7-1 Study Guide and Intervention
Ratios and Proportions

Write and Use Ratios A **ratio** is a comparison of two quantities by division. The ratio a to b, where b is not zero, can be written as $\frac{a}{b}$ or $a:b$.

Exercises

1. In the 2005 Major League Baseball season, Alex Rodriguez hit 54 home runs and was at bat 543 times. What is the ratio of home runs to the number of times he was at bat?

2. There are 182 girls in the sophomore class of 395 students. What is the ratio of girls to total students?

3. The length of a rectangle is 8 inches and its width is 5 inches. What is the ratio of length to width?

Exercises

Solve each proportion.

4. $\frac{x}{5} = \frac{18}{45}$
5. $\frac{4}{7} = \frac{x}{28}$
6. $\frac{x+1}{15} = \frac{21}{45}$

7-2 Study Guide and Intervention
Similar Polygons

Identify Similar Polygons Similar polygons have the same shape but not necessarily the same size.

Exercises

List all pairs of congruent angles, and write a proportion that relates the corresponding sides for each pair of similar polygons.
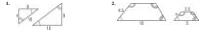
1. $\triangle ABF \sim \triangle GBF$

2. $PQRS \sim TUWX$

Determine whether each pair of figures is similar. If so, write the similarity statement and scale factor. If not, explain your reasoning.

3.

4.

Use Similar Figures You can use scale factors and proportions to find missing side lengths in similar polygons.

Exercises

Each pair of polygon is similar. Find the value of x.

1.

2.

3.

4.

5. If *ABCD* ~ *PQRS*, find the scale factor of *ABCD* to *PQRS* and the perimeters of each polygon.

7-3 Study Guide and Intervention
Similar Triangles

Identify Similar Triangles Here are three ways to show that two triangles are similar.

AA Similarity	Two angles of one triangle are congruent to two angles of another triangle.
SSS Similarity	The measures of the corresponding side lengths of two triangles are proportional.
SAS Similarity	The measures of two side lengths of one triangle are proportional to the measures of two corresponding side lengths of another triangle, and the included angles are congruent.

Exercises

Determine whether the triangles are similar. If so, write a similarity statement. Explain your reasoning.

1.

2.

3.

4.

Use Similar Triangles Similar triangles can be used to find measurements.

Exercises

ALGEBRA Identify the similar triangles. Then find each measure.

1. JL

2. EF

3. QR

4. BC