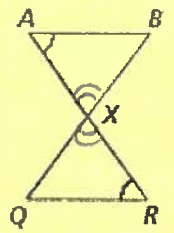
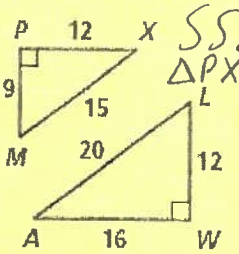
Name Key Class _____ Date _____

Practice 7-3 **Proving Triangles Similar**

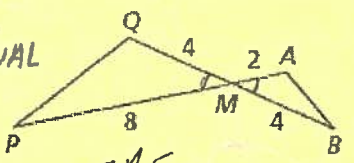
Explain why the triangles are similar. Write a similarity statement for each pair.

1. 

AA~
$\triangle ABX \sim \triangle RQX$

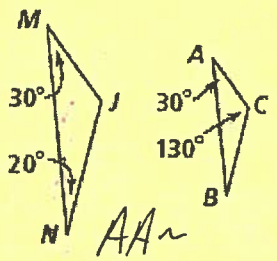
2. 

SSS~
$\triangle PXM \sim \triangle WAL$

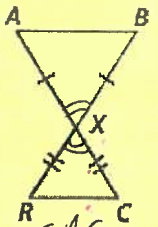
3. 

SAS~
$\triangle QMP \sim \triangle AMB$

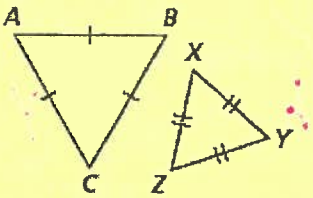
$\frac{2}{4} = \frac{4}{8}$

4. 

AA~
$\triangle MJN \sim \triangle ACB$

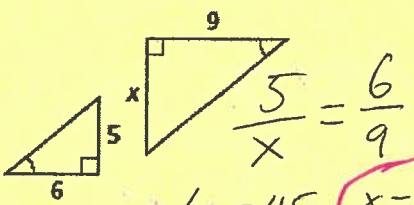
5. 

SAS~
$\triangle AXB \sim \triangle RXC$

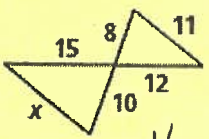
6. 

SSS~
$\triangle ABC \sim \triangle XYZ$
Any order works!

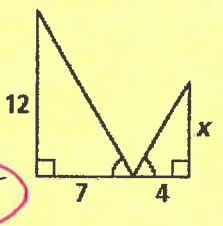
***Algebra* Find the value of *x*.**

7. 

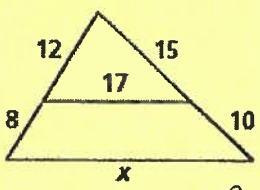
$\frac{5}{x} = \frac{6}{9}$
$6x = 45$
$x = 7.5$

8. 

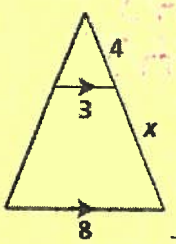
$\frac{12}{15} = \frac{11}{x}$
$12x = 165$
$x = 13.75$

9. 

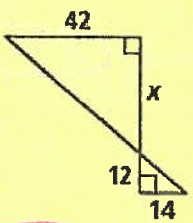
$\frac{x}{4} = \frac{12}{7}$
$7x = 48$
$x = \frac{48}{7}$

10. 

$\frac{12}{20} = \frac{17}{x}$
$12x = 340$
$x = \frac{340}{12} = 28\frac{1}{3}$

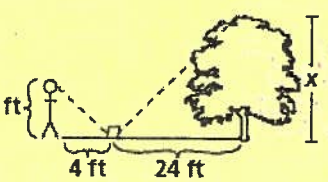
11. 

$\frac{4}{3} = \frac{4+x}{8}$
$32 = 3(4+x)$
$32 = 12 + 3x$
$20 = 3x$
$x = \frac{20}{3}$

12. 

$\frac{x}{12} = \frac{42}{14}$
$14x = 504$
$x = 36$

13. Natasha places a mirror on the ground 24 ft from the base of an oak tree. She walks backward until she can see the top of the tree in the middle of the mirror. At that point, Natasha's eyes are 5.5 ft above the ground, and her feet are 4 ft from the image in the mirror. Find the height of the oak tree.



$\frac{5.5}{x} = \frac{4}{24}$

$4x = 132$

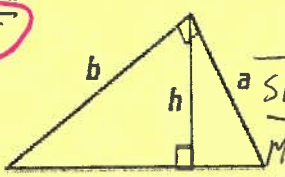
$x = 33$

Practice 7-4

Algebra Find the geometric mean of each pair of numbers.

1. 32 and 8 — $\sqrt{32 \cdot 8} = \sqrt{256} = 16$
2. 4 and 16 — $\sqrt{4 \cdot 16} = \sqrt{64} = 8$
3. 11 and 7 — $\sqrt{11 \cdot 7} = \sqrt{77}$
4. 2 and 22 — $\sqrt{2 \cdot 22} = \sqrt{44} = \sqrt{11} \cdot \sqrt{4} = 2\sqrt{11}$
5. 10 and 20 — $\sqrt{10 \cdot 20} = \sqrt{200} = \sqrt{100} \cdot \sqrt{2} = 10\sqrt{2}$
6. 6 and 30 — $\sqrt{6 \cdot 30} = \sqrt{180} = \sqrt{36} \cdot \sqrt{5} = 6\sqrt{5}$

Algebra Refer to the figure to complete each proportion.

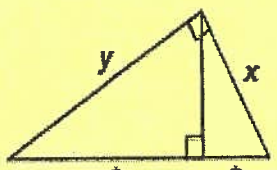


	SΔ	MΔ	LC
SL	y	h	a
ML	h	x	b
H	a	b	c

7. $\frac{x}{h} = \frac{?}{y}$ — h
8. $\frac{a}{b} = \frac{?}{h}$ — y
9. $\frac{a}{b} = \frac{h}{?}$ — x
10. $\frac{a}{c} = \frac{y}{?}$ — a
11. $\frac{a}{c} = \frac{h}{?}$ — b
12. $\frac{b}{x} = \frac{?}{b}$ — c

Algebra Find the values of the variables.

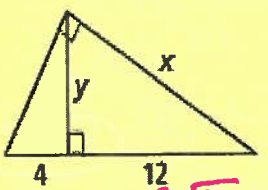
13.



$\frac{9}{y} = \frac{y}{12}$, $y = \sqrt{108}$, $\sqrt{36} \cdot \sqrt{3}$, $= 6\sqrt{3}$

$\frac{3}{x} = \frac{x}{12}$, $x^2 = 36$, $x = 6$

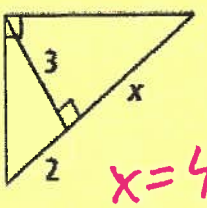
14.



$x = 8\sqrt{3}$

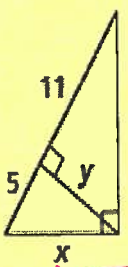
$y = 4\sqrt{3}$

15.



$x = 4.5$

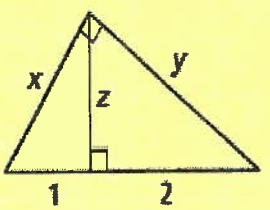
16.



$x = 4\sqrt{5}$

$y = \sqrt{55}$

17.

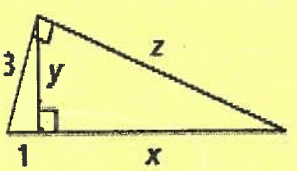


$x = \sqrt{3}$

$z = \sqrt{2}$

$y = \sqrt{6}$

18.



~~$x = 6$~~

~~$y = \sqrt{8}$~~

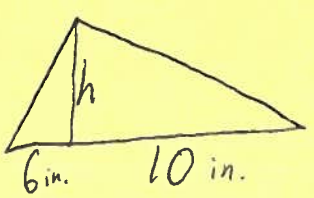
$x = 8$

$z = 6\sqrt{2}$

$y = 2\sqrt{2}$

19. The altitude to the hypotenuse of a right triangle divides the hypotenuse into segments 6 in. and 10 in. long. Find the length h of the altitude.

draw a picture



$\frac{6}{h} = \frac{h}{10}$

$h^2 = 60$

$h = \sqrt{60}$

$\sqrt{15} \cdot \sqrt{4}$

$h = 2\sqrt{15}$