

Chapter 8 Review Guide

Name: _____ Date: _____

1.) Using the proportion, find the value of x:

$$\frac{x-18}{3} = \frac{-12}{2}$$

$$2(x-18) = 3(-12)$$

$$2x - 36 = -36$$

$$2x = 0$$

$$x = 0$$

(Note: The student's work shows a correction from x = -72 to x = 0.)

First step, multiply diagonals because cross products are equal in a proportion. Second, if there is + or - you will need to distribute! Third, solve by getting variables on one side by + or - and then above.

2.) **Multiple Choice.** There are 12 girls and 15 boys in an ~~Enriched~~ Geometry class. What is the ratio of **boys to total students** (in reduced form)? Show your work for partial credit.

a.) $\frac{4:5}{12:15}$ girls:boys
 b.) $\frac{5:4}{15:12}$ boys:girls
 c.) $\frac{5:9}{15:27}$ boys:total
 d.) $\frac{4:9}{12:27}$ girls:total

Order matters. and check if they want total
 Total students
 12 girls + 15 boys
 27 students

3.) In the diagram, $LMNO \sim PQRS$. Complete the proportions and congruence statements.

(Note: This is NOT multiple choice! There are 4 parts to this question.)

a.) $\angle P \cong \angle L$ look to Similarity statements
 Both P and L are first, so those angles are congruent
 b.) $\angle M \cong \angle Q$ Both M and Q are second

c.) Complete the proportion: $\frac{MN}{RQ} = \frac{LM}{PQ}$ Check Similarity Statement
 LM and PQ are both the first 2 letters

d.) Find the value of x.

Put side with x on top and matching side on bottom

$$\frac{x-2}{12} = \frac{18}{24}$$

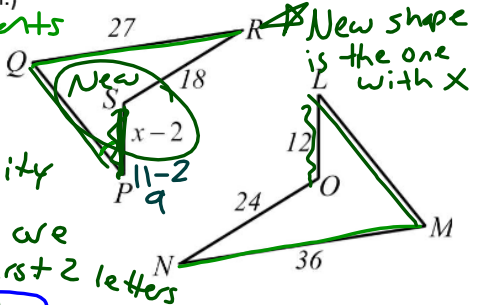
$$24(x-2) = 12 \cdot 18$$

$$24x - 48 = 216$$

$$24x = 264$$

$$x = 11$$

(Note: The student's work shows a correction from x = 11.3 to x = 11.)



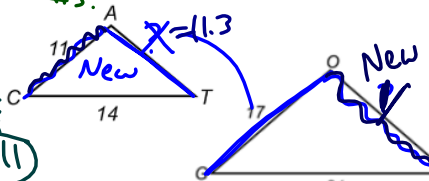
4.) If $\triangle CAT \sim \triangle DOG$, find:

(a) The length of \overline{AT} and \overline{DO}

$$\frac{x}{17} = \frac{11}{21}$$

$$21x = 187$$

$$x = 11$$



(b) The ratio of the perimeters of $\triangle CAT$ to $\triangle DOG$.

Perimeters distance around add all outside sides

$$P_{CAT} = 11 + 14 + 11.3 = 36.3$$

$$P_{DOG} = 17 + 21 + 16.5 = 54.5$$

Ratio is 36.3 : 54.5

$$\frac{y}{11} = \frac{21}{14}$$

$$14y = 231$$

$$y = 16.5$$

(a) What theorem can be applied here?

Extension to Side Splitter Thm.

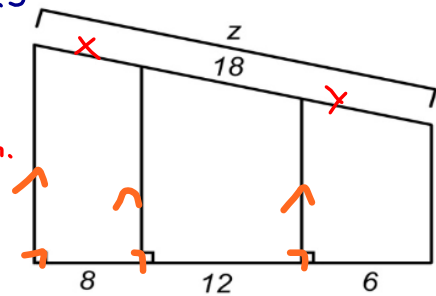
(b) Find the value of z.

$$\frac{12}{18} = \frac{8+12+6}{z}$$

$$12z = 18(26)$$

$$12z = 468$$

$$z = 39$$



lines parallel b/c corresponding angles \cong

OR Do it part by part

$$\frac{x}{8} = \frac{18}{12} \quad \text{and} \quad \frac{y}{6} = \frac{18}{12}$$

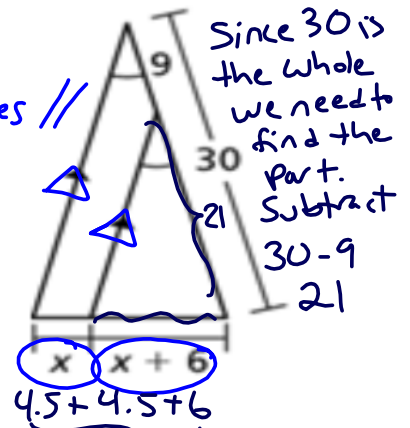
$$12x = 144 \quad \text{and} \quad 12y = 108$$

$$x = 12 + 18 + y = 9$$

6.) Using the figure to the right

(a) What theorem can be applied here?

Side Splitter Theorem if lines // then $\frac{\text{Part}}{\text{Part}} = \frac{\text{Part}}{\text{Part}}$



(b) Find the value of x.

• Cross multiply $x+6 = 21$
 • Distribute to get rid of () $9(x+6) = 21x$

$$9x + 54 = 21x$$

$$-9x \quad -9x$$

$$\frac{54}{12} = \frac{12x}{12}$$

$$4.5 = x$$

7.) Given: $\triangle SEA \sim \triangle TBA$.

If triangles

(a) Can the same theorem be used to find both x and y? What theorem can be used to find x?

Similar Angles are \cong . Since $\angle S \cong \angle T$ and they are corresponding angles. $\overline{TB} \parallel \overline{SE}$. We can use side splitter for side x but not for y b/c it is not a side being split.

(b) Find the values of x and y. Round your answers to the nearest hundredth.

Set up ratios X over same side = same part as x over other part

$$\frac{x}{54} = \frac{23}{40}$$

$$40x = 54 \cdot 23$$

$$40x = 1242$$

$$\frac{40x}{40} = \frac{1242}{40}$$

$$x = 31.05$$

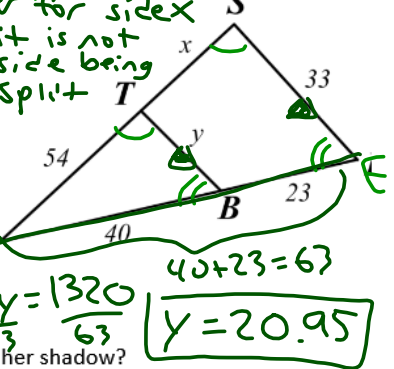
Redraw similar triangles to find full split

$$\frac{y}{33} = \frac{40}{63}$$

$$63y = 1320$$

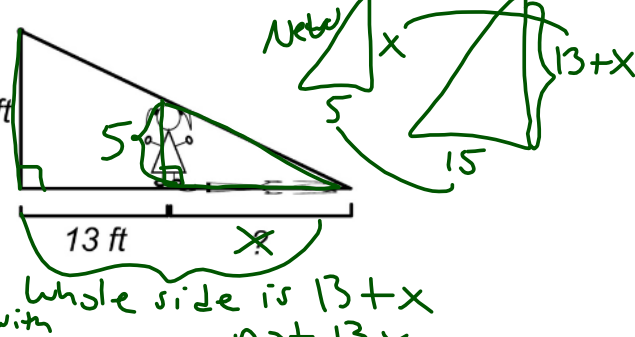
$$\frac{63y}{63} = \frac{1320}{63}$$

$$y = 20.95$$



8.) A 5-foot-tall girl is standing 13 feet away from a 15-foot-tall lamppost. How long is her shadow?

Since one side was inside must redraw triangles with



$$\frac{x}{13+x} = \frac{5}{15}$$

$$15x = 5(13+x)$$

$$15x = 65 + 5x$$

$$-5x \quad -5x$$

$$\frac{10x}{10} = \frac{65}{10}$$

$$x = 6.5 \text{ ft shadow}$$

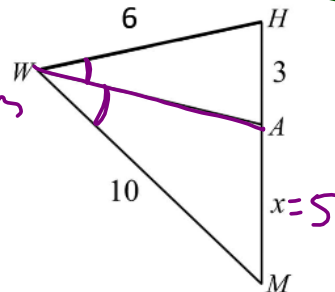
9.) Given: \overline{WA} bisects $\angle HWM$ and measurements shown on the diagram.

(a) What theorem can be applied here?

Triangle Angle Bisector Thm

(b) Find the value of x.

$$\frac{\text{Part}}{\text{Side}} = \frac{\text{Part}}{\text{Side}} \quad \frac{3}{6} = \frac{x}{10}$$



(c) Find the perimeter of $\triangle HWM$.

$$P = 6 + 10 + (3 + 5)$$

$$P = 24$$

$$6x = 30$$

$$x = 5$$