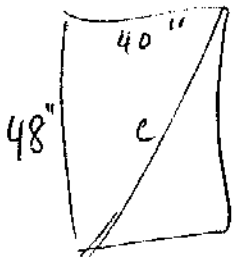
Welding
3-4-5 Rule Worksheet

Name Key

1. If a trailer's dimensions are 40" x 48", what would be the measure of the hypotenuse to the nearest 1/8 inch?

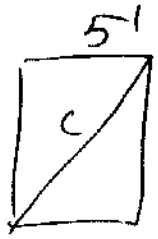


$c^2 = a^2 + b^2$
$c^2 = 40^2 + 48^2$
$c^2 = 1600 + 2304$
$\sqrt{c^2} = \sqrt{3904}$
$c = 62.48$

.48in ÷ $\frac{1}{8}$ in
3.84 = 4
$\frac{4}{8}$ or $\frac{1}{2}$ in

$62\frac{1}{2}$ in

2. If a trailer's dimensions are 5 ft x 8 ft, what would be the measure of the hypotenuse to the nearest 1/16 inch?

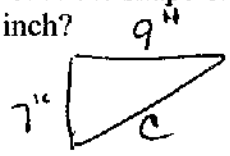


$c^2 = a^2 + b^2$
$c^2 = 5^2 + 8^2$
$c^2 = 25 + 64$
$\sqrt{c^2} = \sqrt{89}$
$c = 9.43$ ft

.43ft * $\frac{12in}{1ft}$ = 5.16 in
.16in ÷ $\frac{1}{16}$ in =
2.56 = 3 $\frac{3}{16}$ in

9ft $5\frac{3}{16}$ in

3. You are a shelf bracket in the shape of a right triangle. It has sides of 7" and 9". What is the length of the diagonal to the nearest 1/16 inch?

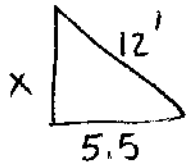


$c^2 = 7^2 + 9^2$
$c^2 = 49 + 81$
$\sqrt{c^2} = \sqrt{130}$
$c = 11.4$ in

.4 in ÷ $\frac{1}{16}$ in = 6.4
$\frac{6}{16}$ or $\frac{3}{8}$ in

$11\frac{3}{8}$ in

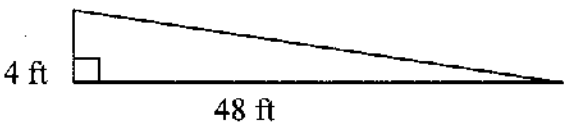
4. The base of a 12-foot ladder is placed 5.5 feet from the side of a house. How far up the side of the house will the ladder reach to the nearest tenth of a foot.



$c^2 = a^2 + b^2$
$12^2 = x^2 + 5.5^2$
$144 = x^2 + 30.25$
$-30.25 \quad -30.25$
$\sqrt{113.75} = \sqrt{x^2}$ $x = 10.67$

10.7ft

5. According to the Americans with Disabilities Act, wheelchair ramps must have 1 foot of rise for every 12 feet in length. If a ramp has a rise of 4 ft and a run of 48 ft, what is the (diagonal) length of the ramp?



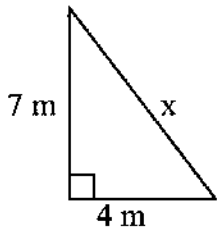
$c^2 = a^2 + b^2$
$c^2 = 4^2 + 48^2$
$c^2 = 16 + 2304$
$\sqrt{c^2} = \sqrt{2320}$
$c = 48.2$ ft

.2ft * $\frac{12in}{1ft}$ = 2.4

48.2ft OR
48 ft 2in

6. Find the missing side length to the nearest tenth.

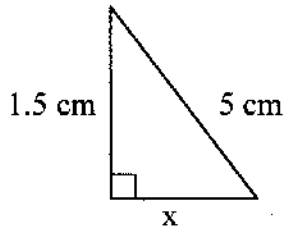
8.1 m



$c^2 = a^2 + b^2$
$x^2 = 7^2 + 4^2$
$x^2 = 49 + 16$
$\sqrt{x^2} = \sqrt{65}$
$x = 8.1$

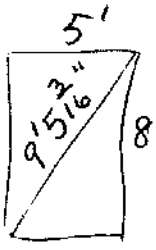
7. Find the missing side length to the nearest tenth.

4.8 cm



$c^2 = a^2 + b^2$
$5^2 = 1.5^2 + x^2$
$25 = 2.25 + x^2$
$-2.25 \quad -2.25$
$\sqrt{22.75} = \sqrt{x^2}$
$x = 4.8$

8. You have a rectangular steel plate with dimensions of 5' x 8' and a diagonals of $9'5\frac{3}{16}$". Is the plate "squared?"

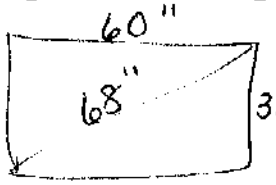


$5ft \cdot \frac{12in}{1ft} = 60in$
$8ft \cdot \frac{12in}{1ft} = 96in$
$9ft \cdot \frac{12in}{1ft} = 108 + 5\frac{3}{16}$
$113\frac{3}{16}in$

$c^2 = a^2 + b^2$
$(113\frac{3}{16})^2 = 60^2 + 96^2$
$113.1875^2 = 3600 + 9216$
$12811.41 < 12816$

No $<$ less than 90° (acute)

9. A window frame has a height of 32 in, a length of 60 in, and diagonals with lengths of 68 in. Is the window frame "squared"?



$c^2 = a^2 + b^2$
$68^2 = 60^2 + 32^2$
$4624 = 3600 + 1024$
$4624 = 4624$

Yes $c^2 = a^2 + b^2$
Right $\angle$

10. Paul wants to create a square garden bed with sides of 4 ft. Explain how Paul can determine if his garden bed is "squared."

$c^2 = 4^2 + 4^2$
$c^2 = 16 + 16$
$\sqrt{c^2} = \sqrt{32}$
$c = 5.66 ft$
$.66 ft \cdot \frac{12in}{1ft} = 7.92$
$.92 \div \frac{1}{16} = 15$
$C = 5ft\ 7\frac{15}{16}in$

If the diagonals are both $5ft\ 7\frac{15}{16}in$ then the garden bed is SQUARED.