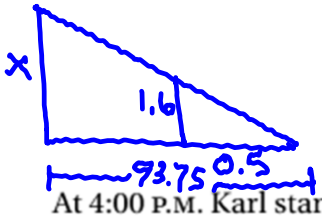
Warm-up:

1) A 1.6-m-tall woman stands next to the Eiffel Tower. At this time of day, her shadow is 0.5 m long. At the same time, the tower's shadow is 93.75 m long. How tall is the Eiffel Tower?

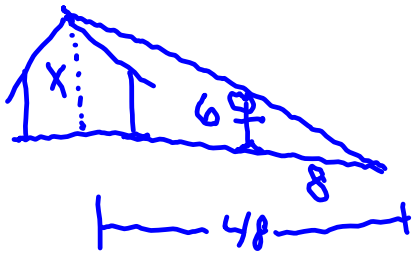


$\frac{0.5}{93.75} = \frac{1.6}{x}$

$0.5x = 150$

$x = 300\text{ m}$

2) At 4:00 P.M. Karl stands next to his house and measures his shadow and the house's shadow. Karl's shadow is 8 ft long. The house's shadow is 48 ft long. If Karl is 6 ft tall, how tall is his house?



$\frac{8}{48} = \frac{6}{x}$

$\frac{1}{6} = \frac{6}{x}$

$x = 36$ ft.

Homework Check

Proving Triangles Similar WS #12-15

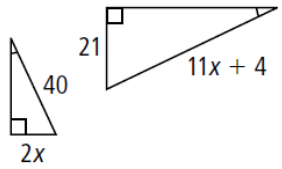
Similarity in Right Triangles and Proportion

Homework:

$\frac{2x}{21} = \frac{40}{11x+4}$ $22x^2 + 8x = 840$ $22x^2 + 8x - 840 = 0$

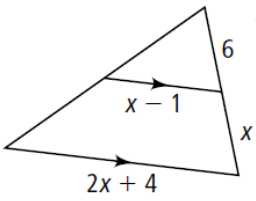
Algebra Explain why the triangles are similar. Then find the value of x.

12.



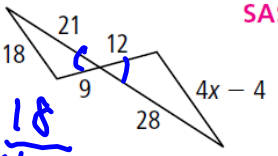
AA ~ Post.; 6

13.



AA ~ Post.; 10

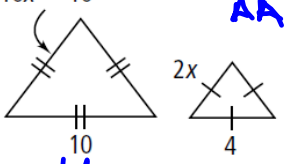
14.



SAS ~ Thm.; 7

$\frac{3}{4} = \frac{18}{4x-4}$

15.



~~SAS~~ AA ~ Thm.; 2

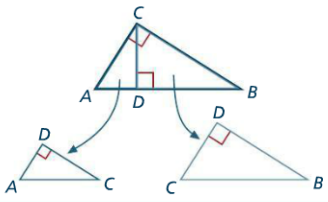
$2x = 4$

$x = 2$

Similarity in Right Triangles

take note **Theorem 62**

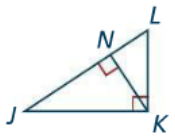
Theorem	If . . .	Then . . .
The altitude to the hypotenuse of a right triangle divides the triangle into two triangles that are similar to the original triangle and to each other.	$\triangle ABC$ is a right triangle with right $\angle ACB$, and $\overline{CD}$ is the altitude to the hypotenuse	$\triangle ABC \sim \triangle ACD$ $\triangle ABC \sim \triangle CBD$ $\triangle ACD \sim \triangle CBD$



Similarity in Right Triangles and Proportion

Practice Write a similarity statement relating the three triangles in each diagram.

1.



$\triangle LJK \sim \triangle KLN$
$\triangle LJK \sim \triangle JKN$
$\triangle KLN \sim \triangle JKN$

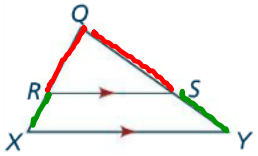
2.

$\triangle PRQ \sim \triangle QRS$
$\triangle PRQ \sim \triangle QPS$
$\triangle QRS \sim \triangle QPS$

Proportions in Triangles

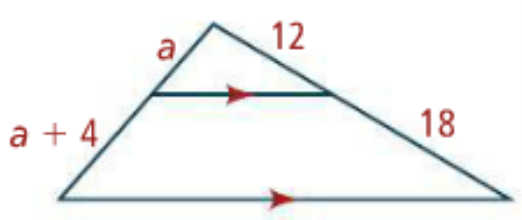
take note

Theorem 63 Side-Splitter Theorem

Theorem	If . . .	Then . . .
If a line is parallel to one side of a triangle and intersects the other two sides, then it divides those sides proportionally.	$\overleftrightarrow{RS} \parallel \overleftrightarrow{XY}$ 	$\frac{XR}{RQ} = \frac{YS}{SQ}$

Problem 1 Using the Side-Splitter Theorem

What is the value of a in the diagram below?

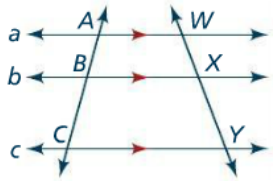


$\frac{12}{18} = \frac{a}{a+4}$ → $3a = 2a + 8$, $a = 8$

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

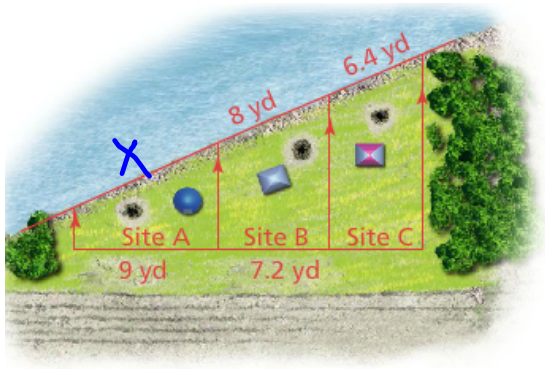
take note

Corollary Corollary to the Side-Splitter Theorem

Corollary	If . . .	Then . . .
If three parallel lines intersect two transversals, then the segments intercepted on the transversals are proportional.	$a \parallel b \parallel c$ 	$\frac{AB}{BC} = \frac{WX}{XY}$

Problem 2 Finding a Length

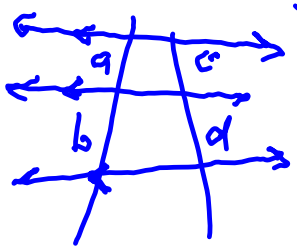
Camping Three campsites are shown in the diagram. What is the length of Site A along the river?



$\frac{7.2}{9} = \frac{8}{x}$

$7.2x = 72$

$x = 10$ yd.



$\frac{a}{b} = \frac{c}{d}$

Practice

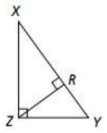
Similarity in Right Triangles and Proportion

Practice

Form K

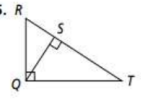
Similarity in Right Triangles

Identify the following in right $\triangle XYZ$.

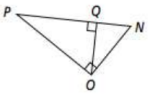


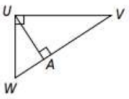
1. the hypotenuse
2. the segments of the hypotenuse
3. the altitude to the hypotenuse
4. the segment of the hypotenuse adjacent to leg $\overline{ZY}$

Write a similarity statement relating the three triangles in each diagram.

5. 

6. 

7. 

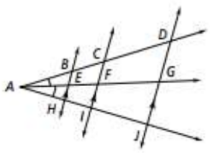
8. 

Practice

Form K

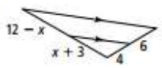
Proportions in Triangles

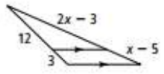
Use the figure at the right to complete each proportion.

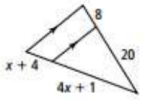


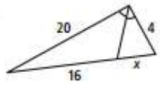
1. $\frac{CF}{\square} = \frac{AC}{AI}$
2. $\frac{AB}{BC} = \frac{\square}{HI}$
3. $\frac{\square}{IJ} = \frac{BC}{HI}$
4. $\frac{JG}{\square} = \frac{GD}{AD}$
5. $\frac{FG}{EF} = \frac{CD}{\square}$
6. $\frac{AC}{AI} = \frac{\square}{IJ}$

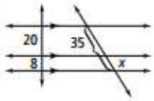
Algebra Solve for x.

7. 

8. 

9. 

10. 

11. 

12.