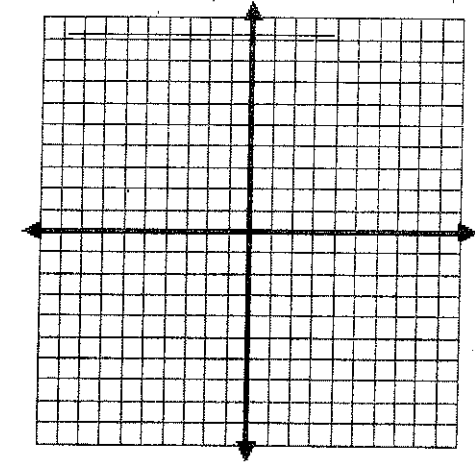


H. Geometry
Test Review - Dilations and Similarity

Date Key

1. Draw a dilation of quadrilateral ABCD with the given vertices.
Use the **origin as the center** and use a scale factor of $\frac{1}{2}$.



↓
same
ratio
 $\frac{1}{2}$

Pre-image

A (-2, 2)

B (-8, -6)

C (4, -10)

D (6, 4)

Image

A' (-1, 1)

B' (-4, -3)

C' (2, -5)

D' (3, 2)

Reduction or Enlargement? (Circle One)

#2-3: Determine the scale factor for each dilation. Assume the **center is the origin**. Is the dilation a reduction or an enlargement?

2. U(2, 3), C(3, 4), X(5, 1)

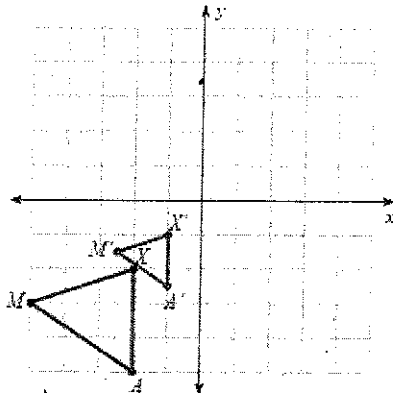
to

U'(8, 12), C'(12, 16), X'(20, 4)

$$\frac{20}{5} = \frac{4}{1}$$

k = 4 reduction or enlargement

3.



k = $\frac{1}{2}$ reduction or enlargement

$$X \rightarrow X' \\ (-2, -2) \rightarrow (-1, -1)$$

4. Given that $\triangle MAX \sim \triangle IZY$. Complete the following:

a. $\angle M \cong \angle I$

b. $\frac{AX}{ZY} = \frac{XM}{ZI}$

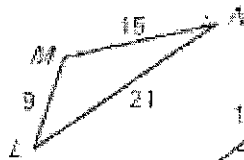
c. $\angle Z \cong \angle A$

d. $\triangle ZIY \cong \triangle AMX$

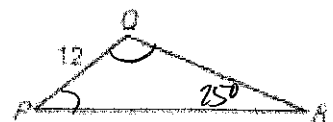
5. Given $\triangle LMN \sim \triangle PQR$. Complete the following:

a. Scale factor of $\triangle LMN$ to $\triangle PQR$ $\frac{3}{4}$

$$\frac{LM}{PQ} = \frac{9}{12}$$



$$\frac{3}{4} = \frac{15}{x}$$



$$\frac{3}{4} = \frac{21}{x}$$

b. QR = 20 and PR = 28

c. What is the ratio of the perimeters? $\frac{3}{4}$

d. If $m\angle P = 40^\circ$ and $m\angle Q = 15^\circ$, then $m\angle R = \underline{125^\circ}$, $m\angle L = \underline{40^\circ}$, and $m\angle M = \underline{115^\circ}$

6. If two polygons are similar, the ratio of their areas is equal to the Square of the scale factor.

7. What is a rigid motion? Which transformations are rigid motions (result in a congruency transformation)?

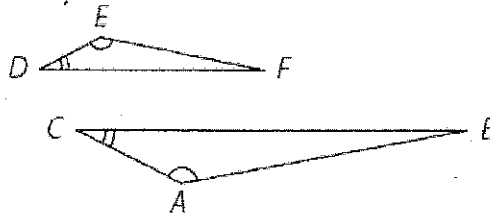
↳ preserves size and shape

↳ rotations, reflections, translations

8. What is a non-rigid motion? Which transformations is a non-rigid motion?

↳ Different size, Dilations

9. Identify the similar triangles.



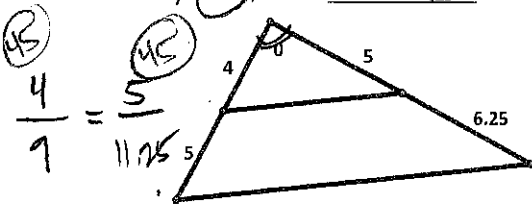
$\triangle FED \sim \triangle BAC$

10. Which theorems are used to prove that two triangles are similar?

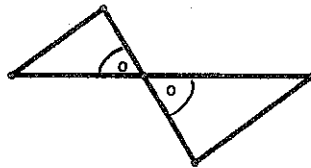
AA, SAS, SSS

11. Are the following pairs of triangles similar? If they are, then name their similarity criteria. (SSS~, SAS~, AA~)

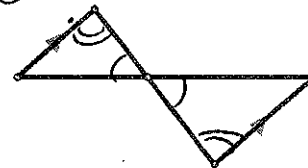
a) Yes/No SAS



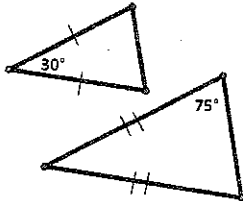
b) Yes/No _____



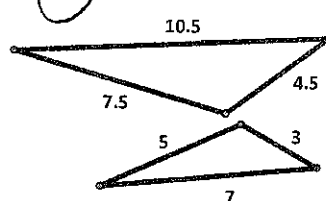
c) Yes/No AA



d) Yes/No AA, SAS

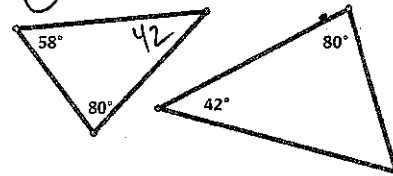


e) Yes/No SSS



$\frac{3}{4.5} = \frac{5}{7.5} = \frac{7}{10.5}$

f) Yes/No AA



12. Find x and the length of the missing sides in the diagram below.

$\triangle ABC \sim \triangle DEA$

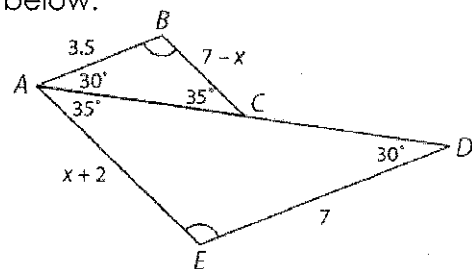
$\frac{7-x}{x+2} = \frac{3.5}{7}$

$7(7-x) = 3.5(x+2)$

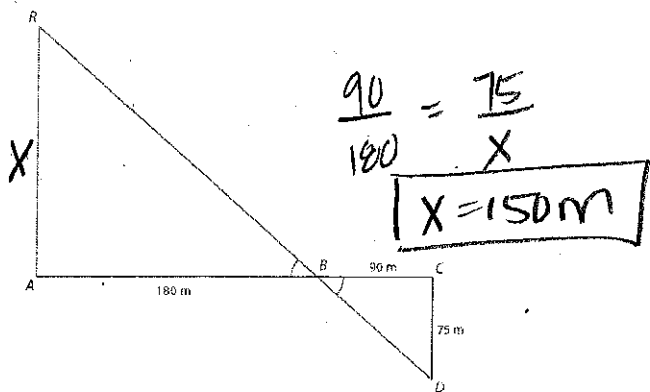
$49 - 7x = 3.5x + 7$

$-10.5x = -42$

$x=4, 7-x=3$



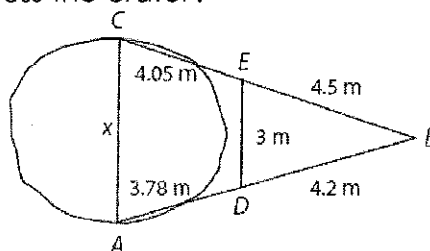
13. Finding the distance across a canyon can often be difficult. A drawing of similar triangles can be used to make this task easier. Use the diagram to determine \overline{AR} , the distance across the canyon.



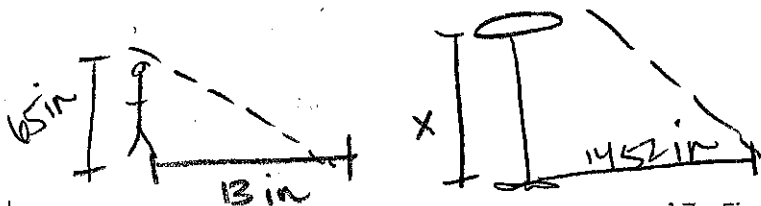
14. To measure \overline{BC} , the distance across a crater, an archaeologist stands at point A and locates points B, C, D, and E. What is the distance across the crater?

$$\frac{4.5}{3} = \frac{8.55}{X}$$

$$X = 5.7$$



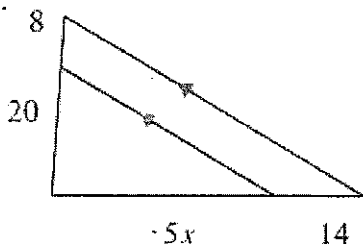
15. Rebecca is 5 feet 5 inches tall and is standing near the Space Needle in Seattle, Washington. She casts a 13 inch shadow at the same time that the Space Needle casts a 121 foot shadow. How tall is the Space Needle?



$$\frac{65}{13} = \frac{X}{1452}$$

$$X = 7260 \text{ in or } 605 \text{ ft}$$

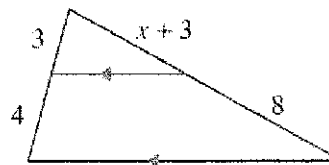
16. Find x.



$$\frac{8}{20} = \frac{5x}{14}$$

$$X = 7$$

17. Find x.



$$\frac{x+3}{8} = \frac{3}{4}$$

$$4(x+3) = 24$$

$$4x + 12 = 24$$

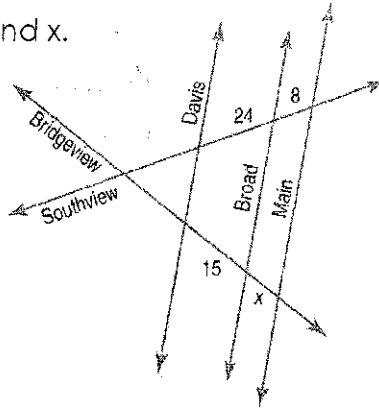
$$4x = 12$$

$$X = 3$$

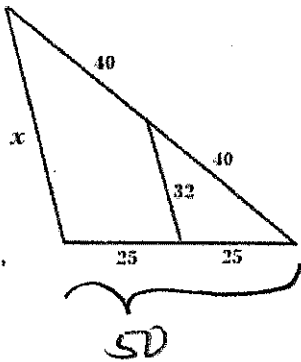
18. Davis, Broad, and Main Streets are parallel. Find x.

$$\frac{24}{8} = \frac{15}{x}$$

$$\boxed{x=5}$$



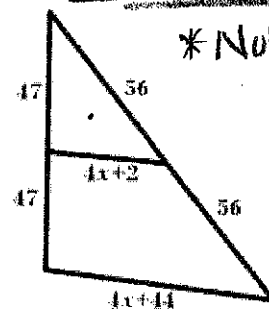
19. Find the value of x.



$$\frac{x}{50} = \frac{32}{25}$$

$$\boxed{x=64}$$

20. Find the length of the midsegment.



$$2(4x+2) = 4x+44$$

$$8x+4 = 4x+44$$

$$4x = 40$$

$$x = 10$$

Midsegment

$$4(10)+2 = \boxed{42}$$