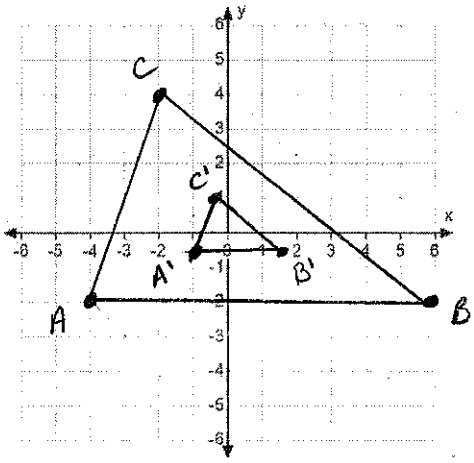
Unit 6 Test Review – Similarity

Name: Key Per: ____

This review will guide you through your notes and the textbook in order to review the concepts on your test. You need to be able to apply these concepts to ANY problem, not just those you've already seen.

1. Read your vocabulary and theorem sheets. Highlight words or theorems that you don't understand or can't remember.

2. The ΔABC is given by the coordinates listed below. Apply a scale factor of ¼, with center (0, 0) and list the new coordinates in the table below. Graph the original triangle and the transformed triangle on the coordinate plane.



Preimage coordinates	Image coordinates
A (-4, -2)	A' (-1 , -.5)
B (6, -2)	B' (1.5 , -.5)
C (-2, 4)	C' (-.5 , 1)

$(\frac{1}{4}(-4), \frac{1}{4}(-2)) \to (-1, -\frac{1}{2})$

$(\frac{1}{4}(6), \frac{1}{4}(-2)) \to (\frac{3}{2}, -\frac{1}{2})$

$(\frac{1}{4}(-2), \frac{1}{4}(4)) \to (-\frac{1}{2}, 1)$

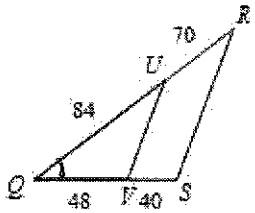
3. The polygon DEFGH is given by the coordinates listed below. Apply a scale factor of 3, with center (0, 0) and the list the new coordinates in the table below. **Graph the original polygon and the transformed polygon on a separate sheet of graph paper**.

Preimage coordinates	Image coordinates
D (-2, 3)	D' (-6 , 9)
E (1, 4)	E' (3 , 12)
F (4, 2)	F' (12 , 6)
G (2, -2)	G' (6 , -6)
H (-2, -1)	H' (-6 , -3)

$(-2(3), 3(3)) \to -6, 9$

4. State the postulate that can be used to prove the triangles similar and write the similarity statement.

a.



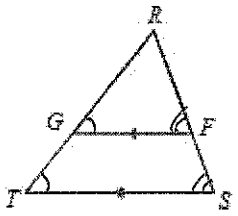
$\Delta QRS \sim$ QUV

Postulate: SAS

$\frac{84}{48} = 1.75$

$\frac{84+70}{48+40} = \frac{154}{88} = 1.75$

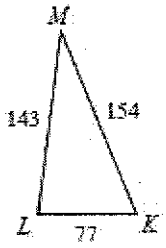
b.

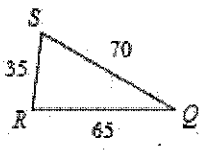


$\Delta RST \sim$ RFG

Postulate: AA

c.





$\Delta MLK \sim$ _____

Postulate: _____

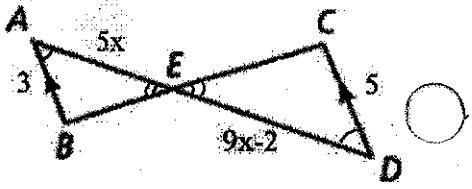
$\frac{143}{35} = 4.09$

$\frac{154}{70} = 2.2$

$\frac{77}{65} = 1.18$

not similar

5. Explain why the triangles are similar.



a. Postulate: AA

b. Similarity Statement: $\triangle AEB \sim \triangle DEC$

c. Solve for x. Show all work:

$\frac{5x}{9x-2} = \frac{3}{5}$ $\quad 25x = 3(9x-2)$

$25x = 27x - 6$

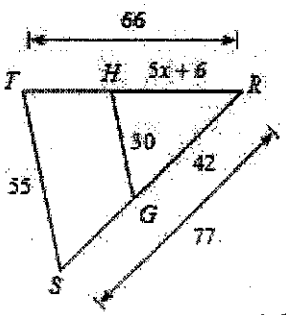
$-27x \quad -27x$

$-2x = -6$

$\boxed{x=3}$

6. The triangles in each pair are similar. Set up a proportion and solve for x.

a.



$\frac{5x+6}{66} = \frac{30}{55}$ $\quad 55(5x+6) = 30 \cdot 66$

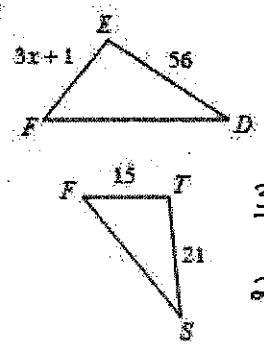
$275x + 330 = 1980$

$-330 \quad -330$

$\frac{275x}{275} = \frac{1650}{275}$

$\boxed{x=6}$

b.



$\frac{3x+1}{15} = \frac{56}{21}$

$21(3x+1) = 56(15)$

$63x + 21 = 840$

$-21 \quad -21$

$\frac{63x}{63} = \frac{819}{63}$

$\boxed{x=13}$

.5ft

7. The Eiffel Tower in Paris, France is 1063 feet high. A model of the tower is 6 inches tall.

a. What is the ratio of the height of the model to the height of the actual Eiffel Tower? (Reduce the fraction to lowest terms.)

$\frac{6in}{1063ft}$ or

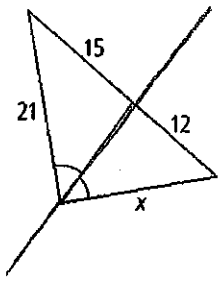
b. Using the ratio in part a, write a proportion which could be used to determine the actual width of the Eiffel Tower if the model width is 2.5 inches.

$\frac{6in}{1063ft} = \frac{2.5in}{Xft}$

c. What is the actual width of the Eiffel Tower?

8. Solve for x.

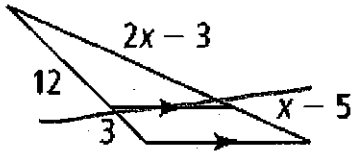
a.



$\frac{21}{x} = \frac{15}{12}$ $\quad 15x = 252$

$\boxed{x=16.8}$

b.



$\frac{12}{3} = \frac{2x-3}{x-5}$

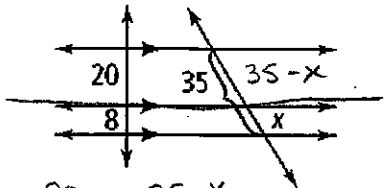
$12(x-5) = 3(2x-3)$

$12x - 60 = 6x - 9$

$6x = 51$

$\boxed{x=8.5}$

c.



$\frac{20}{8} = \frac{35-x}{x}$

$20x = 8(35-x)$

$20x = 280 - 8x$

$28x = 280$

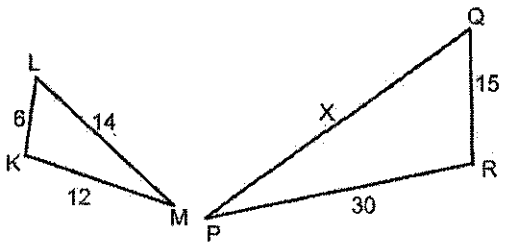
$\boxed{x=10}$

9. Set up a proportion and solve for x. $\Delta KLM \sim \Delta RQP$

$\frac{14}{x} = \frac{6}{15}$

$6x = 210$

$x = 35$



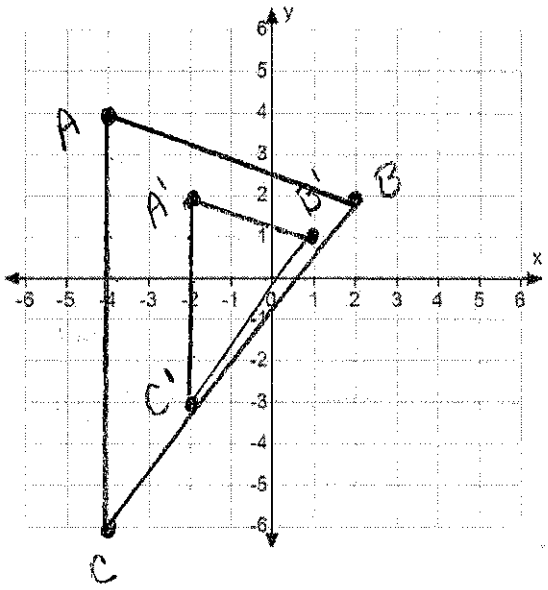
10. ΔABC has vertices A(-4, 4), B(2, 2) and C (-4, -6). ΔA'B'C' has vertices A'(-2, 2), B'(1, 1) and C'(-2, -3). Graph each triangle.

What is the center of dilation?

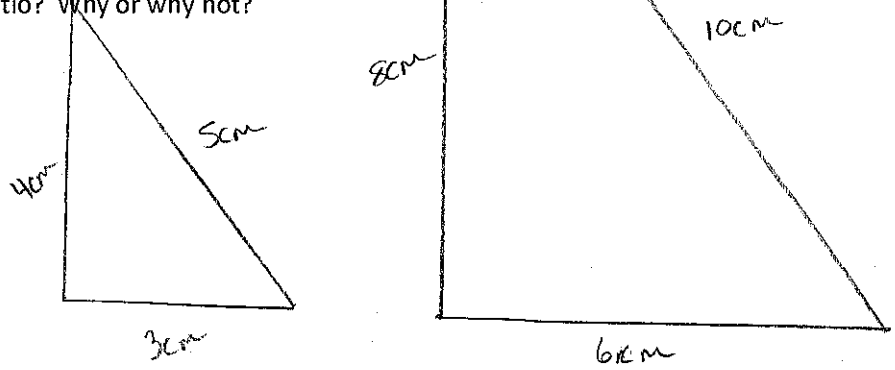
(0, 0)

What is the scale factor?

$n = \frac{\text{image}}{\text{preimage}} = \frac{A'C'}{AC} = \frac{5}{10} = \frac{1}{2}$



11. Draw 2 triangles that are similar. Label the side lengths. What is the similarity ratio? Do all sides create the same ratio? Why or why not?



$\frac{3}{6} = \frac{1}{2}$

$\frac{4}{8} = \frac{1}{2}$

$\frac{5}{10} = \frac{1}{2}$

yes. All sides of similar figures must have the same ratio.

12. What is indirect measurement? When would it be used?

A way to calculate the height of something that can't be directly measured.

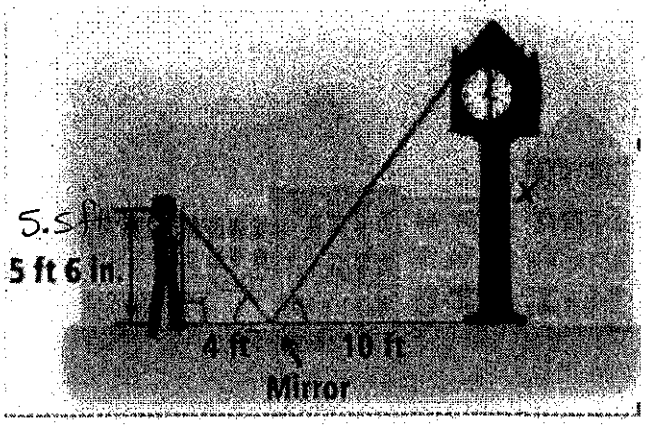
Examples: tree, cliff, flagpole, building

13. Mark is looking at a mirror on the ground and can see the top of the clock tower. What is the height of the clock tower?

$\frac{5.5}{X} = \frac{4}{10}$

$4X = 55$

$X = 13.75$ ft



14. The Davis family is planning to drive from San Antonio to Houston. The measured distance on the map is 2.8 cm. Set up a proportion to represent the distance between the 2 cities.

$\frac{1\text{cm}}{112\text{km}} = \frac{2.8\text{cm}}{X}$

Find the actual distance between San Antonio and Houston.

$X = 2.8(112)$

$X = 313.6$ km