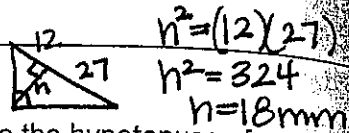


**LESSON**  
**8-1**

**Problem Solving**  
**Similarity in Right Triangles**



$$x^2 = (6)(10)$$

$$x^2 = 60$$

$$x = \sqrt{60}$$

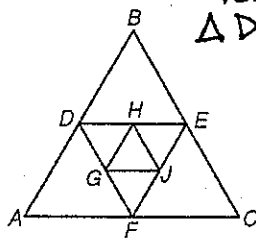
1. A sculpture is 10 feet long and 6 feet wide. The artist made the sculpture so that the height is the geometric mean of the length and the width. What is the height of the sculpture to the nearest tenth of a foot?

7.7 ft

2. The altitude to the hypotenuse of a right triangle divides the hypotenuse into two segments that are 12 mm long and 27 mm long. What is the area of the triangle?

$$A = \frac{1}{2}(39)(18) = 351 \text{ mm}^2$$

3. The perimeter of  $\triangle ABC$  is 56.4 cm, and the perimeter of  $\triangle GHJ$  is 14.1 cm. The perimeter of  $\triangle DEF$  is the geometric mean of these two perimeters. What is the perimeter of  $\triangle DEF$ ?



Perimeter  $\triangle DEF \Rightarrow$

$$x^2 = (56.4)(14.1)$$

$$x^2 = 795.24$$

$$x = 28.2 \text{ cm}$$

Perimeter  $\triangle DEF = 28.2 \text{ cm}$

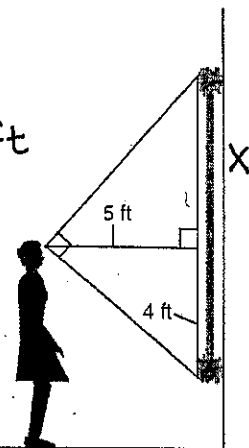
4. Tamara stands facing a painting in a museum. Her lines of sight to the top and bottom of the painting form a  $90^\circ$  angle. How tall is the painting?

$$5^2 = (4)(x)$$

$$25 = 4x$$

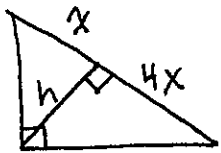
$$x = 6.25 \text{ ft}$$

$$\begin{array}{r} 6.25 \\ + 4 \\ \hline 10.25 \end{array}$$



10.25 ft.

Choose the best answer.



5. The altitude to the hypotenuse of a right triangle divides the hypotenuse into two segments that are  $x$  cm and  $4x$  cm, respectively. What is the length of the altitude?

- A  $2x$                       C  $5x$   
 B  $2.5x$                       D  $4x^2$

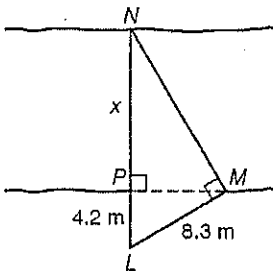
$$h^2 = (x)(4x)$$

$$\sqrt{h^2} = \sqrt{4x^2}$$

$$h = 2x$$

7. A surveyor sketched the diagram at right to calculate the distance across a ravine. What is  $x$ , the distance across the ravine, to the nearest tenth of a meter?

- A 7.2 m                      C 16.4 m  
 B 12.2 m                      D 64.7 m



$$8.3^2 = (4.2)(4.2 + x)$$

$$68.89 = 17.64 + 4.2x$$

$$51.25 = 4.2x$$

$$x = 12.2 \text{ m}$$

6. Jack stands 9 feet from the primate enclosure at the zoo. His lines of sight to the top and bottom of the enclosure form a  $90^\circ$  angle. When he looks straight ahead at the enclosure, the vertical distance between his line of sight and the bottom of the enclosure is 5 feet. What is the height of the enclosure?

- A 16.2 ft                      H 23.8 ft  
 B 21.2 ft                      J 28.8 ft

$$9^2 = 5x$$

$$81 = 5x$$

$$x = 16.2 \text{ ft}$$

