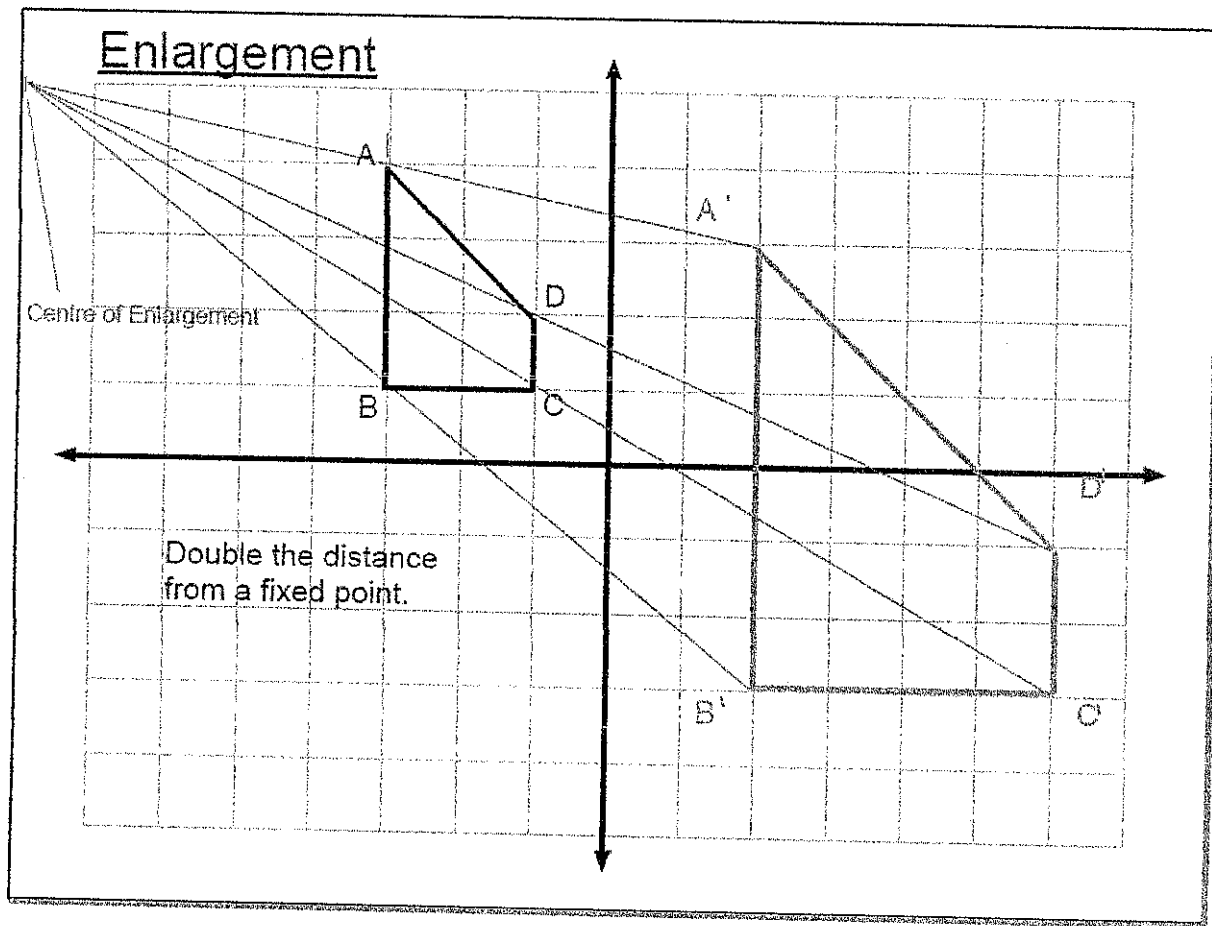


Name: _____

Date: _____

Similarity



$$ABCD \sim A'B'C'D'$$

What makes polygons similar?

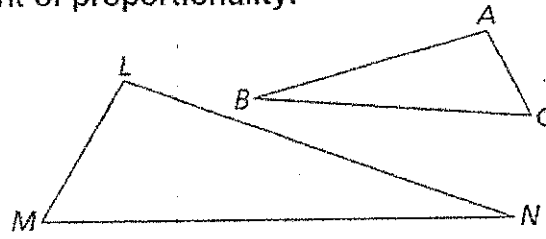
1.

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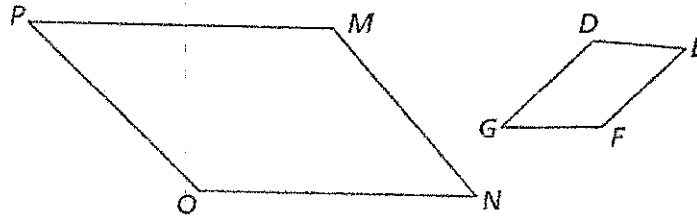
1.

List all pairs of congruent angles. Then write the ratios of the corresponding side lengths in a statement of proportionality.

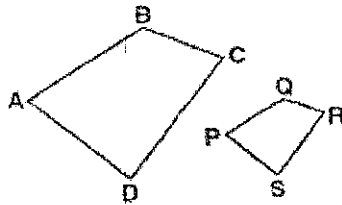
1. $\triangle LNM \sim \triangle ABC$



2. $DEFG \sim MNOP$



2.



If quadrilateral $ABCD \sim$ quadrilateral $PQRS$, $AD = 7$, $AB = 5x - 1$, $PS = 4$, and $PQ = 2x + 2$, then find the value of x .

3. The sides of a triangle are 4, 8, and 10. If the longest side of a similar triangle measures 30, find the *shortest* side.

4. If $\triangle RST \sim \triangle ABC$, $m\angle A = x^2 - 8x$, $m\angle C = 4x - 5$, and $m\angle R = 5x + 30$, find $m\angle C$.

5. A triangle has sides whose lengths are 5, 12, and 13. A similar triangle could have sides with lengths of

1) 3, 4, and 5

2) 6, 8, and 10

3) 7, 24, and 25

4) 10, 24, and 26

6. The accompanying diagram shows two similar triangles.



Find x .

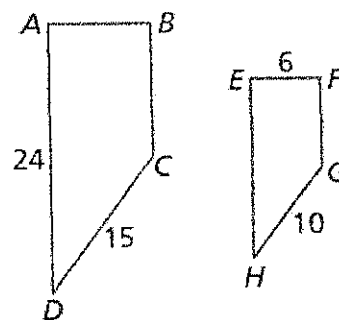
7.

In the diagram, $ABCD \sim EFGH$. Find the following.

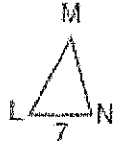
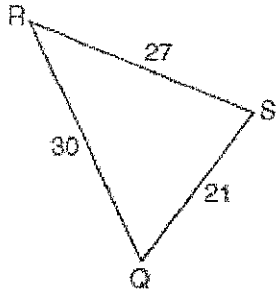
4. scale factor

5. EH

6. AB



8. In the accompanying diagram, $\triangle QRS$ is similar to $\triangle LMN$, $RQ = 30$, $QS = 21$, $SR = 27$, and $LN = 7$. What is the length of \overline{ML} ?



9.

The sides of a triangle are 3, 4, and 5. Find the length of the *shortest* side of a similar triangle whose longest side has length 20.

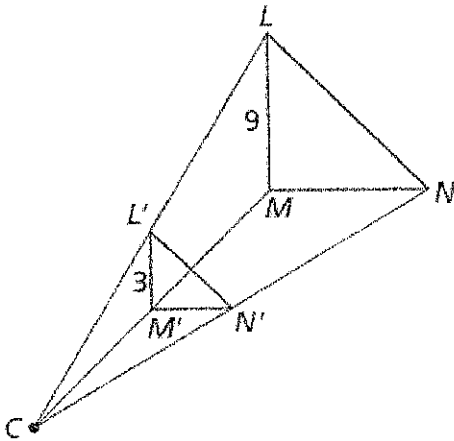
10.

Pittsburgh, Pennsylvania and State College, Pennsylvania are 9.8 inches apart on a map that has a scale showing 1.1 inches equal to 15 miles. How far apart are the cities in real life?

11.

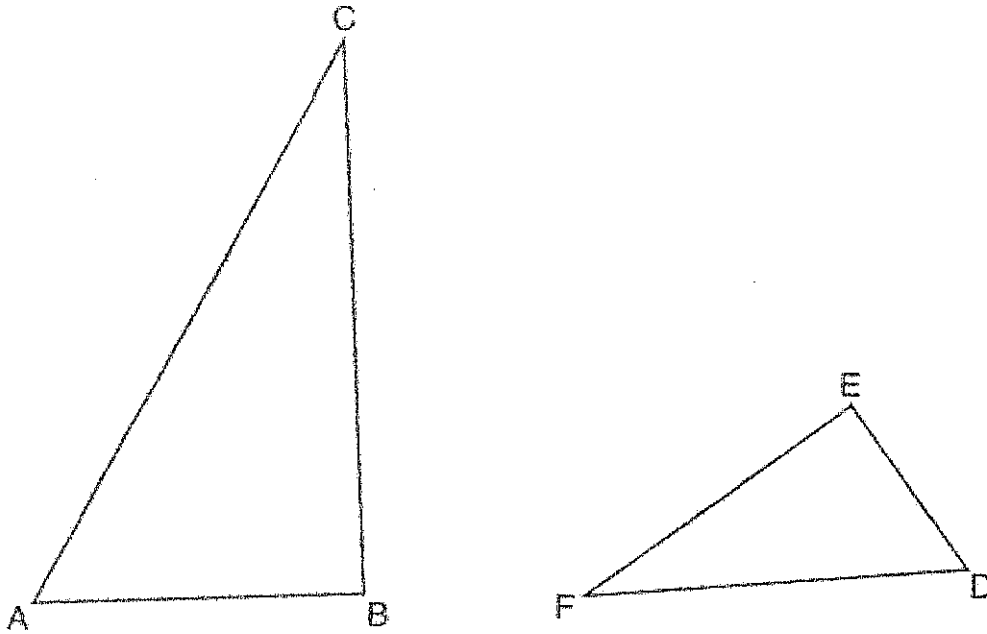
The sides of a pentagon are 5, 8, 9, 11, and 17. What is the length of the *longest* side of a similar pentagon whose shortest side is 10?

12. Find the scale factor of the dilation



13.

Triangles ABC and DEF are drawn below.



If $AB = 9$, $BC = 15$, $DE = 6$, $EF = 10$, and $\angle B \cong \angle E$, which statement is true?

(1) $\angle CAB \cong \angle DEF$

(3) $\triangle ABC \sim \triangle DEF$

(2) $\frac{AB}{CB} = \frac{FE}{DE}$

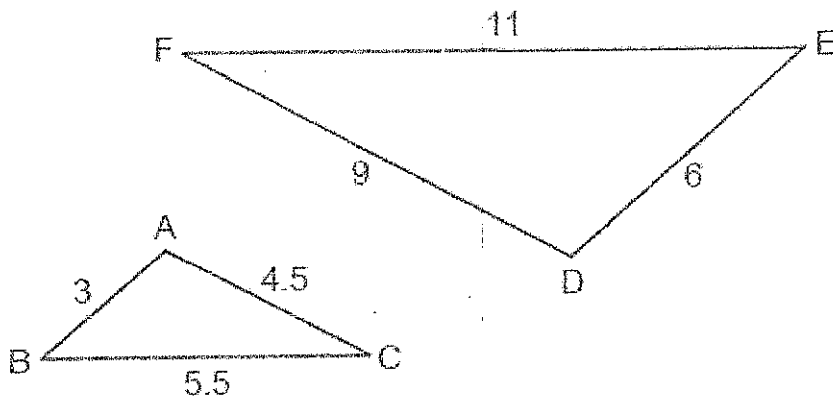
(4) $\frac{AB}{DE} = \frac{FE}{CB}$

14.

A flagpole casts a shadow 16.60 meters long. Tim stands at a distance of 12.45 meters from the base of the flagpole, such that the end of Tim's shadow meets the end of the flagpole's shadow. If Tim is 1.65 meters tall, determine and state the height of the flagpole to the *nearest tenth of a meter*.

15.

In the diagram below, $\triangle DEF$ is the image of $\triangle ABC$ after a clockwise rotation of 180° and a dilation where $AB = 3$, $BC = 5.5$, $AC = 4.5$, $DE = 6$, $FD = 9$, and $EF = 11$.



Which relationship must always be true?

(1) $\frac{m\angle A}{m\angle D} = \frac{1}{2}$

(3) $\frac{m\angle A}{m\angle C} = \frac{m\angle F}{m\angle D}$

(2) $\frac{m\angle C}{m\angle F} = \frac{2}{1}$

(4) $\frac{m\angle B}{m\angle E} = \frac{m\angle C}{m\angle F}$

Triangle Proportionality

In your own words, write the meaning of each vocabulary term.

corresponding parts

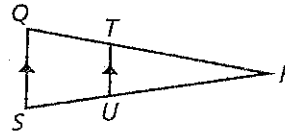
ratio

proportion

Theorems

Theorem 8.6 Triangle Proportionality Theorem

If a line parallel to one side of a triangle intersects the other two sides, then it divides the two sides proportionally.

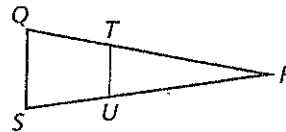


$$\text{If } \overline{TU} \parallel \overline{QS}, \text{ then } \frac{RT}{TQ} = \frac{RU}{US}.$$

Notes:

Theorem 8.7 Converse of the Triangle Proportionality Theorem

If a line divides two sides of a triangle proportionally, then it is parallel to the third side.

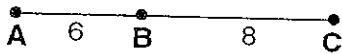


$$\text{If } \frac{RT}{TQ} = \frac{RU}{US}, \text{ then } \overline{TU} \parallel \overline{QS}.$$

Notes:

Name: _____
 Topic: Ratios and Proportions

Questions 1 and 2 refer to the following:

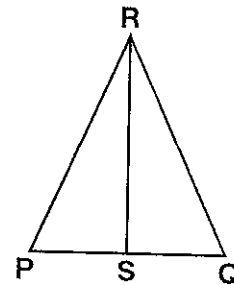


- 1) If $AB = 6$ and $BC = 8$, find $AB:BC$ in simplest form.
- 2) If $AB = 6$ and $BC = 8$, find $AB:AC$ in simplest form.
- 3) Divide a line segment 36 inches long into two parts whose measures are in the ratio 2:7.
- 4) The measure of an angle and its complement are in the ratio 2:7. Find the measure of the two angles.
- 5) The measure of an angle and its supplement are in the ratio 4:11. Find the measures of the two angles.

- 6) The measures of the angles of a triangle are in the ratio 2:3:5. Find the measure of the *largest* angle.

Questions 7 through 9 refer to the following:

$\triangle PQR$ is isosceles with $\overline{PR} \cong \overline{RQ}$ and \overline{RS} is the median to \overline{PQ} .
 $PR = 15$ and $PQ = 12$.



- 7) Find the value of $\frac{PR}{RQ}$.
- 8) Find the value of $\frac{PS}{PQ}$.
- 9) Find the value of $\frac{RQ}{SQ}$.

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