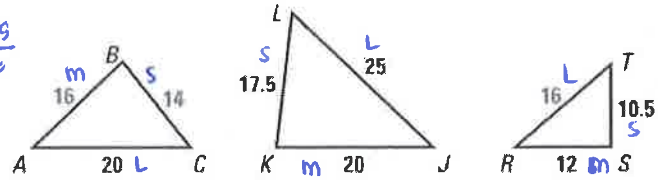
Geometry H
Section 6.5-6.7 Quiz Review

Name : Key
Date : ______________________ Period : _____

1. Please determine if any pairs of triangles are similar. If so, write a similarity statement. Show all work.



$\frac{\Delta ABC}{\Delta LKJ}$: $\frac{14}{17.5}, \frac{16}{20}, \frac{20}{25} \Rightarrow \frac{4}{5}, \frac{4}{5}, \frac{4}{5}$

$\frac{\Delta ABC}{\Delta TSR}$: $\frac{14}{10.5}, \frac{16}{12}, \frac{20}{16} \Rightarrow \frac{4}{3}, \frac{4}{3}, \frac{5}{4}$

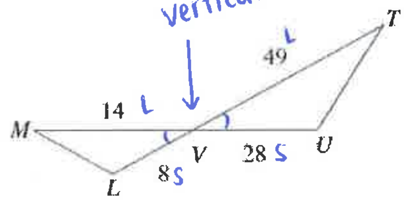
$\frac{\Delta LKJ}{\Delta TSR}$: $\frac{17.5}{10.5}, \frac{20}{12}, \frac{25}{16}$
$\downarrow$
$\frac{5}{3}, \frac{5}{3}, \frac{25}{16}$

$\boxed{\Delta ABC \sim \Delta LKJ \text{ by SSS} \sim}$

For exercises #2 – 5, determine whether the two triangles are similar. If they are similar, write a similarity statement and state the reason why.

2.

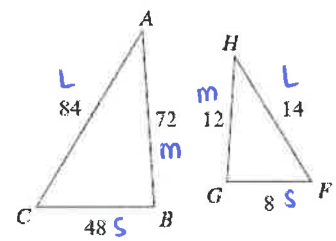
vertical



$\frac{\Delta MLV}{\Delta TUV}$: $\frac{8}{28}, \frac{14}{49} \Rightarrow \frac{2}{7}, \frac{2}{7}$ and included angles are congruent

$\boxed{\Delta MLV \sim \Delta TUV \text{ by SAS} \sim}$

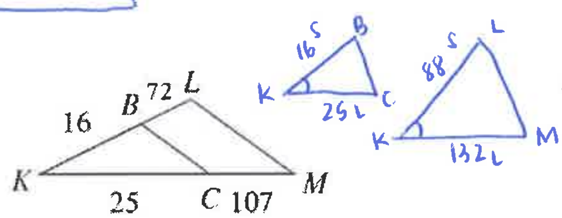
3.



$\frac{\Delta ABC}{\Delta HGF}$: $\frac{48}{8}, \frac{72}{12}, \frac{84}{14} \Rightarrow \frac{6}{1}, \frac{6}{1}, \frac{6}{1}$

$\boxed{\Delta ABC \sim \Delta HGF \text{ by SSS} \sim}$

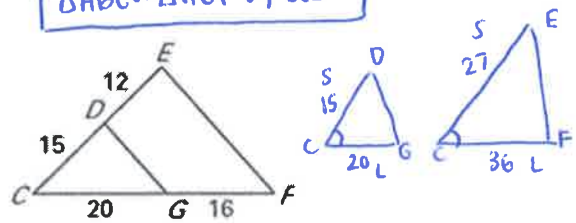
4.



$\frac{\Delta KBC}{\Delta KLM}$: $\frac{16}{88}, \frac{25}{132} \Rightarrow \frac{2}{11}, \frac{25}{132}$

The scale factors aren't the same so the Δ's are not similar

5.



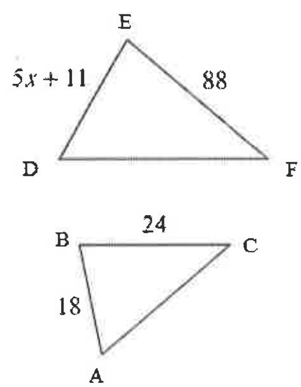
$\frac{\Delta CDG}{\Delta CEF}$: $\frac{15}{27}, \frac{20}{36} \Rightarrow \frac{5}{9}, \frac{5}{9}$ and $\angle C \cong \angle C$ so included angles are congruent

$\boxed{\Delta CDG \sim \Delta CEF \text{ by SAS} \sim}$

6. Find the value of the variables that make $\triangle ABC \sim \triangle DEF$.

look at order of the letters to match up corresponding sides

a.



$\frac{AB}{DE} = \frac{BC}{EF}$
$\downarrow$
$\frac{18}{5x+11} = \frac{24}{88}$

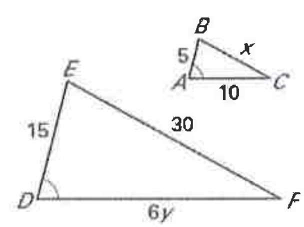
$1584 = 24(5x+11)$

$1584 = 120x + 264$

$1320 = 120x$

$\boxed{x = 11}$

b.



$\frac{AB}{DE} = \frac{BC}{EF}$
$\downarrow$
$\frac{5}{15} = \frac{x}{30}$

$15x = 150$

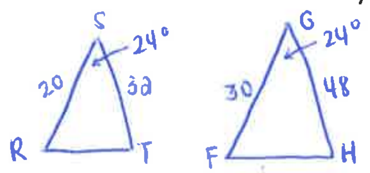
$\boxed{x = 10}$

$\frac{AB}{DE} = \frac{AC}{DF}$
$\downarrow$
$\frac{5}{15} = \frac{10}{6y}$

$150 = 30y$

$\boxed{y = 5}$

7. In ΔRST, $RS = 20$, $ST = 32$, and $m\angle S = 24°$. In ΔFGH, $FG = 30$, $GH = 48$, and $m\angle G = 24°$. Explain whether the two triangles can be similar. If so, write a similarity statement and state the reason why.



$\frac{\Delta RST}{\Delta FGH}$: $\frac{20}{30}$, $\frac{32}{48}$ → $\frac{2}{3}$, $\frac{2}{3}$

since corresponding sides are proportional and included angles are the same,

$\boxed{\Delta RST \sim \Delta FGH \text{ by SAS} \sim}$

8. Given the diagram shown and $\overline{LM} \parallel \overline{PQ}$, complete the following statements.

a. $m\angle NQP$ = 53° } both by alt. interior angles

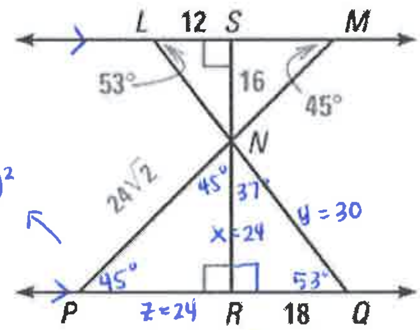
b. $m\angle NPQ$ = 45°

c. $m\angle PNQ$ = 45+37 = 82°

d. RN = 24

e. QN = 30

f. PR = 24



$\frac{16}{x} = \frac{12}{18}$

$12x = 288$

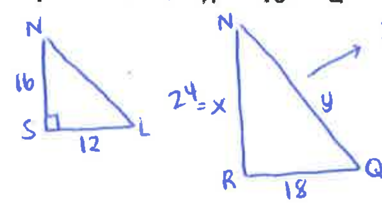
$x = 24$

$z^2 + 24^2 = (24\sqrt{2})^2$

$z^2 + 576 = 1152$

$z^2 = 576$

$z = 24$



$24^2 + 18^2 = y^2$

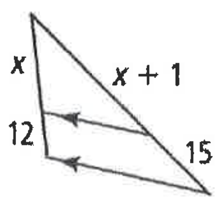
$576 + 324 = y^2$

$900 = y^2$

$y = 30$

Using the diagrams below, please solve for x.

9.



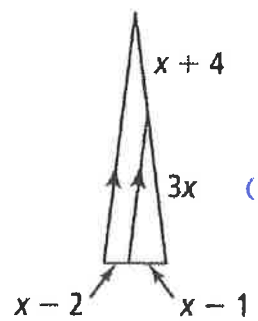
$\frac{x}{12} = \frac{x+1}{15}$

$15x = 12(x+1)$

$15x = 12x + 12$

$3x = 12 \Rightarrow \boxed{x = 4}$

10.



$\frac{3x}{x+4} = \frac{x-1}{x-2}$

$(x+4)(x-1) = 3x(x-2)$

$x^2 + 3x - 4 = 3x^2 - 6x$

$0 = 2x^2 - 9x + 4$

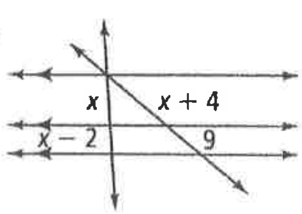
$0 = 2x^2 - 8x - 1x + 4$

$0 = 2x(x-4) - 1(x-4)$

$0 = (2x-1)(x-4)$

$\boxed{x = 1/2,\ x = 4}$

11.



$\frac{x}{x-2} = \frac{x+4}{9}$

$9x = (x-2)(x+4)$

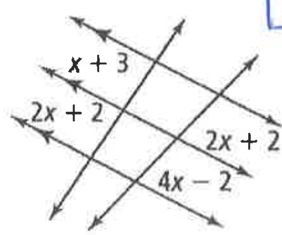
$9x = x^2 + 2x - 8$

$0 = x^2 - 7x - 8$

$0 = (x-8)(x+1)$

$\boxed{x = 8,\ x = -1}$

12.



$\frac{x+3}{2x+2} = \frac{2x+2}{4x-2}$

$(2x+2)(2x+2) = (x+3)(4x-2)$

$4x^2 + 8x + 4 = 4x^2 + 10x - 6$

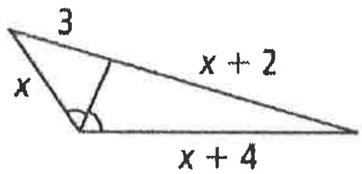
$8x + 4 = 10x - 6$

$4 = 2x - 6$

$10 = 2x$

$\boxed{x = 5}$

13.



$\frac{3}{x+2} = \frac{x}{x+4}$

$x(x+2) = 3(x+4)$

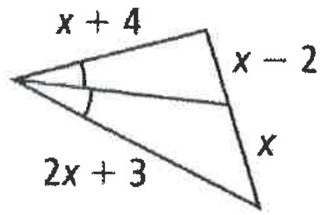
$x^2+2x = 3x+12$

$x^2 - x - 12 = 0$

$(x-4)(x+3) = 0$

$\boxed{x=4,\ x=-3}$

14.



$\frac{x-2}{x} = \frac{x+4}{2x+3}$

$x(x+4) = (x-2)(2x+3)$

$x^2+4x = 2x^2+3x-4x-6$

$0 = x^2-5x-6$

$0 = (x-6)(x+1)$

$\boxed{x=6,\ x=-1}$

15. ΔGHI has vertices $G(0,5)$, $H(4,2)$, and $I(3,3)$. What are the vertices after the dilation with a scale factor of 9 using the origin as the center of dilation?

$G(0,5) \rightarrow \times 9$ | $G'(0,45)$

$H(4,2) \rightarrow \times 9$ | $H'(36,18)$

$I(3,3) \rightarrow \times 9$ | $I'(27,27)$

16. ΔABC has vertices $A(0,20)$, $B(16,24)$, and $C(12,12)$. What are the vertices after the dilation with a scale factor of ¾ using the origin as the center of dilation?

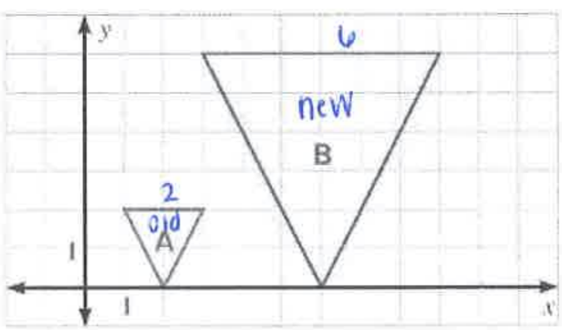
$A(0,20) \times 3/4 \rightarrow$ | $A'(0,15)$

$B(16,24) \times 3/4 \rightarrow$ | $B'(12,18)$

$C(12,12) \times 3/4 \rightarrow$ | $C'(9,9)$

Determine whether the dilation from Figure A to Figure B is a reduction or an enlargement. State the scale factor.

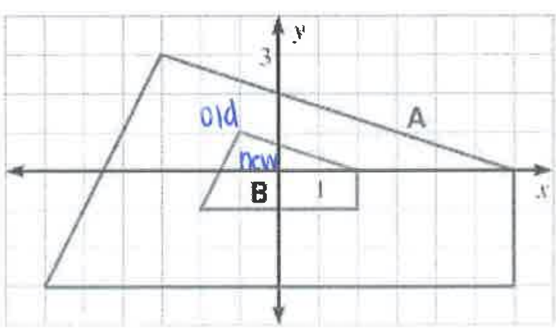
17.



$\frac{\text{new}}{\text{old}} = \frac{6}{2} = 3$

$\boxed{K=3,\ \text{Enlargement}}$

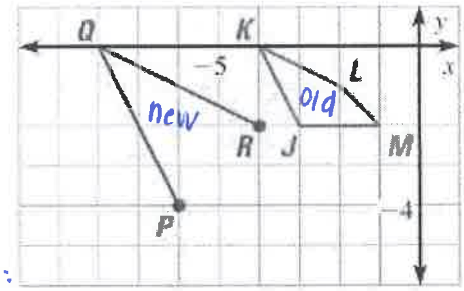
18.



$\frac{\text{new}}{\text{old}} = \frac{1}{3}$

$\boxed{K=1/3;\ \text{Reduction}}$

19. You want to create a quadrilateral PQRS that is similar to quadrilateral JKLM. What are the coordinates of S?



$\frac{\text{new}}{\text{old}} : \frac{Q(-8,0)}{K(-4,0)} \Rightarrow \frac{-8}{-4} = 2$

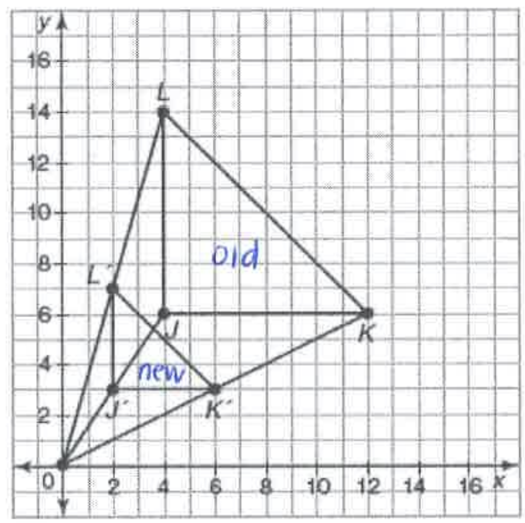
$\boxed{K=2}$

Since M and S are corresponding, multiply point M by 2:

$M(-1,-2) \times 2 \Rightarrow \boxed{S(-2,-4)}$

20. Given the image and the pre-image, determine the scale factor.

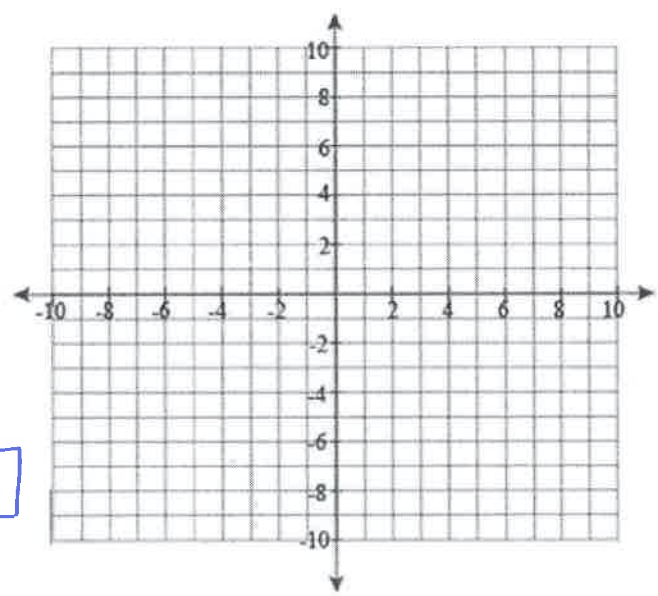
pick a corresponding side on each figure



$\frac{\text{new}}{\text{old}} : \frac{J'K'}{JK} = \frac{4}{8} = \frac{1}{2}$

$\boxed{K = 1/2}$

21. In ΔABC, the coordinates are $A(2,6)$, $B(8,7)$, and $C(4,4)$. Dilate ΔABC by a scale factor of 2 using $(8,2)$ as the center of dilation.



A: From center $(8,2)$ to $A(2,6)$: $(x-6, y+4) \times 2$

$(x-12, y+8)$

From center $(8,2)$: $(8-12, 2+8)$

$\boxed{A'(-4,10)}$

B: From center $(8,2)$ to $B(8,7)$: $(x+0, y+5) \times 2$

$(x+0, y+10)$

From center $(8,2)$: $(8+0, 2+10) \Rightarrow \boxed{B'(8,12)}$

C: From center $(8,2)$ to $C(4,4)$: $(x-4, y+2) \times 2$

$(x-8, y+4)$

From center $(8,2)$: $(8-8, 2+4) \Rightarrow \boxed{C'(0,6)}$