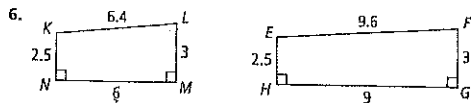
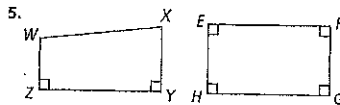
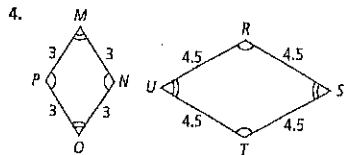
2.  $\triangle MNO \sim \triangle RST$



3.  $NPOM \sim TQRS$



Determine whether the polygons are similar. If so, write a similarity statement and give the scale factor. If not, explain.



Determine whether the polygons are similar.

- an equilateral triangle with side length 6 and an equilateral triangle with side length 15
- a square with side length 4 and a rectangle with width 8 and length 8.5
- a triangle with side lengths 3 cm, 4 cm, and 5 cm, and a triangle with side lengths 18 cm, 19 cm, and 20 cm
- a rhombus with side lengths 8 and consecutive angles  $50^\circ$  and  $130^\circ$ , and a rhombus with side lengths 13 and consecutive angles  $60^\circ$  and  $130^\circ$

# 7-2

## Practice (continued)

Form G

### Similar Polygons

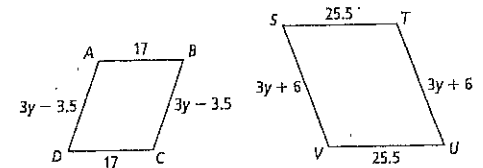
- An architect is making a scale drawing of a building. She uses the scale 1 in. = 15 ft.
  - If the building is 48 ft tall, how tall should the scale drawing be?
  - If the building is 90 ft wide, how wide should the scale drawing be?
- A scale drawing of a building was made using the scale 15 cm = 120 ft. If the scale drawing is 45 cm tall, how tall is the actual building?

Determine whether each statement is *always*, *sometimes*, or *never* true.

- Two squares are similar.
- Two hexagons are similar.
- Two similar triangles are congruent.
- A rhombus and a pentagon are similar.

Algebra Find the value of  $y$ . Give the scale factor of the polygons.

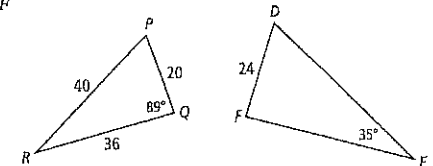
17.  $ABCD \sim TSVU$



- The scale factor of  $RSTU$  to  $VWXY$  is  $14 : 3$ . What is the scale factor of  $VWXY$  to  $RSTU$ ?

In the diagram below,  $\triangle PRQ \sim \triangle DEF$ . Find each of the following.

- the scale factor of  $\triangle PRQ$  to  $\triangle DEF$
- $m\angle D$
- $m\angle R$
- $m\angle P$
- $DE$
- $FE$



- Writing Explain why all isosceles right triangles are similar, but not all scalene right triangles are similar.