Unit 8 – Similarity Unit – HOMEFUN

Day 1 Ratios and Proportions ** No Decimals Allowed**

Simplify the following ratios.

1. $\frac{40}{50}$ $\frac{4}{5}$

2. $\frac{1000}{225}$ $\frac{40}{9}$

3. $\frac{54}{45}$ $\frac{6}{5}$

4. $\frac{12x}{3x}$ $\frac{4}{1}$

Simplify the following ratios – make sure the units are correct.

4. $\frac{125\ oz}{5\ lb}$ $\frac{25}{16}$

5. $\frac{6\ cups}{1 pint}$ $\frac{3}{1}$

6. $\frac{12in}{4yd}$ $\frac{1}{12}$

7. $\frac{100\ m}{2\ km}$ $\frac{20}{1}$

Solve the following Proportions.

8. $\frac{4}{16}=\frac{a}{8}$ $a=2$

9. $\frac{14}{21}=\frac{x}{24}$ $x=16$

10. $\frac{3x}{12}=\frac{15}{12}$ $x=5$

11. $\frac{y-3}{y}=\frac{7}{10}$ $y=10$

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

$x=-3$

$x=4$

13. $\frac{2y}{y}=\frac{3y+5}{4y}$

$y=1$

For exercise #14 – 19, use the table to find the ratios. Express each ratio as a fraction.

Teams	Wins	Losses
Huskies	**18**	**10**
Tigers	**14**	**14**
Lancers	**2**	**16**
Grizzlies	**16**	**12**

14) Games won to games lost for the Huskies.

9:5

15) Games won by the Lancers to games won by the Tigers. 1:7

16) Games won to games played for Tigers.

1:2

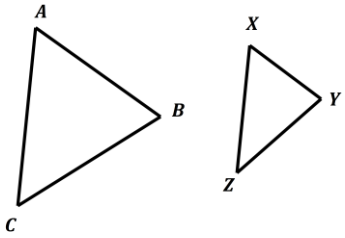
17) Games won to games played for Grizzlies.

4:7

Day 2 – Similar Polygons and Triangles

List all pairs of congruent angles, and then write a proportion that relates to the corresponding sides for each pair of similar polygons. Leave all answers as fractions.

1. $\Delta ABC \sim \Delta XYZ$



Angles ***Sides***

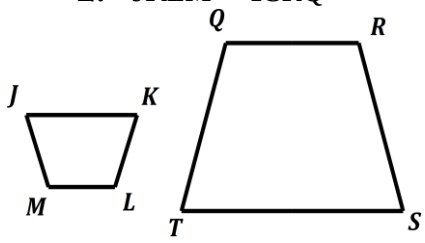
$\angle A \sim \angle X$

$\angle B \sim \angle Y$

$\angle C \sim \angle Z$

$\frac{AB}{XY} = \frac{BC}{YZ} = \frac{AC}{XZ}$

2. $JKLM \sim TSRQ$



Angles ***Sides***

$\angle J \sim \angle T$

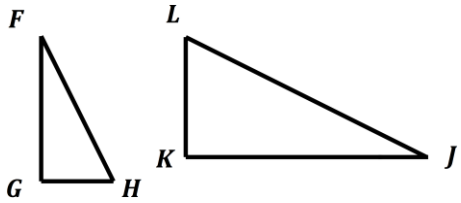
$\angle K \sim \angle S$

$\angle L \sim \angle R$

$\angle M \sim \angle Q$

$\frac{JK}{TS} = \frac{KL}{SR} = \frac{LM}{RQ} = \frac{JM}{TQ}$

3. $\Delta FGH \sim \Delta JKL$



Angles ***Sides***

$\angle F \sim \angle J$

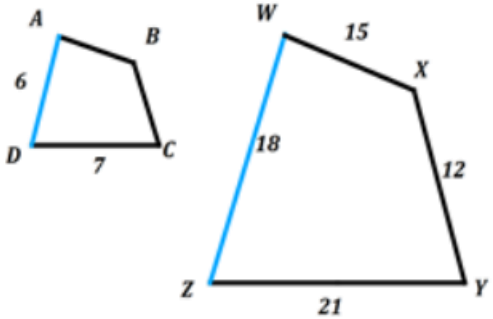
$\angle G \sim \angle K$

$\angle H \sim \angle L$

$\frac{FG}{JK} = \frac{GH}{JL} = \frac{FH}{JL}$

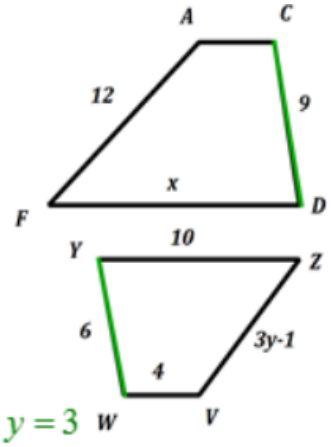
Given each pair of polygons are similar, find the scale factor, and missing sides.

4. $DCBA \sim WXYZ$



Scale Factor: $\frac{AD}{WZ} = \frac{6}{18} = \frac{1}{3}$ ***AB*** = 4

5. $ACDF \sim VWYZ$



$\frac{CD}{WY} = \frac{9}{6} = \frac{3}{2}$

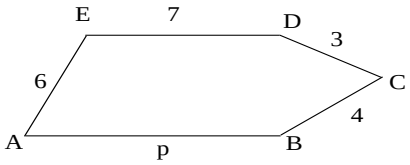
Scale Factor: _____

$y = 3$

AC = 6 **, VZ =** $VZ = 8$

Use the diagram to complete the following. Given $ABCDE \sim ZYXWV$

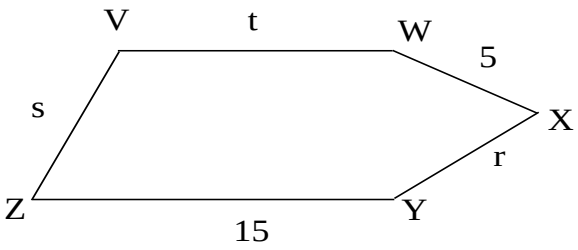
9. Write the scale factor of ABCDE to ZYXWV.



$$\frac{3}{5} \text{ or } 3:5$$

10. Write the scale factor of VWXYZ to ABCDE.

$$\frac{5}{3} \text{ or } 5:3$$



11. Find the values of p, r, s, and t.

$$p = 9$$

$$r = \frac{20}{3} = 6.33$$

$$s = 10$$

$$t = \frac{35}{3} = 11.67$$

12. Find the perimeters of each polygon.

$$ABCDE = 29$$

$$VWXYZ = 48$$

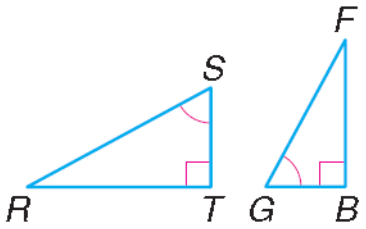
13. Find the ratio of the perimeter of VWXYZ to the perimeter of ABCDE.

$$\frac{5}{3} \text{ or } 5:3$$

Day 3 Proving Triangles are Similar

Determine if the following triangles are similar; if so give a reason why.

1.

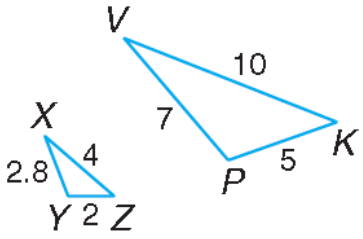


$\triangle RST \sim \triangle$ ___?___

FGB

$\angle S \cong \angle G$	Given
$\angle T \cong \angle B$	Given
$\Delta RST \sim \Delta FGB$	
AA~	

2.

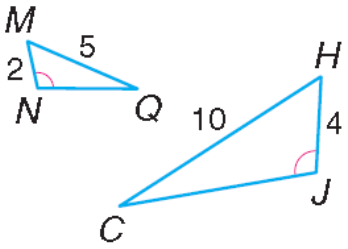


$\triangle XYZ \sim \triangle$ ___?___

VPK

$\frac{XZ}{VP} = \frac{XY}{VP} = \frac{YZ}{PK} = \frac{2}{5}$	Given
$\Delta XYZ \sim \Delta VPK$	
SSS~	

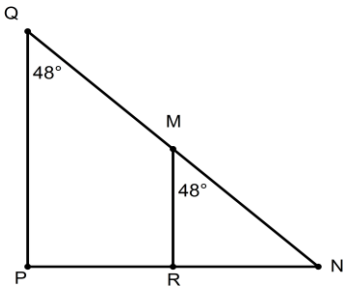
3.



$\triangle MNQ \sim \triangle$ ___?___

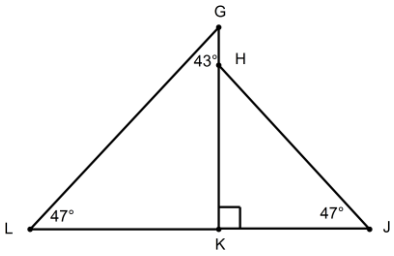
No
Enough
Info

4.



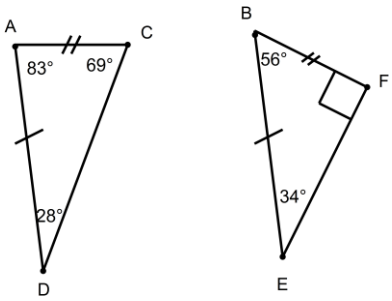
$\angle N \cong \angle N$	Reflexive
$\angle Q \cong \angle RMN$	Corresponding $\angle$s
$\Delta NMR \sim \Delta NQP$	
AA~	

5.



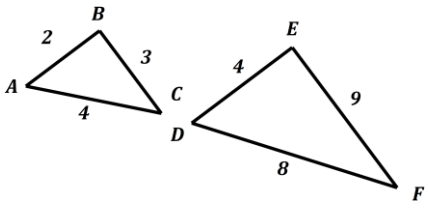
$\angle L \cong \angle J$	Given
$\angle G \cong \angle H$	Triangle Sum Thm.
$\Delta LGK \sim \Delta JHK$	
AA~	

6.

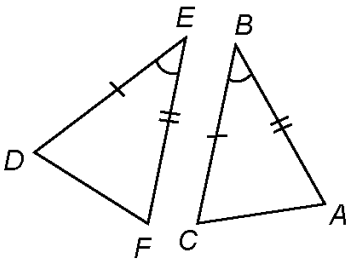


Not
Similar

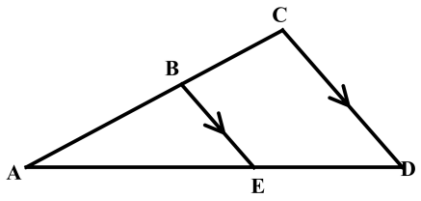
7.



8.



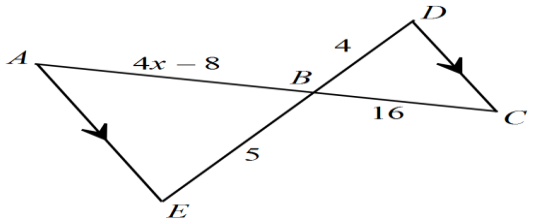
9.



Not	*Triangles*	$\angle A \cong \angle A$	Reflexive
Similar	*are*	$\angle D \cong \angle AEB$	Corresponding $\angle s$
	Congruent	$\Delta AEB \sim \Delta ADC$	
	$SF = 1:1$		AA~

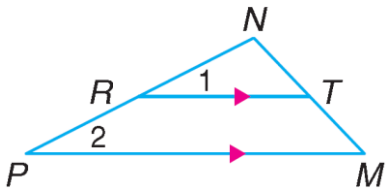
13. Find the value of x if the following triangles are similar.

$x = 7$



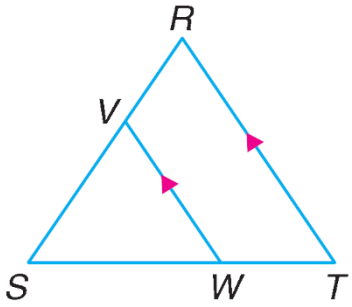
Day 4 –Proportions and Similar Triangles "Ladder" Triangles

1. Explain why $\Delta NRT \sim \Delta NPM$ **.**



$AA\sim$

For 2 – 4, complete the follow proportion.

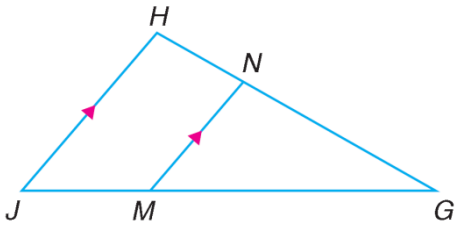


2. $\frac{SV}{SR}=\frac{?}{RT}$ VW

3. $\frac{ST}{SW}=\frac{?}{SV}$ SR

4. $\frac{?}{VW}=\frac{SR}{TR}$ SV

5. For 5 – 7, complete the following proportions.



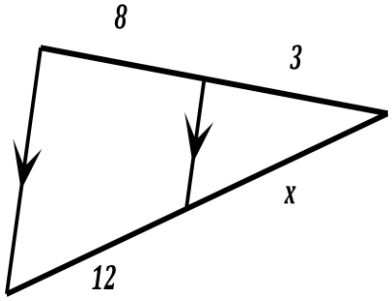
5. $\frac{GN}{NH}=\frac{GM}{?}$ MJ

6. $\frac{GJ}{?}=\frac{GH}{GN}$ MG

7. $\frac{?}{NH}=\frac{GM}{MJ}$ NG

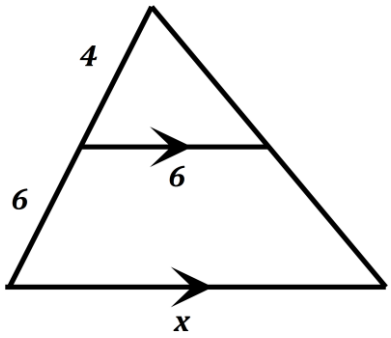
For 8 – 12, find the following variables.

8.



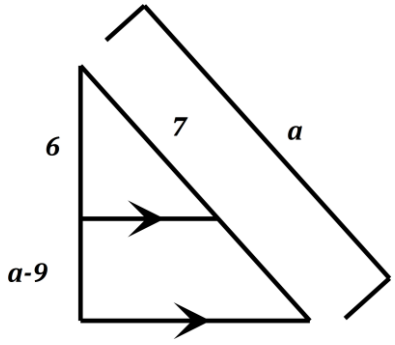
$x=4.5$

9.



$x=15$

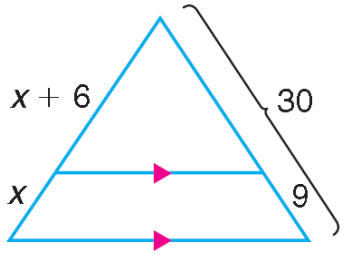
10.



$a=21$

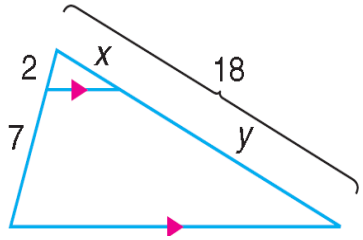
For 11 – 12, find the following variables.

11.



$x = 4.5$

12.

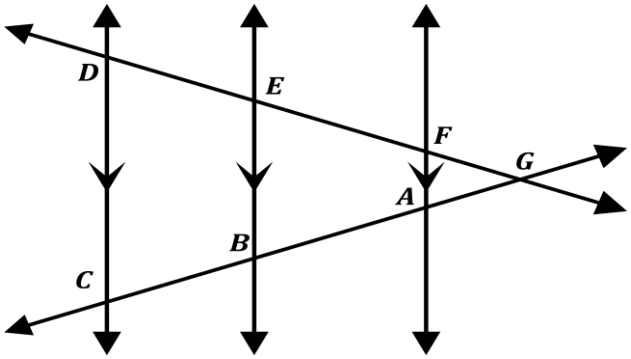


$x = 4$

$y = 14$

Day 5 Proportions and Similar Triangles: Segment Lengths

Use the figure to complete the proportions.



1. $\frac{EF}{FG} = \frac{BA}{?}$ AG

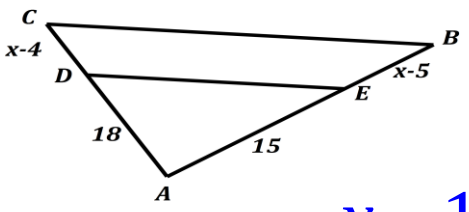
2. $\frac{CB}{BA} = \frac{?}{EF}$ DE

3. $\frac{EB}{FA} = \frac{?}{FG}$ EG

4. $\frac{EG}{ED} = \frac{?}{CB}$ BG

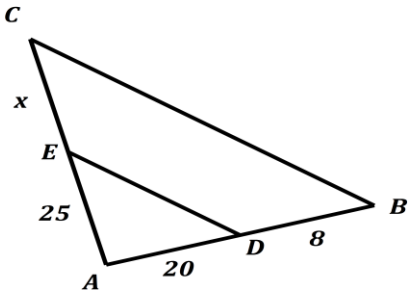
Determine the value of the variable so that $\overline{DE} \parallel \overline{BC}$

5.



$x = 10$

6.



$x = 10$

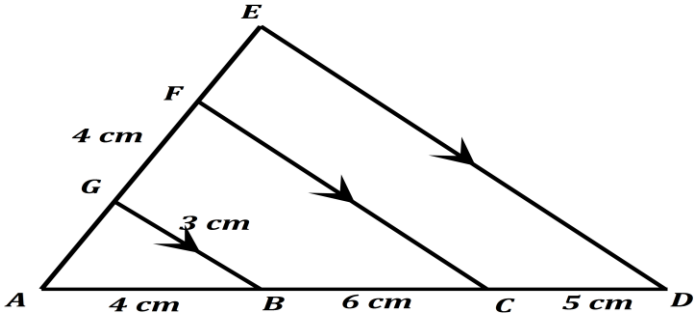
Determine the length of each segment.

7. $\overline{FE}$

8. $\overline{AF}$

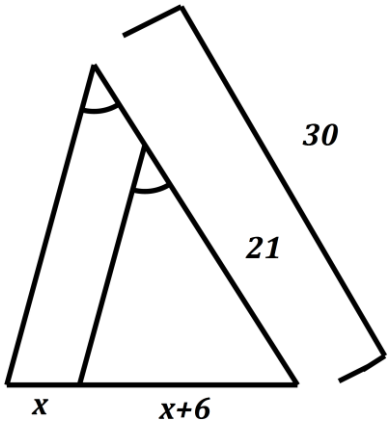
$AG = \frac{8}{3}$

$AF = \frac{10}{3}$



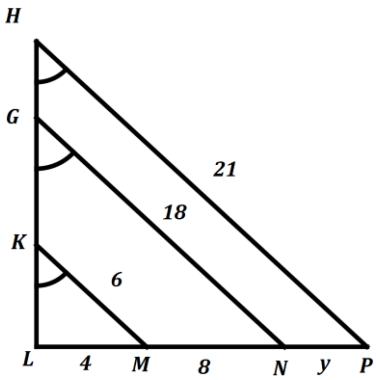
Find the value of the variable.

9.



$x = 4.5$

10.



$y = 2$