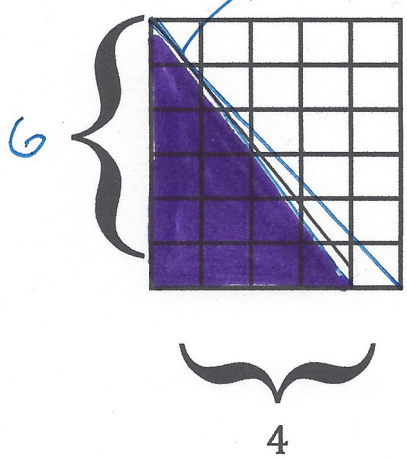
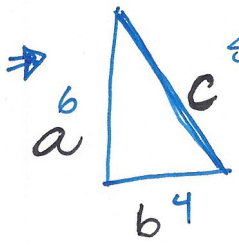
Section 1.7 – Applying the Pythagorean Theorem

Find the length of the line segment below:

notice that this line segment is part of 2 triangles. Look





So the line segment is the hypotenuse c

$c^2 = a^2 + b^2$

$c^2 = 6^2 + 4^2$

$c^2 = 36 + 16$

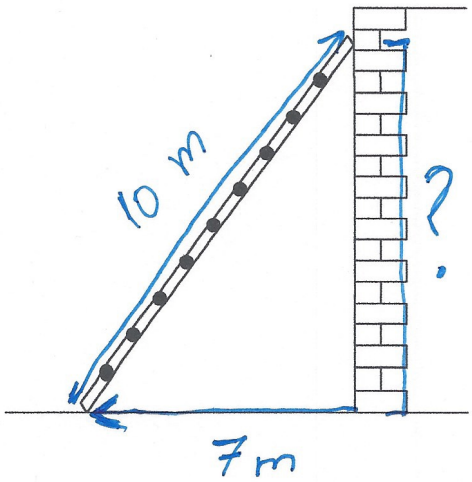
$c^2 = 52$

then $c = \sqrt{52}$

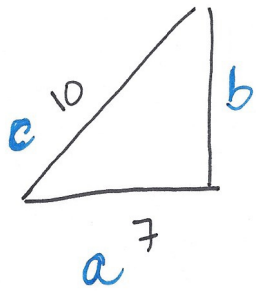
$c = 7.21$

Examples:

1. The base of a ladder rests 7 m from the side of a house. The ladder measures 10 m. How far up the side of the house does the ladder reach? Draw a diagram.



- As you can see, this is also a RIGHT Triangle:



- In this case, we have the hypotenuse
- We have to find b

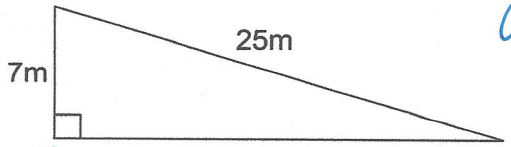
$b^2 = c^2 - a^2 \Rightarrow b^2 = 10^2 - 7^2$

$b^2 = 100 - 49 = 51$

then $b = \sqrt{51} = 7.14$

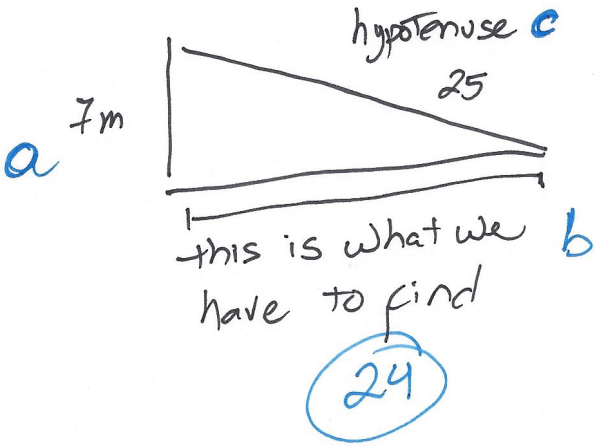
2. A wheelchair ramp is 25 m in length and its height at the top is 7 m. How long is the base of the ramp?

- Identify what type of triangle you are dealing with.



↳ Right angle

- Since there is a Right angle, this triangle is a Right Triangle. Thus, we can use the PYTHAGOREAN THEOREM



$$\Rightarrow b^2 = c^2 - a^2$$

$$b^2 = (25)^2 - (7)^2$$

$$b^2 = 625 - 49$$

$$b^2 = 576$$

then $b = \sqrt{576} = 24$

7, #'s 4, 6, 8-11, 13, 18