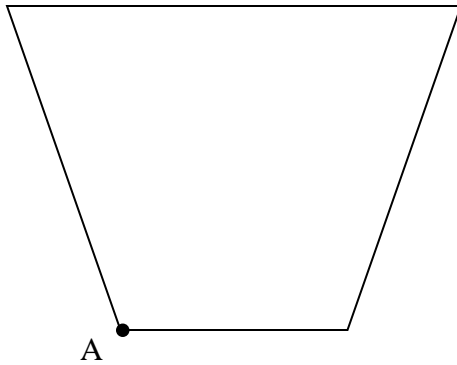


Name: _____ Section: _____ Date: _____
 Geometry LAB: Unit 7 Review (2016-17): Similarity

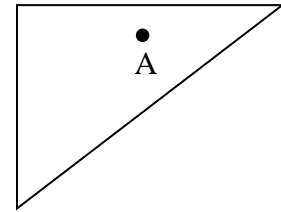
1. Write 3 statements that are equivalent to $\frac{a}{b} = \frac{c}{d}$

2. Construct each of the dilations:

a) $D_{A, \frac{1}{2}}$

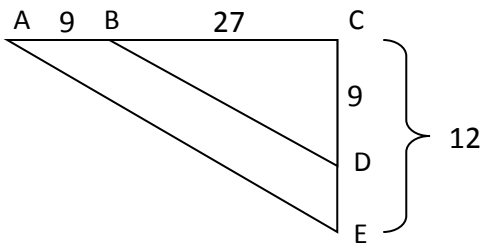


b) $D_{A, 2}$

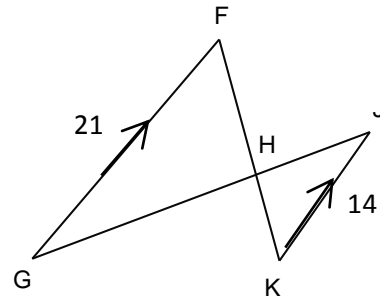


For 3-4, Determine whether the figures are similar. If the figures are similar, write the statement of similarity and the ratio of similarity.

3.



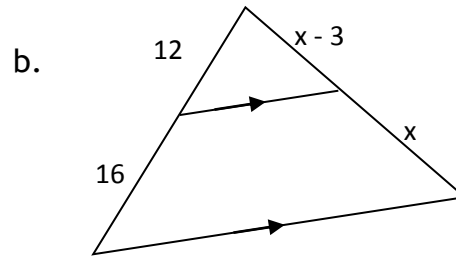
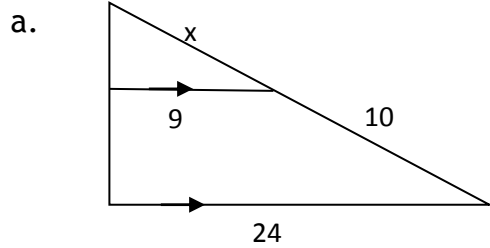
4.



Similar? Yes No
 If so, why (AA~,SSS~,SAS~)? _____
 Statement of Similarity: $\triangle ABC \sim$ _____
 Ratio of Similarity: _____
 Scale Factor: _____

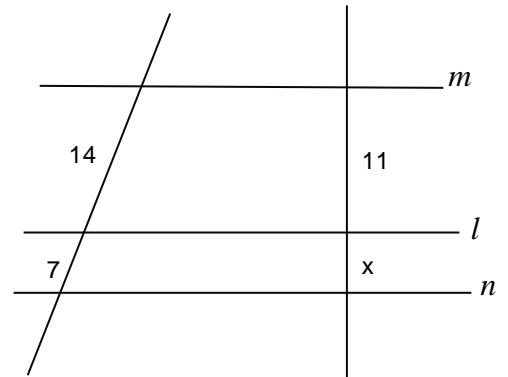
Similar? Yes No
 If so, why (AA~,SSS~,SAS~)? _____
 Statement of Similarity: $\triangle FGH \sim$ _____
 Ratio of Similarity: _____
 Scale Factor: _____

5. Determine the value of x .



c. For which question could you use side splitter (if you want to)? _____

6. Determine the value of x that makes the lines m, l and n parallel. Only an algebraic solution will be accepted. Show all work.



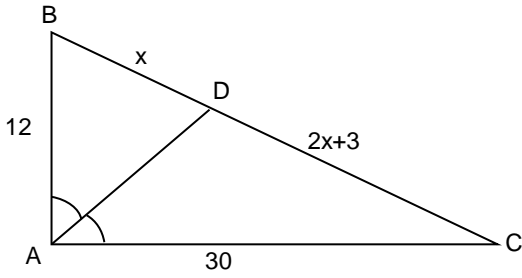
7. Two triangles are similar to each other with a similarity ratio of 3:5. The smaller triangle has a perimeter of 21 inches and an area of 36 in^2 . Find:

a. the perimeter of the larger triangle

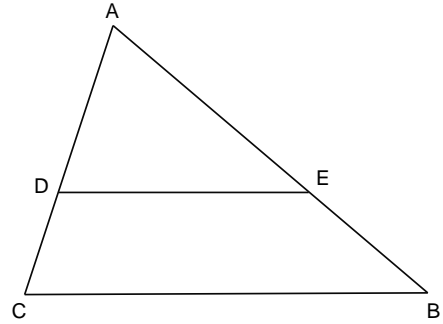
b. The area of the larger triangle

8. $\triangle RST \sim \triangle UVW$. If the area of $\triangle RST$ is 48 ft^2 and the the area of $\triangle UVW$ is 75 ft^2 , determine the similarity ratio (*make sure it corresponds with the similarity statement*).

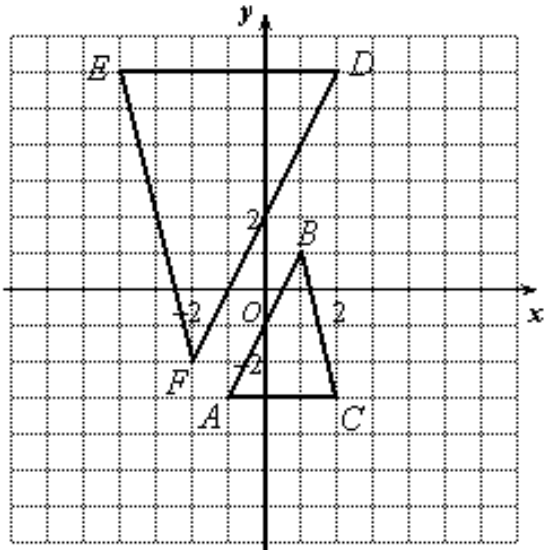
9. Find BD.



10. Given: Triangle ABC with $\overline{DE} \parallel \overline{CB}$
Prove: $AD \cdot CB = AC \cdot DE$

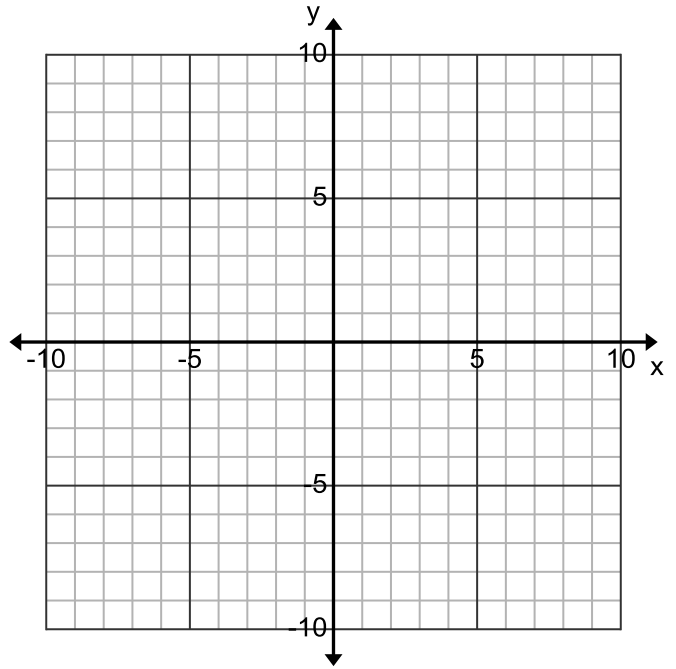


11. Identify a precise sequence of transformations that maps $\triangle DFE$ onto $\triangle ABC$.



12. Given: $A(0, 0)$, $B(6, 2)$, $C(6, 6)$, $D(9, 3)$, $E(9, 9)$

Prove: $\triangle ABC \sim \triangle ADE$ using coordinate geometry
and the criteria AA~, SSS~, or SAS~.



13. Dilations preserve all of the following properties except: (circle your answer)

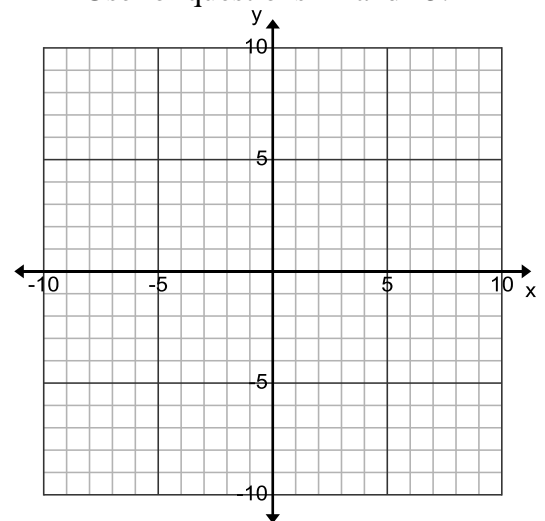
- a. Parallelism b. Perpendicularity c. Angle Measure d. Distance e. Orientation

14. If the coordinates of point A are $(-2, 3)$, what is the image of A under

$r_{y\text{-axis}}(D_{\text{origin}, 3})$? (Use of the grid is optional)

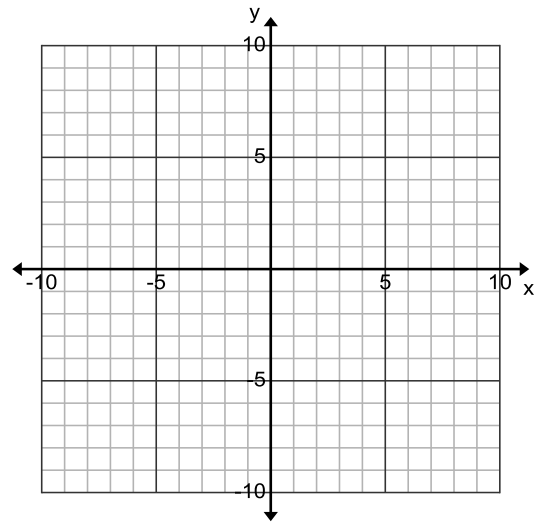
- 1) $(-6, -9)$
- 2) $(9, -6)$
- 3) $(5, 6)$
- 4) $(6, 9)$

Use for questions 14 and 15.



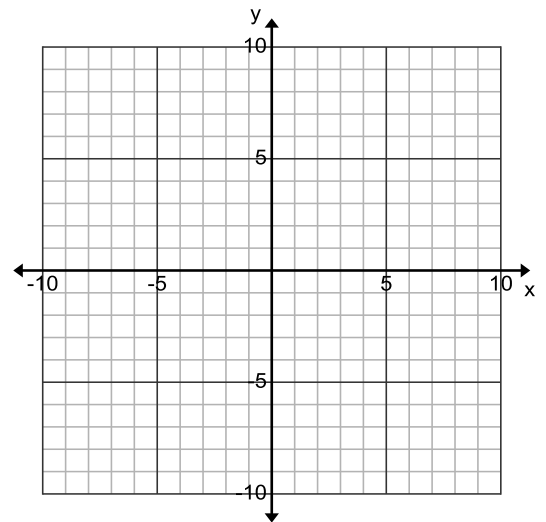
15. Dilate point $C(6, -1)$ from the point $(10, 0)$ by a scale factor of 5. State the coordinates of C' .

16. Given the points $T(-4,-1)$ and $U(10,6)$ on directed line segment \overline{TU} , find point Q that divides \overline{TU} into the ratio of 2 to 5. (Use of the grid is optional).



17. Given line h with the equation $5x + y = 8$ maps onto line j after a dilation centered at the origin by a scale factor of $\frac{1}{2}$, answer the following:

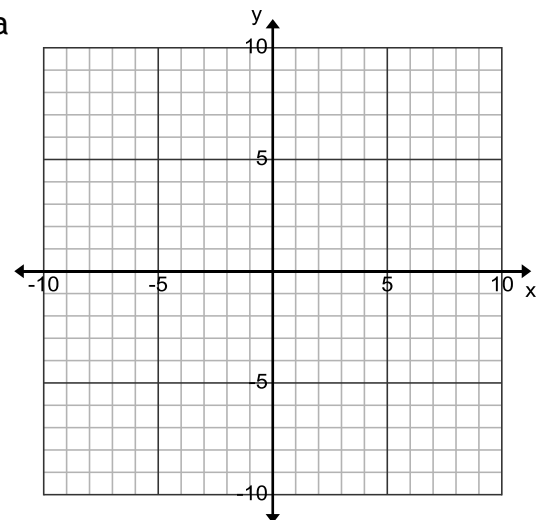
a. Write an equation for line j .



b. Determine the relationship between lines h and j . _____

18. Given line f with the equation $y = \frac{1}{3}x$ maps onto line g after a dilation centered at the origin by a scale factor of 3, answer the following:

a. Write an equation for line g .



b. Determine the relationship between lines f and g . _____

GEO LAB Unit 7 Review ANSWERS 2016-17

1. $bc = ad$, $\frac{b}{a} = \frac{a}{c}$, $\frac{b}{a} = \frac{a}{c}$, $\frac{c}{a} = \frac{d}{b}$		2. Constructions	
3. Yes, they are similar by $SAS\sim$ $\triangle BCD \sim \triangle ACE$ Sim Ratio: $\frac{2}{3}$ Scale Factor $\frac{4}{3}$	4. Yes, they are similar by $AA\sim$ $\triangle FGH \sim \triangle KJH$ Sim Ratio: $\frac{3}{2}$ Scale Factor $\frac{2}{3}$	5. A. $x = 6$ (similar triangles) B. $x = 12$ C. Only B	
6. $x = 5.5$	7. $P = 35 \text{ in} ; A = 100 \text{ in}^2$	8. $\frac{4}{5}$ or 4:5	9. $BD = 6$
10. 1. $\overline{DE} \parallel \overline{CB}$ 2. $\sphericalangle ADE \cong \sphericalangle ACB$ $\sphericalangle AED \cong \sphericalangle ABC$ 3. $\triangle ADE \cong \triangle ACB$ 4. $\frac{AD}{AC} = \frac{DE}{CB}$ 5. $AD \cdot CB = AC \cdot DE$		1. given 2. \parallel lines $\rightarrow \cong$ corresponding $\sphericalangle s$ 3. $AA\sim AA$ (steps 2,2) 4. $\sim \triangle s \rightarrow \cong \sphericalangle s$ and proportional sides 5. cross products property	
11. Example: 1) First dilate $\triangle DFE$ by a scale factor of $\frac{1}{2}$ centered at D to map $D \rightarrow D$, $F \rightarrow F'$, $E \rightarrow E'$. 2) Translate down 9 and left 3 $\langle -3, -9 \rangle$ to map $D \rightarrow A$, $F' \rightarrow F''$, $E' \rightarrow E''$. 3) Reflect into point A or rotate 180° around A to map $A \rightarrow A$, $F'' \rightarrow B$, $E'' \rightarrow C$.			
12. Method 1 $m_{BC} = \text{undefined} = m_{ED}$ Since slopes of \overline{BC} and \overline{ED} are both undefined, they are both vertical and therefore parallel. Since they are parallel lines cut by a transversal, then corresponding angles are congruent, so $\sphericalangle ABC \cong \sphericalangle ADE$ and $\sphericalangle ACB \cong \sphericalangle AED$. Therefore $\triangle ABC \sim \triangle ADE$ by $AA\sim$.		Method 2 $AB = 2\sqrt{10}$ $AC = 6\sqrt{2}$ $BC = 4$ $AD = 3\sqrt{10}$ $AE = 9\sqrt{2}$ $DE = 6$ $\frac{AB}{AD} = \frac{2\sqrt{10}}{3\sqrt{10}}$ $\frac{AC}{AE} = \frac{6\sqrt{2}}{9\sqrt{2}}$ $\frac{BC}{DE} = \frac{4}{6}$ $\frac{AB}{AD} = \frac{2}{3} = \frac{AC}{AE} = \frac{BC}{DE}$ Since all 3 set of corresponding sides have the same similarity ratio of $\frac{2}{3}$, then they are proportional. Therefore $\triangle ABC \sim \triangle ADE$ by SSS~.	
Method 3: Use the same calculations as method 2 Since $\frac{AB}{AD} = \frac{2}{3} = \frac{AC}{AE}$ have the same similarity ratio, then they are proportional. Since the included angle $\sphericalangle A \cong \sphericalangle A$ by reflexive, then $\triangle ABC \sim \triangle ADE$ by SAS~.			
13. d. Distance is not preserved under a dilation	14. 4) $A'(6,9)$ 15. $C'(-10,-5)$ 16. $Q(0,1)$	17. j: $y = -5x + 4$ h & j are parallel	18. g: $y = \frac{1}{3}x$ f & g are coincident