

Unit 8: Pythagorean Relationships

A: Squares & Square Roots

Perfect Square

→ a number that is a product of the same two numbers.

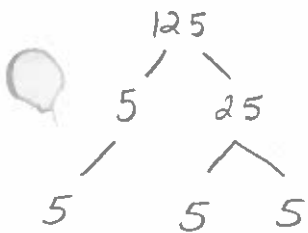
e.g. $16 = 4 \times 4$ $8 = 2 \times 2 \times 2$ $81 = 3 \times 3 \times 3 \times 3$

16, 8, 81 are perfect squares.

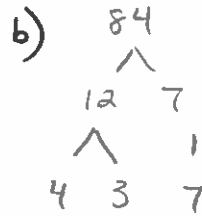
Examples:

1. Write the prime factorization of each. Determine if it is a perfect square.

a) 125



$125 = 5 \times 5 \times 5 \therefore$ perfect square



$84 = 4 \times 3 \times 7$ not a perfect square.

2. What is the square of each number?

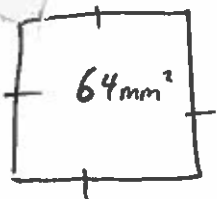
a) 18

$= 18^2$
 $= 18 \times 18$
 $= 324$

b) 22

$= 22^2$
 $= 22 \times 22$
 $= 484$

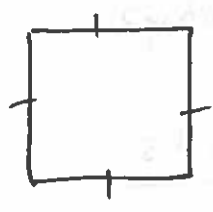
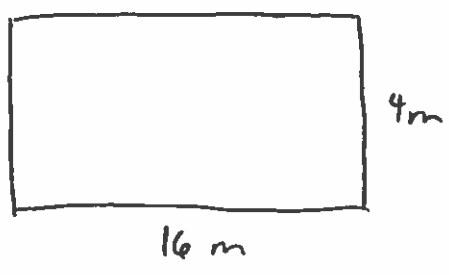
3. What is the side length of the square shown?



$A = s^2$
 $64 = s^2$
 $\sqrt{64} = \sqrt{s^2}$

$8 = s$
 $8\text{mm} = s$

4]



area of rectangle = area of square

a) What is the area of the rectangle?

$$\begin{aligned}
 A &= lw \\
 &= (16)(4) \\
 &= 64 \text{ m}^2
 \end{aligned}$$

b) What is the side length of the square?

area of rectangle = area of square

$$64 \text{ m}^2 = \text{area of square}$$

$$A = s^2$$

$$64 = s^2$$

$$\sqrt{64} = \sqrt{s^2}$$

$$\boxed{8 \text{ m} = s}$$

Assignment Pg. 85 # 5-15 (odd), 18-20