Name_____

Geo w/Trig Final Exam Review

Unit 6: Similarity

Chapter 7

1. The perimeter of ΔABC is 50 inches. The extended ratio of the sides is 2:3:5. Find the length of each side.

$2x + 3x + 5x = 50$

$10x = 50$

$x = 5$

Side lengths: 10 in, 15 in, 25 in

2. The angles of a trapezoid are in the ratio 3 : 4 : 5 : 6. Find the measure of the largest angle of the trapezoid. *(Hint: What is the sum of the interior angles of a trapezoid?)*

↖ Quadrilateral = 360°

$3x + 4x + 5x + 6x = 360$

$18x = 360$

$x = 20$

$6(20) = 120$

Largest angle: 120°

3. Given: $ABCD \sim WXYZ$ and the ratio of the corresponding sides is 3:7.

a. What is the ratio of the areas of $ABCD$ to $WXYZ$?

9 : 49

b. If the area of $ABCD$ is 27 in², what is the area of $WXYZ$? 147 in²

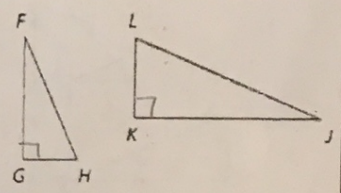
$\frac{9}{49} = \frac{27}{x}$ $9x = 1323$ $x = 147$

4. Given: $\Delta FGH \sim \Delta JKL$

a) $\angle G \cong$ $\angle K$

b) $\frac{JK}{FG} = \frac{KL}{GH}$

c) $\Delta GHF \sim \Delta$ KLJ



5. Given that $\Delta ABC \sim \Delta GEH$ and the ratio of one side of ΔABC to a corresponding side of ΔGEH is 2 to 5, and the perimeter of ΔABC is 14 feet find the perimeter of ΔGEH.

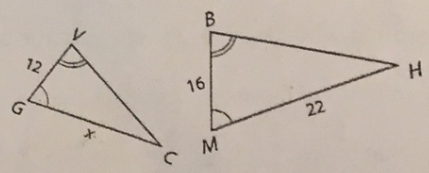
$\frac{\Delta ABC}{\Delta GEH}$ $\frac{2}{5} = \frac{14}{x}$

$2x = 70$

$x = 35$

Perimeter of ΔGEH: 35 ft

6. The two triangles in the figure below are similar. Find the value of x.



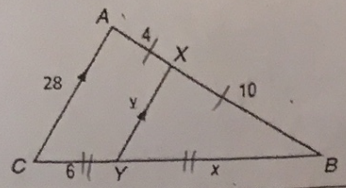
$\frac{12}{16} = \frac{x}{22}$

$264 = 16x$

$x = 16.5$

$x =$ 16.5

7. Find the value of x and y in the diagram.



$\frac{10}{4} = \frac{x}{6}$ $\frac{10}{y} = \frac{14}{28}$

$60 = 4x$ $280 = 14y$

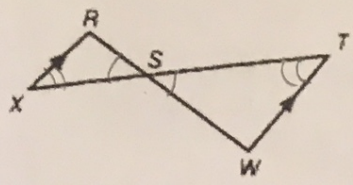
$x = 15$ $y = 20$

$x =$ 15

$y =$ 20

8. State the postulate/theorem (AA, SSS, or SAS) that proves the following triangles are similar, and then write a similarity statement. *Show work or markings in the diagram to support your answer!*

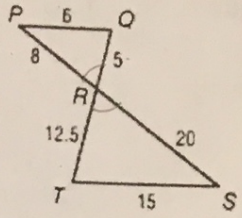
a)



$\triangle SRX \sim \triangle SWT$

AA~

b)

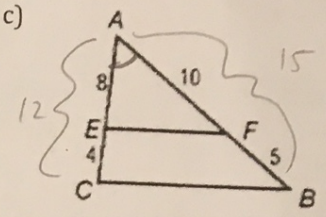


$\frac{5}{12.5} = \frac{2}{5}$ $\frac{6}{15} = \frac{2}{5}$

$\frac{8}{20} = \frac{2}{5}$

SSS

c)



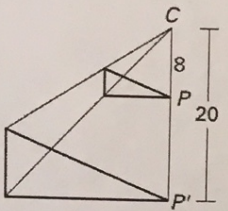
$\frac{8}{12} = \frac{2}{3}$ $\angle A \cong \angle A$

$\frac{10}{15} = \frac{2}{3}$

SAS

9. Determine whether the dilation with center *C* is an *enlargement* or a *reduction*. Then find the scale factor.

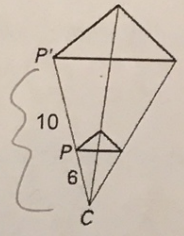
a)



Enlargement

$k = \frac{20}{8} = \frac{5}{2}$

b)



enlargement

$k = \frac{16}{6} = \frac{8}{3}$

10. A dilation centered at the origin maps ΔCAT onto ΔDOG with a scale factor of 5.

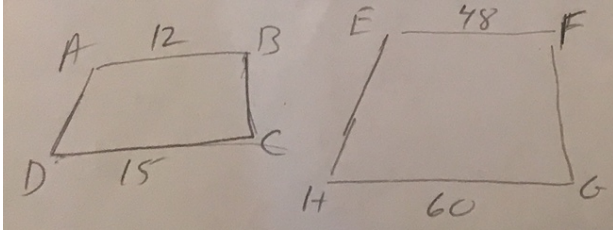
a) If the coordinates of *C* are (−1, 3), what are the coordinates of *D*? (−5, 15)

b) If the coordinates of *G* are (10, 2), what are the coordinates of *T*? (2, 2/5)

c) If $CA = 5$, what is DO? 25 (5 × 5 = 25)

d) If $GO = 20$, what is TA? 4 (20 ÷ 5 = 4)

11. Given that $ABCD \sim EFGH$ and $AB = 12$, $DC = 15$, $EF = 48$, $HG = 60$, find the scale factor from EFGH to ABCD. *Hint: Sketch a diagram!*



EFGH → ABCD

$k = \frac{EF}{AB} = \frac{48}{12} = 4$