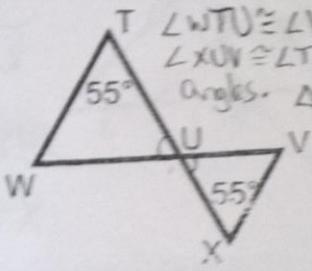
Similarity, Dilations, Triangle Theorem Review Name_____ Block___

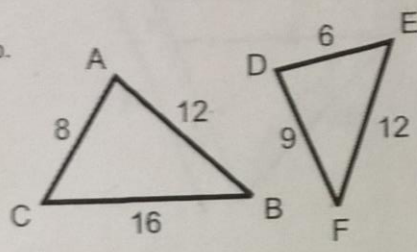
1. Determine if the following triangles are similar and show how you decided. If they are similar write a similarity statement.

a. Similar because AA.



$\angle WTU \cong \angle VXU$ and $\angle XUV \cong \angle TUW$ by vertical angles. $\triangle TUW \sim \triangle XUV$

b.



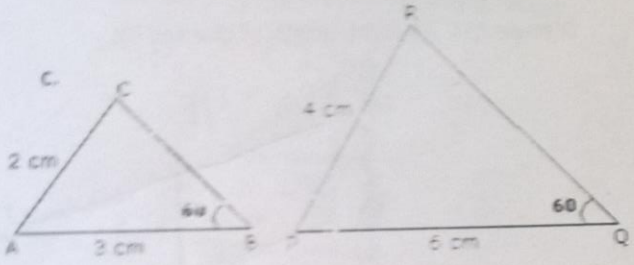
Similar by SSS.

$\frac{16}{12} = \frac{12}{9} = \frac{8}{6}$

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

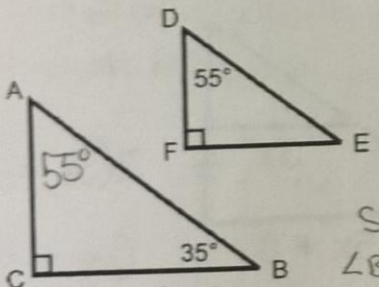
$\triangle ABC \sim \triangle DFE$

c.



Not similar because although there are two pairs of corresponding proportional sides and 1 pair of corresponding congruent angles. The angles are not included by the sides given.

d.



$90 + 35 + m\angle A = 180$

$125 + m\angle A = 180$

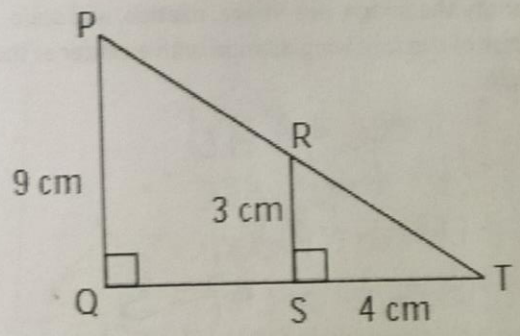
$m\angle A = 55°$

Similar by AA

$\angle BAC \cong \angle EDF$ and $\angle DFE \cong \angle ACB$.

$\triangle ABC \sim \triangle DEF$

2. Looking at the triangles in the figure on the right:



a. Are the two triangles similar? How do you know?

Yes by AA $\angle PQT \cong \angle RST$ and $\angle PTQ \cong \angle RTS$ by reflexive prop.

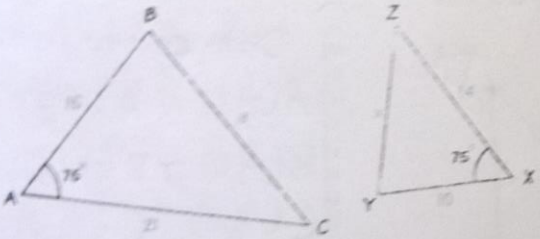
b. What is the length of $\overline{QT}$?

$\frac{9}{3} = \frac{\overline{QT}}{4}$ $3\overline{QT} = 36$ $\overline{QT} = 12$

c. If PT is 15 cm, what is the length of RT?

$\frac{9}{3} = \frac{15}{RT}$ $9\overline{RT} = 45$ $\overline{RT} = 5$

3. Is the following pair of triangles similar? What postulate/theorem could you use? Show your work.



Yes by SAS. $\angle BAC \cong \angle YXZ$ and $\frac{21}{14} = \frac{15}{10}$.

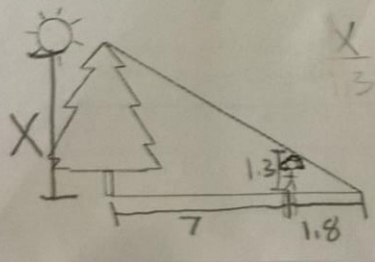
$\triangle BAC \sim \triangle YXZ$

If a = 18 what is the value of x?

$\frac{15}{10} = \frac{18}{x}$ $15x = 180$ $x = 12$

4. Tonya is 1.3 meters tall. She stands 7 meters in front of a tree and casts a shadow 1.8 meters long. How tall is the tree?

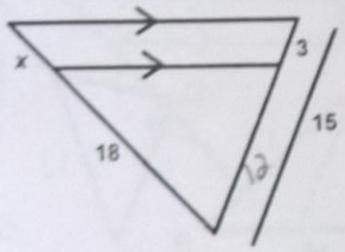
$\frac{x}{1.3} = \frac{8.8}{1.8}$



$\frac{x}{1.3} = \frac{8.8}{1.8}$

5. Find the value of x for each of the following.

a.

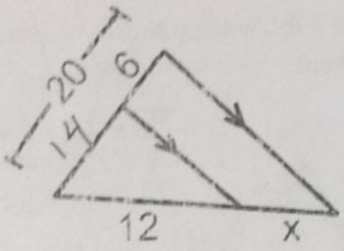


$\frac{x}{18} = \frac{3}{12}$

$12x = 54$

$x = 4.5$

b.

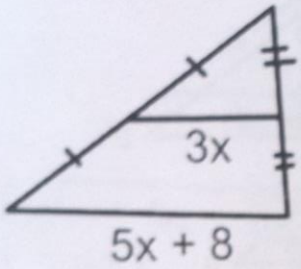


$\frac{14}{6} = \frac{12}{x}$

$14x = 72$

$x = 5.14$

5. Find the value of x in the following image.

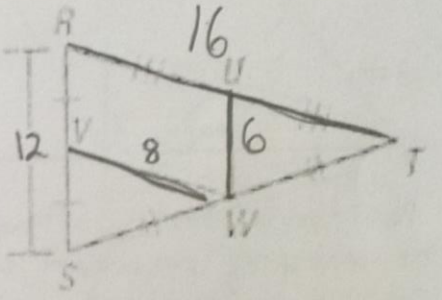


$2(3x) = 5x + 8$

$6x = 5x + 8$

$x = 8$

7. UW and VW are midsegments of triangle RST. Find the length of UW and TR.



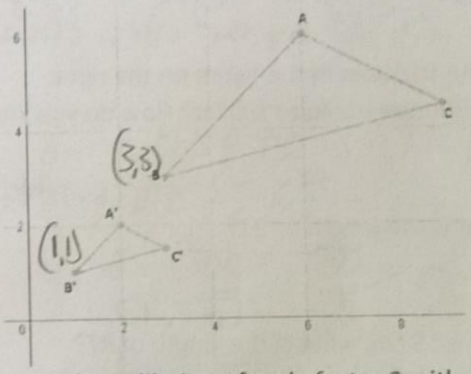
9. Identify the image, pre-image, dilation, and scale factor of the following dilation with a center at the origin.

Image = A'B'C'

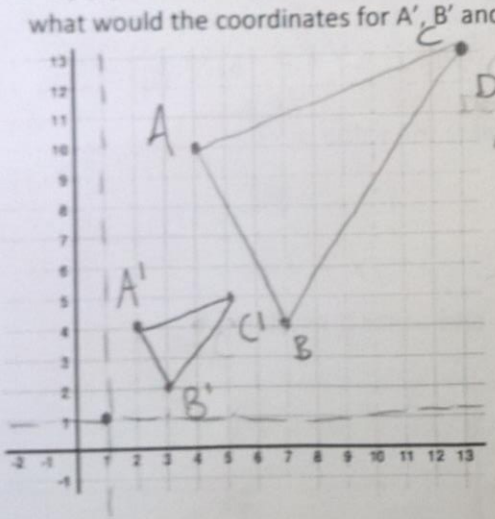
pre-image = ABC

Dilation: Reduction

Scale factor: $\frac{3}{1} = 3$



3. Under a dilation of scale factor 1/3 with center at the (1,1) if A is (4,10), B is (7,4), C is (13, 13), what would the coordinates for A', B' and C' be?



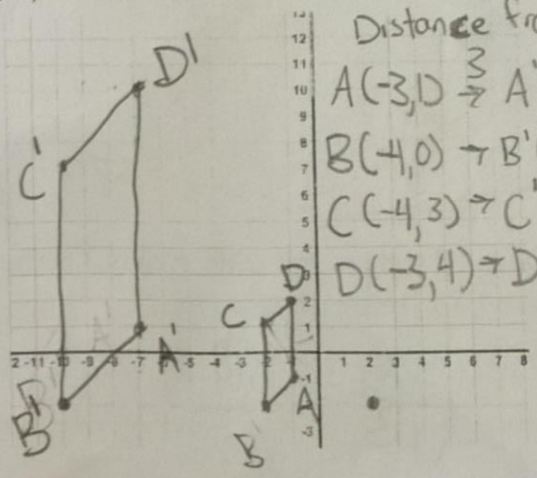
Distance From Center

$A(3,9) \xrightarrow{1/3} A'(1,3)$

$B(6,3) \rightarrow B(2,1)$

$C(12,12) \rightarrow C'(4,4)$

4. Under a dilation of scale factor 3 with center at (2, -2).) if A is (-1,-1), B is (-2,-2), C is (-2, 1), and D is (-1,2) what would the coordinates for A', B', C' and D' be?



Distance from Center

$A(-3,1) \xrightarrow{3} A'(-9,3)$

$B(-4,0) \rightarrow B'(-12,0)$

$C(-4,3) \rightarrow C'(-12,9)$

$D(-3,4) \rightarrow D'(-9,12)$