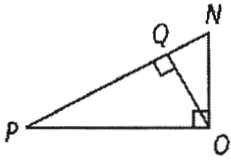


# 8.4 – Using Similar Right Triangles

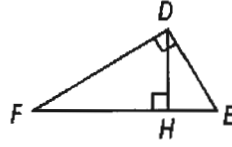
Write a similarity statement relating the three triangles in the diagram.

1)



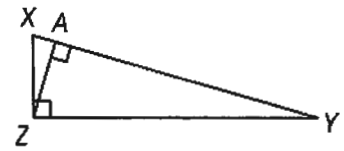
$$\triangle NOP \sim \triangle OQP \sim \triangle ONQO$$

2)



$$\triangle DEF \sim \triangle HFD \sim \triangle HED$$

3)



$$\triangle XYZ \sim \triangle XZA \sim \triangle ZYA$$

Find the geometric mean of each pair of numbers.

4) 9 and 4

6

5) 14 and 6

$2\sqrt{21}$

6) 25 and 49

35

7) 12 and 16

$8\sqrt{3}$

Use the figure at the right to complete each proportion. (Clue: draw the 3 separate similar triangles first)

8)  $\frac{q}{r} = \frac{t}{y}$

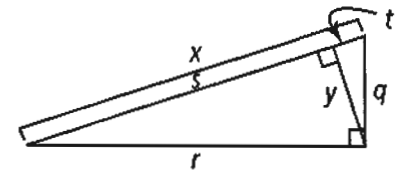
9)  $\frac{s}{y} = \frac{q}{t}$

10)  $\frac{t}{q} = \frac{q}{x}$

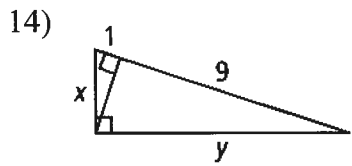
11)  $\frac{q}{x} = \frac{t}{r}$

12)  $\frac{s}{r} = \frac{y}{q}$

13)  $\frac{s}{r} = \frac{r}{x}$

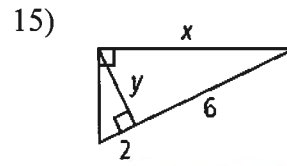


Solve for the value of the variables in each right triangle.



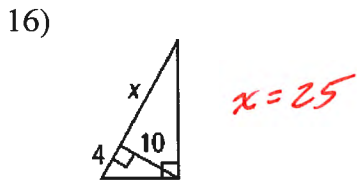
$$x = \sqrt{10}$$

$$y = 3\sqrt{10}$$

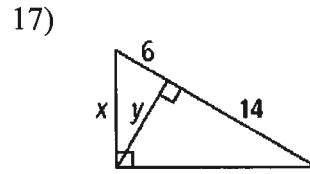


$$x = 4\sqrt{3}$$

$$y = 2\sqrt{3}$$

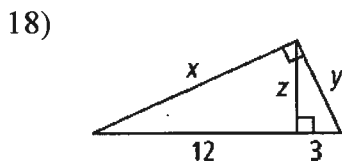


$$x = 25$$



$$x = 2\sqrt{30}$$

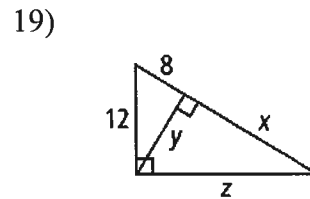
$$y = 2\sqrt{21}$$



$$x = 6\sqrt{5}$$

$$y = 3\sqrt{5}$$

$$z = 6$$



$$x = 10$$

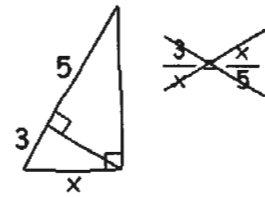
$$y = 4\sqrt{5}$$

$$z = 6\sqrt{5}$$

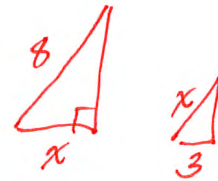
- 20) The altitude of the hypotenuse of a right triangle divides the hypotenuse into 45 in. and 5 in. segments. What is the length of the altitude?

15 in.

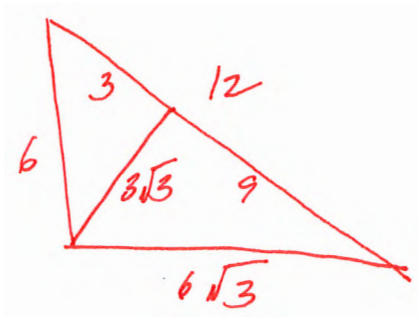
- 21) A classmate writes an incorrect proportion to find  $x$ . Explain and correct the error.



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



- 22) The sides of a right triangle measure  $6\sqrt{3}$  in., 6 in., and 12 in. If an altitude is drawn from the right angle to the hypotenuse, what is the length of the segment of the hypotenuse adjacent to the shorter leg? What is the length of the altitude?



Shorter segment = 3 in  
Altitude =  $3\sqrt{3}$  in.