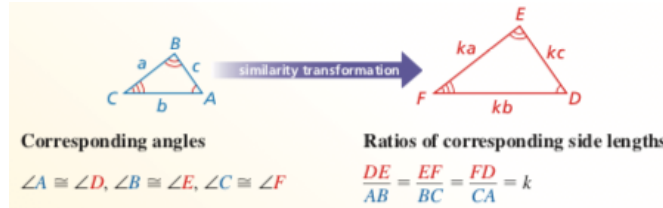


Definitions

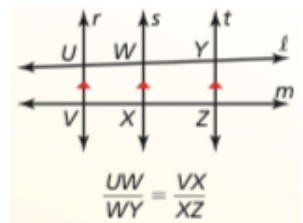
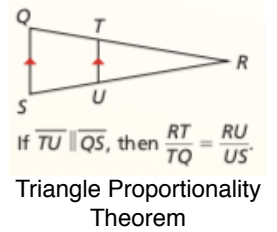
Corresponding Parts of Similar Polygons: similar polygons have congruent corresponding angle measures and proportional corresponding side lengths.

Scale factor (k): the ratio of corresponding side lengths for two similar polygons.



Theorems and Postulates

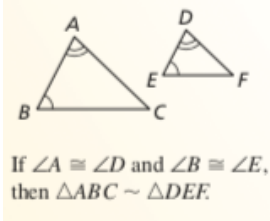
- **Perimeters of Similar Polygons Theorem:** If two polygons are similar, then the ratio of their perimeters is equal to the ratios of their corresponding side lengths.
- **Areas of Similar Polygons Theorem:** If two polygons are similar, then the ratio of their areas is equal to the squares of the ratios of their corresponding side lengths.
- **Triangle Proportionality Theorem/Converse:** A line parallel to one side of a triangle intersects the other two sides if and only if it divides the two sides proportionally.
- **Three Parallel Lines Theorem:** If three parallel lines intersect two transversals, then they divide the transversals proportionally.
- **Triangle Angle Bisector Theorem:** If a ray bisects an angle of a triangle, then it divides the opposite side into segments whose lengths are proportional to the lengths of the other two sides.



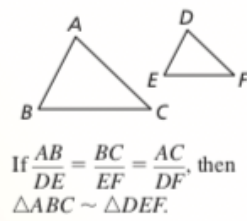
Triangle Similarity Theorems

- **Angle-Angle Similarity Theorem (AA~):** If two angles of one triangle are congruent to two angles of another triangle, then the two triangles are similar.
- **Side-Side-Side Similarity Theorem (SSS~):** If the corresponding side lengths of two triangles are proportional, then the triangles are similar.
- **Side-Angle-Side Similarity Theorem (SAS~):** If two sides of one triangle are proportional to two sides of a second triangle and the included angles of those sides are congruent, then the triangles are similar.

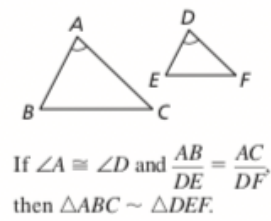
AA Similarity Theorem



SSS Similarity Theorem

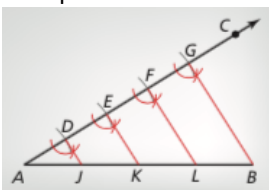


SAS Similarity Theorem



Constructions

Construct the point L on AB so that the ratio of AL to LB is 3 to 1.



Geometry
Big Ideas Chapter 8 Practice Problems
Show all work!!!

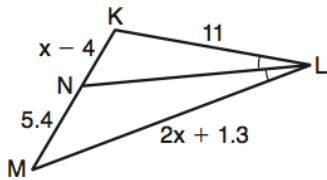
Name _____
Date _____ Period _____

1) Two rectangles are similar. They both have a width to length ratio of 2:3. The ratio of the lengths between the rectangles is 3:1. The larger rectangle has a perimeter of 90 miles. Find the area of each rectangle.

Area of smaller = _____

Area of larger = _____

3) Find KN and LM.



KN = _____

LM = _____

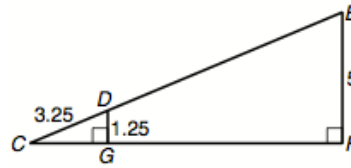
5) In $\triangle QRS$, the bisector of $\angle R$ divides \overline{QS} into segments with lengths 2.1 and 2.8. If $RQ = 3$, what is the length of \overline{RS} ? Draw a diagram and solve.

RS = _____

7) A free-fall ride at an amusement park casts a shadow $43\frac{2}{3}$ feet long. At the same time, a 6-foot-tall person standing in line casts a shadow 2 feet long. What is the height of the ride?

Height of ride = _____

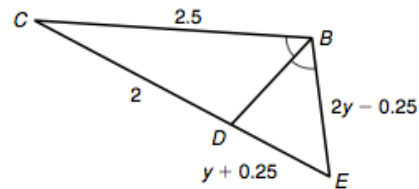
2) Explain why the triangles are similar and find the length of DE.



Reason:

DE = _____

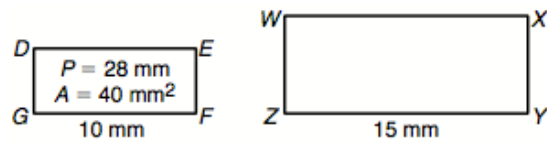
4) Find the lengths BE and DE.



BE = _____

DE = _____

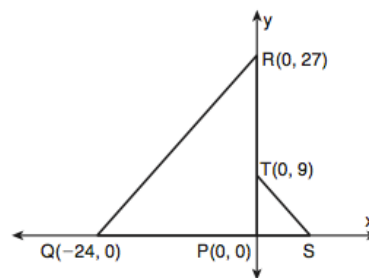
6) Given that $DEFG \sim WXYZ$, find the perimeter and area of WXYZ.



Perimeter = _____

Area = _____

8) Given that $\triangle PQR \sim \triangle PST$, find the scale factor and the coordinates of S.



Scale factor = _____

S = _____