

Name: Solutions

Class: _____

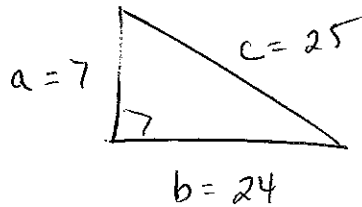
M8-U7: Notes & HW# 10

Date: _____

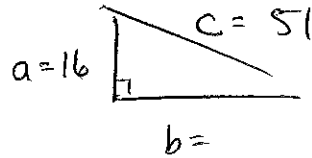
Practice: Draw pictures; find the exact length of the missing sides.

1. $a = 7\text{mi}, b = 24\text{mi}, c = ?$

2. $a = 16\text{ ft}, b = ?, c = 51\text{ ft}$



$$\begin{aligned} a^2 + b^2 &= c^2 \\ 7^2 + 24^2 &= c^2 \\ 49 + 576 &= c^2 \\ \sqrt{625} &= \sqrt{c^2} \\ 25 &= c \end{aligned}$$



$$\begin{aligned} a^2 + b^2 &= c^2 \\ 16^2 + b^2 &= 51^2 \\ 256 + b^2 &= 2601 \\ -256 &\quad -256 \\ \hline \sqrt{b^2} &= \sqrt{2345} \\ b &\approx 48.43 \end{aligned}$$

Determine if the given sides are sides of a right triangle.

3. 1 in, 2 in, 3 in

4. 4, 9, 13

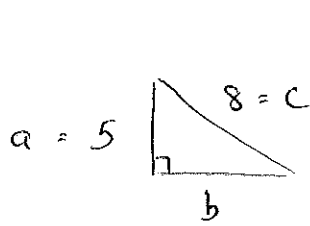
$$\begin{aligned} a^2 + b^2 &\stackrel{?}{=} c^2 \\ 1^2 + 2^2 &\stackrel{?}{=} 3^2 \\ 1 + 4 &\stackrel{?}{=} 9 \\ 5 &\neq 9 \end{aligned}$$

$$\begin{aligned} a^2 + b^2 &= c^2 \\ 4^2 + 9^2 &\stackrel{?}{=} 13^2 \\ 16 + 81 &= 169 \\ 97 &\neq 169 \end{aligned}$$

No

No

5. Kendrick wants to build a slide for his son in the backyard. He buys a slide that is 8 feet long. The height of the stairs is 5 feet. Find the distance from the bottom of the stairs to the base of the slide. Show your work, round your answer to the nearest tenth.



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

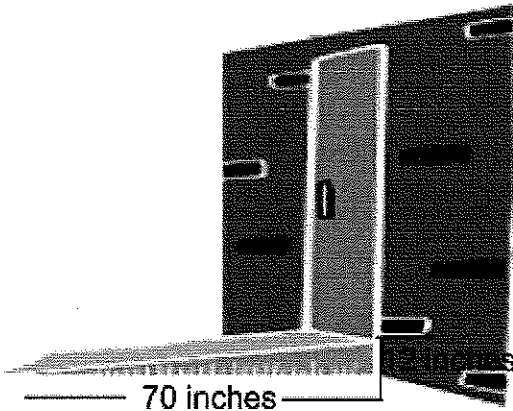
$$5^2 + b^2 = 8^2$$

$$\begin{array}{r} 25 + b^2 = 64 \\ -25 \quad -25 \\ \hline \end{array}$$

$$\sqrt{b^2} = \sqrt{39}$$

$$b \approx 6.24 \text{ ft}$$

6. Mrs. Hanson uses a wheelchair, her husband decides to build a ramp to make it easier for her to enter and leave the house. Find the length of the ramp. Show your work.



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

$$70^2 + 12^2 = c^2$$

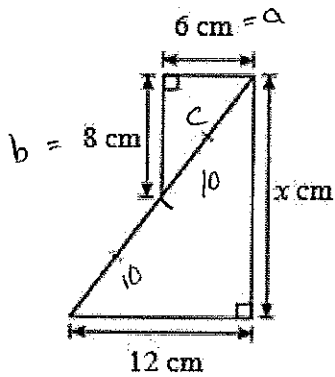
$$4900 + 144 = c^2$$

$$\sqrt{5044} = \sqrt{c^2}$$

$$71.02 \approx c$$

inches

7. Find the value of x in the following diagram. Round your answer to the nearest tenth.



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

$$6^2 + 8^2 = c^2$$

$$36 + 64 = c^2$$

$$\sqrt{100} = \sqrt{c^2}$$

$$10 = c$$

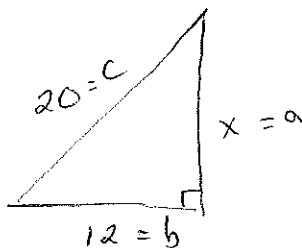
$$a^2 + b^2 = c^2$$

$$a^2 + 12^2 = 20^2$$

$$\begin{array}{r} a^2 + 144 = 400 \\ -144 \quad -144 \\ \hline \end{array}$$

$$\sqrt{a^2} = \sqrt{256}$$

$$a = 16 \text{ cm}$$

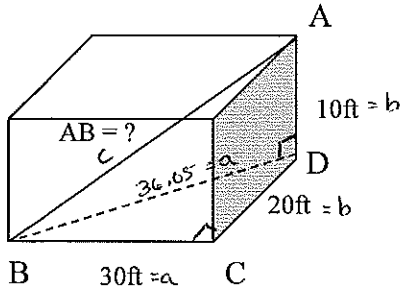


$$x = 16 \text{ cm}$$

2

8. Often builders want to know the length of wire, cable, or lumber needed to go from one point to another without having to actually measure the distance beforehand. If the lengths are parts of right triangles, the Pythagorean formula can be used to find the answer. The next example illustrates such a situation.

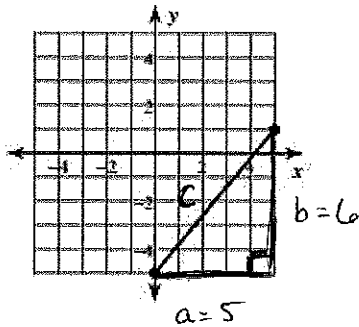
The figure shows a sketch of a rectangular storage area that is part of a warehouse. A chute is going to be built from point A (the back right corner) to point B (the front left corner). The dimensions of the rectangular area are known: 30ft long, 20ft wide, and 10 ft high. What is the length of the chute – distance AB?



$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 30^2 + 20^2 &= c^2 \\
 900 + 400 &= c^2 \\
 \sqrt{1300} &= \sqrt{c^2} \\
 36.05 &\approx c
 \end{aligned}$$

$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 36.05^2 + 10^2 &= c^2 \\
 1300 + 100 &= c^2 \\
 \sqrt{1400} &= \sqrt{c^2} \\
 37.429 &\approx c
 \end{aligned}$$

9. Find the distance between the points (5,1) and (0,5). As shown on the coordinate plane below.



$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 5^2 + 6^2 &= c^2 \\
 25 + 36 &= c^2 \\
 \sqrt{61} &= \sqrt{c^2}
 \end{aligned}$$

$$7.81 \approx c$$

