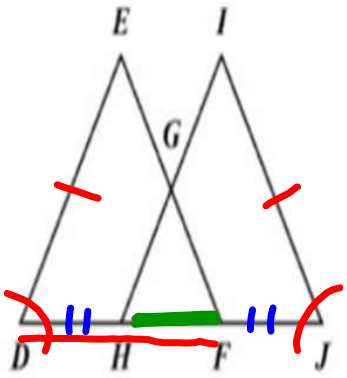
57. In this diagram, $\overline{DE} \cong \overline{JI}$ and $\angle D \cong \angle J$. Which additional information is sufficient to prove that ΔDEF is congruent to ΔJIH ?

A. $\overline{EF} \cong \overline{IH}$ SSA nope!.
B. $\overline{DH} \cong \overline{JF}$
C. $\overline{HG} \cong \overline{GI}$ only on one triangle
D. $\overline{HF} \cong \overline{JF}$ only on one triangle



Segment Addition Postulate

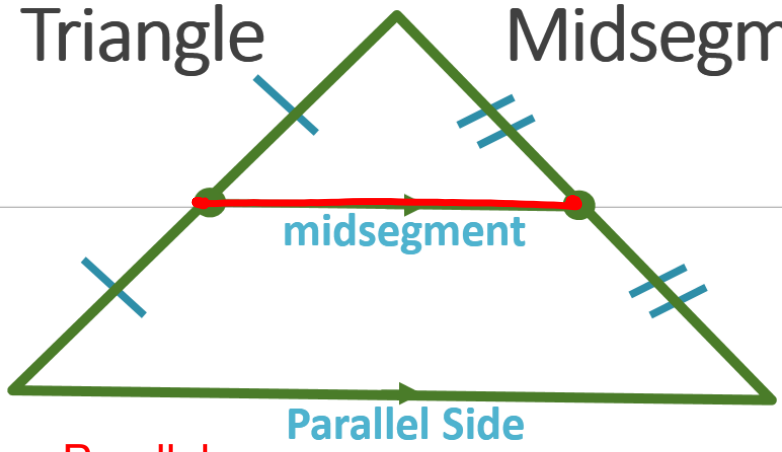
DH + HF = DF

JF + HF = JH

DF = JH

Triangle Midsegment Theorem

Triangle Midsegment



1. Parallel _____ to one side of the triangle
2. Is half _____ the length of the parallel side
3. Connects the midpoints _____

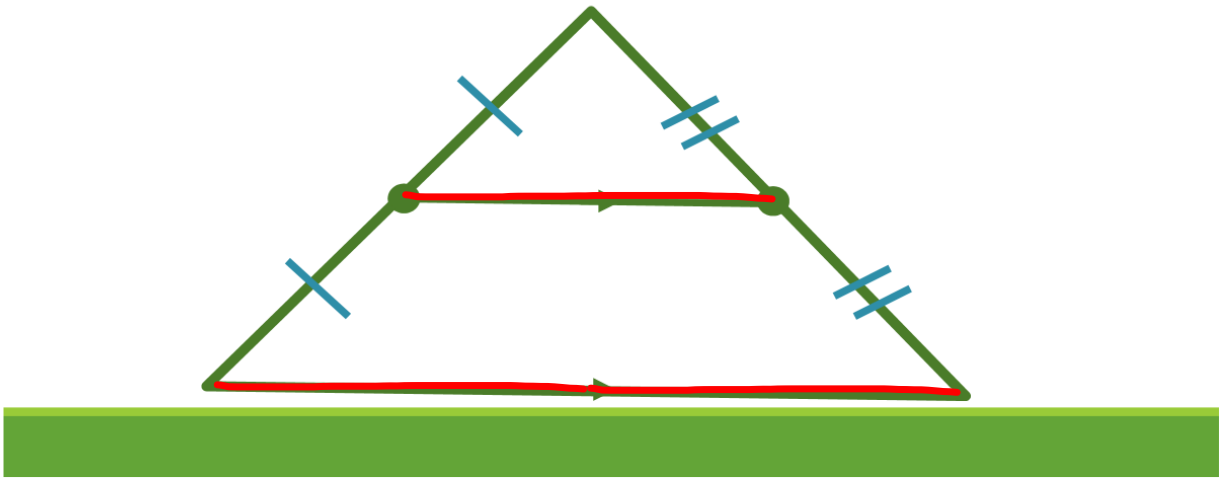
Triangle Midsegment Theorem

EQUATION

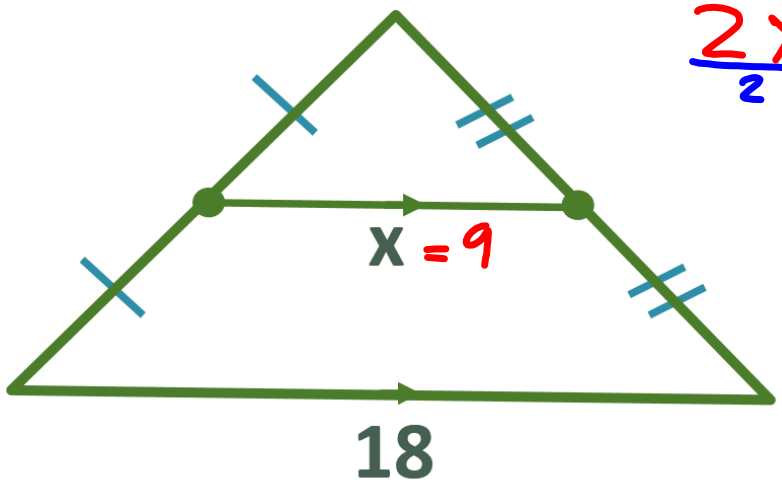
$$MIDSEGMENT = \frac{1}{2} Parallel\ Side$$

or

$$2(MIDSEGMENT) = Parallel\ Side$$



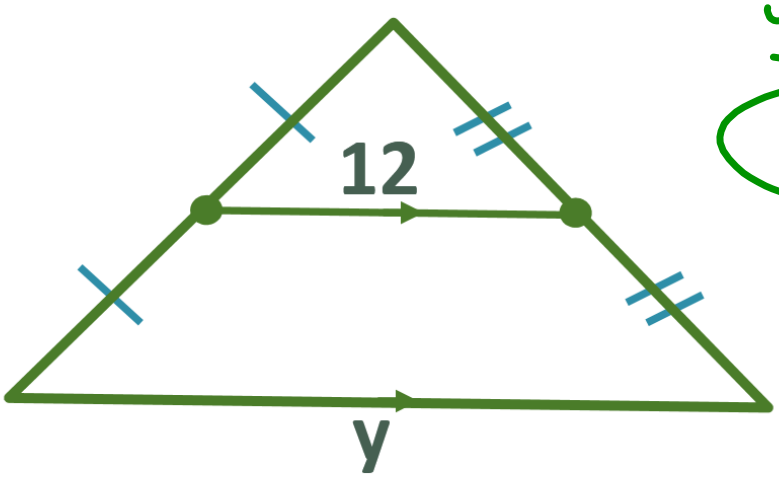
1. Solve for x.



$\frac{2x}{2} = \frac{18}{2}$

$x = 9$

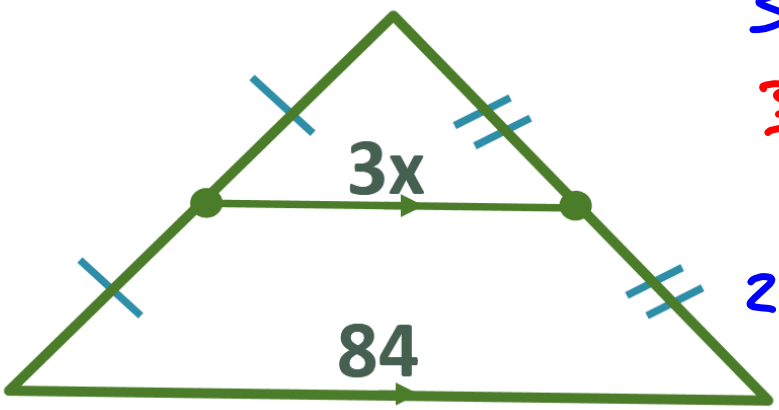
2. Solve for y.



$y = 2(12)$

$y = 24$

3. Solve for x.



$3x = \frac{1}{2}(84)$

$\frac{3x}{3} = \frac{42}{3}$

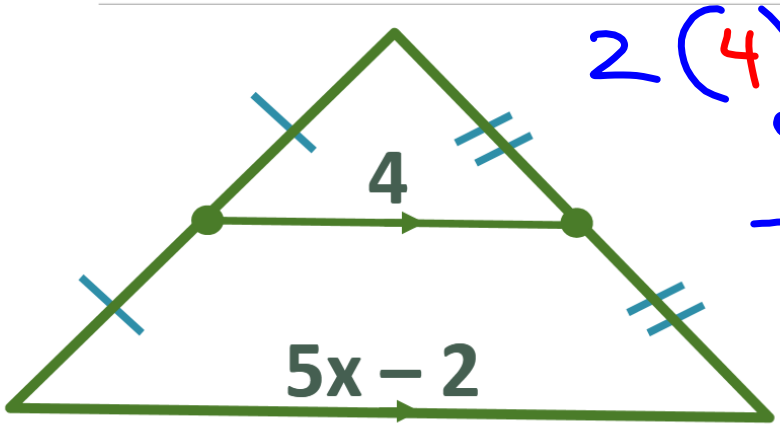
$x = 14$

$2(3x) = 84$

$\frac{6x}{6} = \frac{84}{6}$

$x = 14$

4. Solve for x.



$2(4) = 5x-2$

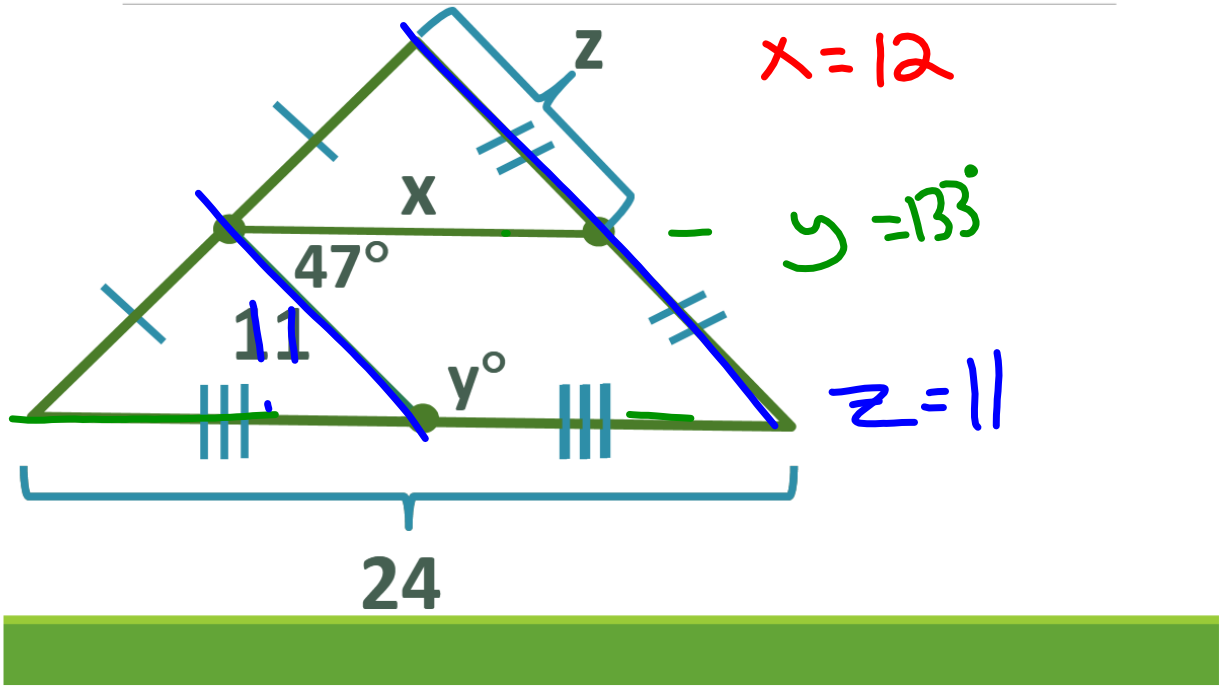
$8 = 5x-2$

$+2 \quad +2$

$\frac{10}{5} = \frac{5x}{5}$

$2 = x$

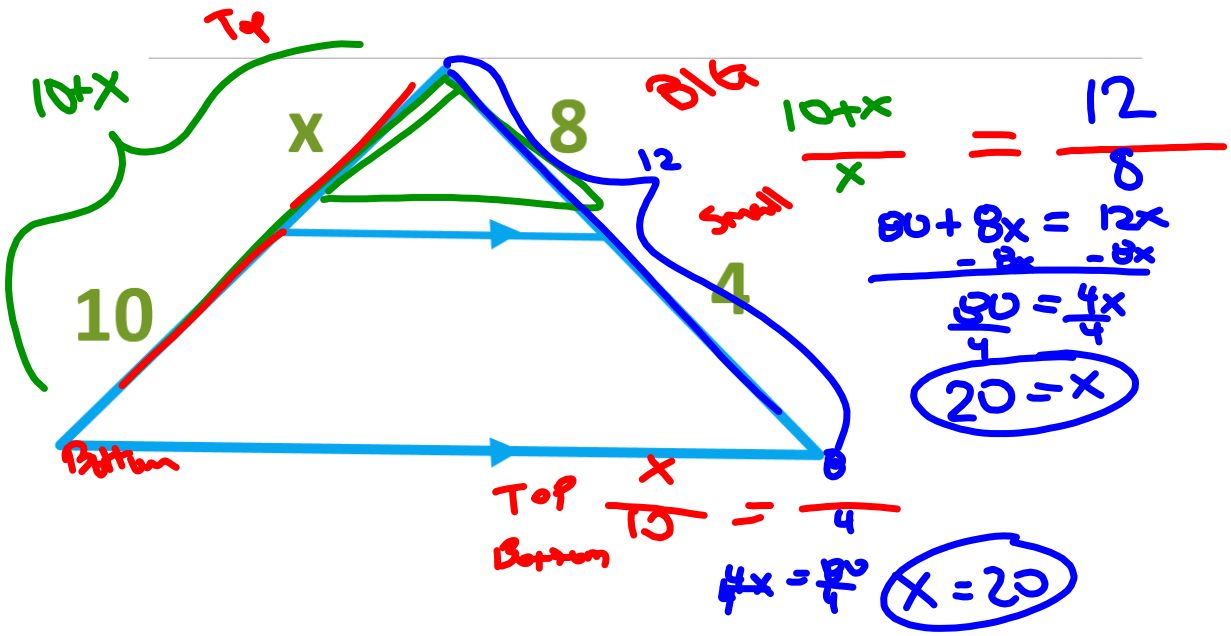
5. Solve for the missing variables.



Proportional Parts of Triangles

BE CONSISTENT WITH HOW YOU SET UP THE RATIOS.

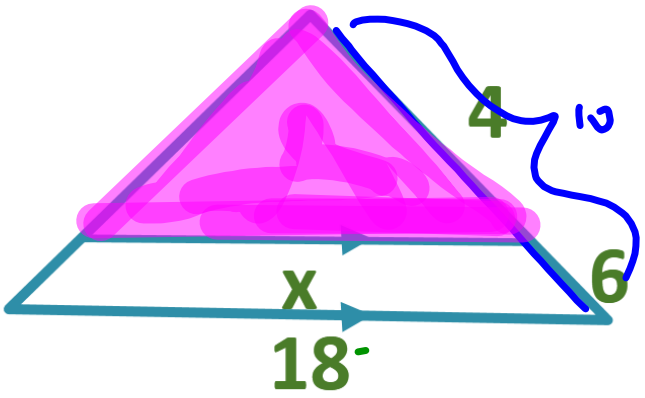
1. Solve for x.


Top
10+x
x
8
10
4
12
Bottom
Top
Bottom
x
15
4
Big
Small
10+x / x = 12 / 8
80 + 8x = 12x
-8x -8x
80/4 = 4x/4
20 = x
4x = 80/4
x = 20

2. Solve for x.

BIG $\frac{18}{x} = \frac{10}{4}$

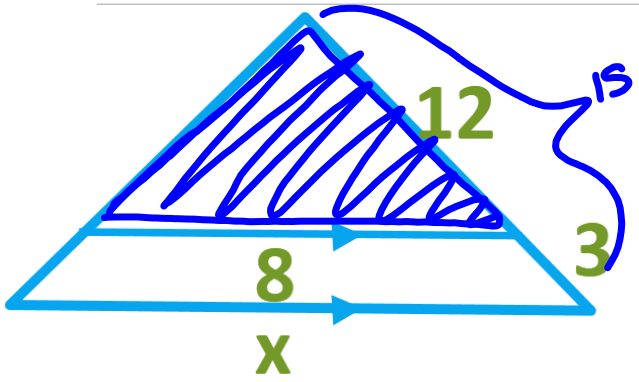
small



$\frac{72}{10} = \frac{10x}{10}$

$x = 7.2$

3. Solve for x.



Big / Small

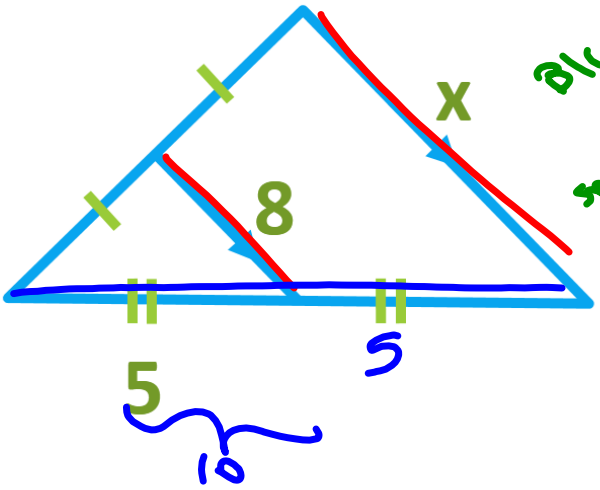
$$\frac{x}{8} = \frac{15}{12}$$

$$12x = 120$$

$$x = 10$$

Determine if a midsegment or proportionality problem and solve.

x = 16



BIG

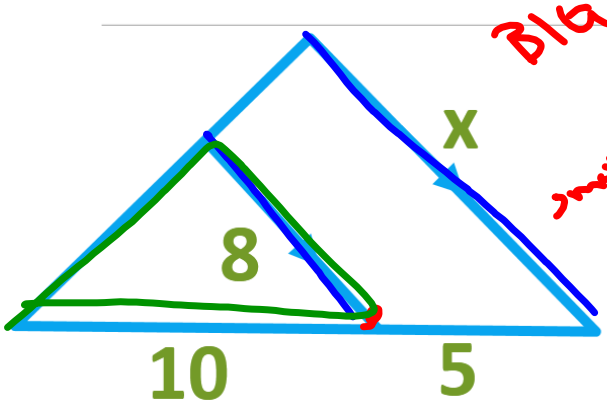
$\frac{x}{8} = \frac{10}{5}$

$5x = 80$

$\frac{5x}{5} = \frac{80}{5}$

$x = 16$

Determine if a midsegment or proportionality problem and solve.



BIG

$\frac{x}{8} = \frac{15}{10}$

$\frac{120}{10} = \frac{10x}{10}$

$x = 12$

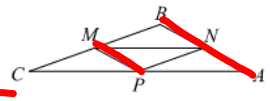
Geometry Name_____ ID: 1

Midsegment

Date_____ Period____

In each triangle, M, N, and P are the midpoints of the sides. Name a segment parallel to the one given.

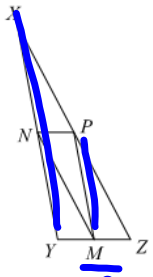
1)



BA

___ || $\overline{MP}$

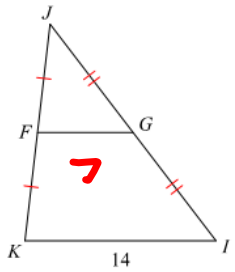
2)



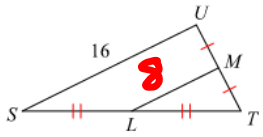
$\overline{YX}$ || MP

Find the missing length indicated.

3) Find *FG*

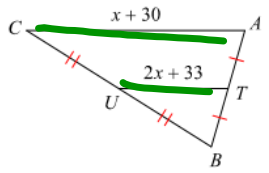


4) Find *ML*



Solve for *x*.

5)

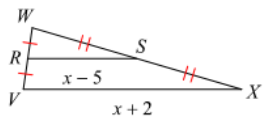


2(2x+33) = x+30

4x+66 = x+30

x = −12

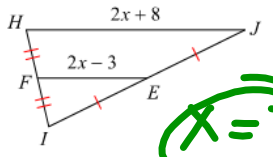
6)



x = 12

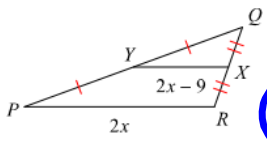
Find the missing length indicated.

7) Find *JH*



x = 7

8) Find *PR*

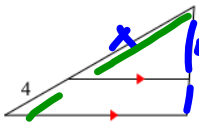


x = 18

Geometry Name_____

Triangle Proportionality Theorem

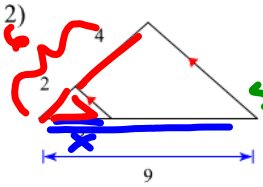
Find the missing length indicated.

1) 

Top: $\frac{x}{4} = \frac{4}{2}$

Bottom: $2x = 12$

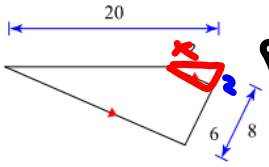
$x = 6$

2) 

Big: $\frac{6}{2} = \frac{9}{x}$

Small: $\frac{6x}{6} = \frac{18}{6}$

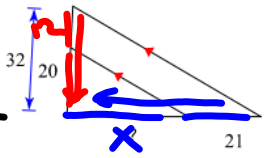
$x = 3$

3) 

Big: $\frac{20}{x} = \frac{8}{2}$

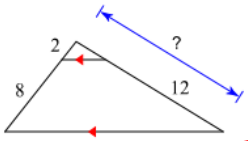
Small: $\frac{40}{8} = \frac{8x}{8}$

$5 = x$

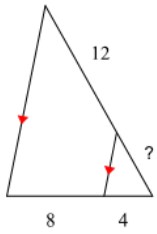
4) 

$\frac{12}{20} = \frac{21}{x}$

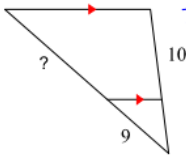
$x = 35$

5) 

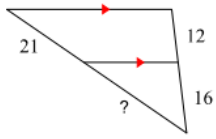
$x = 15$

6) 

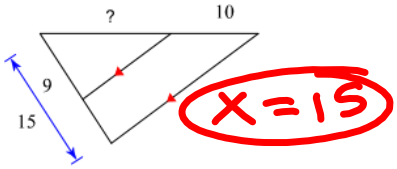
$x = 6$

7) 

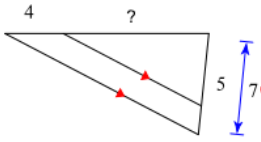
$x = 15$

8) 

$x = 28$

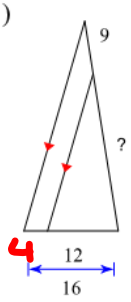
9) 

$x = 15$

10) 

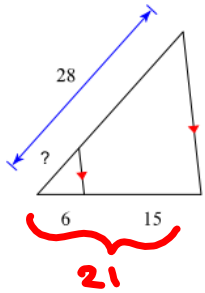
$x = 10$

11)



$x = 27$

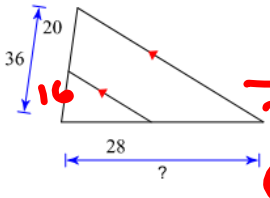
12)



$\frac{28}{x} = \frac{21}{6}$

$x = 8$

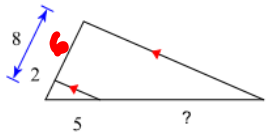
13)



$\frac{x}{28} = \frac{36}{16}$

$x = 63$

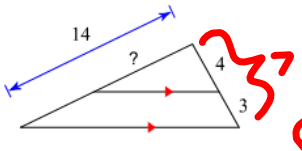
14)



$\frac{6}{2} = \frac{x}{5}$

$x = 15$

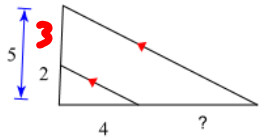
15)



$\frac{14}{x} = \frac{7}{4}$

$x = 8$

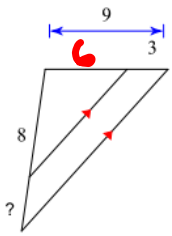
16)



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

$x = 6$

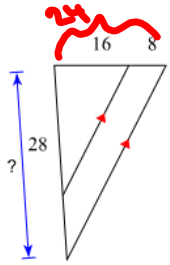
17)



$\frac{3}{6} = \frac{x}{8}$

$x = 4$

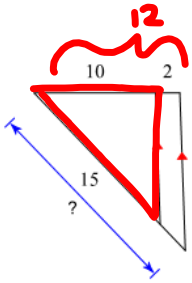
18)



$\frac{x}{28} = \frac{24}{16}$

$x = 42$

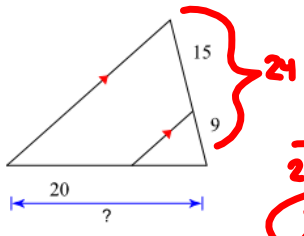
19)



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

$x = 18$

20)



$\frac{x}{20} = \frac{24}{15}$

$x = 32$

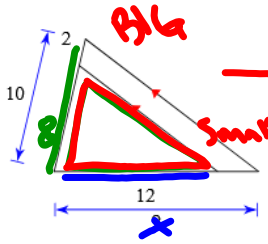
GeomeTRY Name_____

Midsegment and Proportionality Review

Date_____ Period____

Find the missing length indicated.

1)



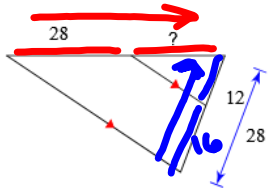
BIG:Small

$\frac{10}{8} = \frac{x}{12}$

$\frac{120}{8} = \frac{8x}{8}$

$x = 15$

2)



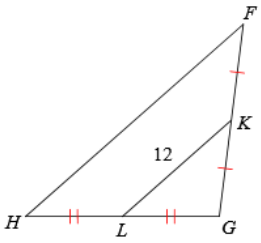
4 sections!

$\frac{28}{x} = \frac{16}{12}$

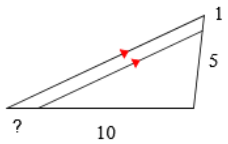
$\frac{336}{16} = \frac{16x}{16}$

$x = 21$

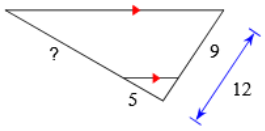
3) Find *FH*



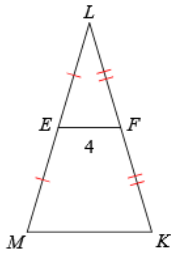
4)



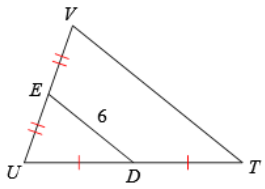
5)



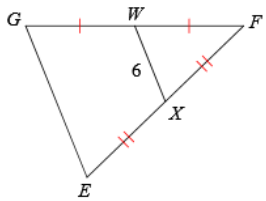
6) Find *MK*



7) Find *TV*

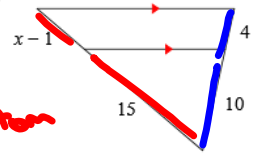


8) Find *GE*



Solve for x.

9)



Top

Bottom

$\frac{x-1}{15} = \frac{4}{10}$

$10(x-1) = 60$

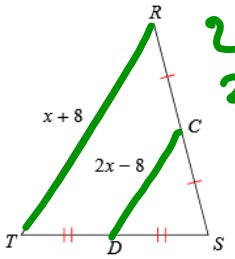
$10x - 10 = 60$

$+10 \quad +10$

$\frac{10x}{10} = \frac{70}{10}$

$x = 7$

10)



midsegment

2(halves) = 1(whole)

$2(2x-8) = x+8$

$4x - 16 = x + 8$

$-x \quad -x$

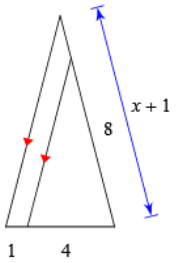
$3x - 16 = 8$

$+16 \quad +16$

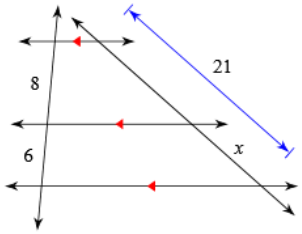
$\frac{3x}{3} = \frac{24}{3}$

$x = 8$

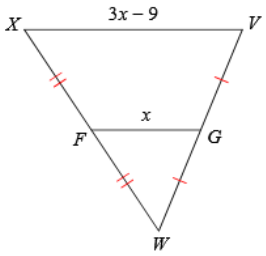
11)



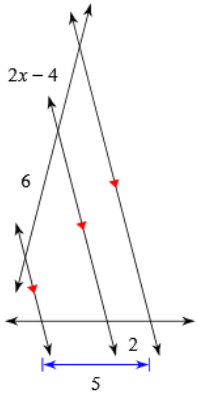
12)



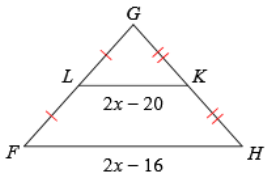
13)



14)



15)



16)