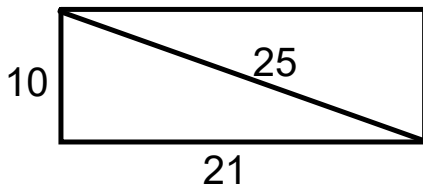




**Warm Up Grade 8**

**Feb 22, 2024**



Is the quadrilateral a rectangle?

$$a = 10$$

$$b = 21$$

$$c = 25$$

$$c^2 \quad \left\{ \quad a^2 + b^2 \right.$$

$$(25)^2 \quad \left\{ \quad (10)^2 + (21)^2 \right.$$

$$625 \quad \left\{ \quad 100 + 441 \right.$$

$$\quad \quad \quad \left\{ \quad 541 \right.$$

Different  
 so  
 Not Right  $\Delta$   
 Not quadrilateral

Homework Solutions pg. 43 # 9,10,12(a,c), 14

9. 6,  $\underset{c}{7}$ ,  $\sqrt{13}$

$$7^2 = 6^2 + (\sqrt{13})^2 ?$$

$$49 = 36 + 13$$

$$49 = 49$$

$$\sqrt{9} = 3$$

$$\sqrt{13}$$

$$\sqrt{16} = 4$$

Yes it is a right triangle.

It is not a pythagorean triple  
because one side is not a whole  
number

Homework Solutions pg. 43 # 9,10,12(a,c), 14

10. If the number are pythag. triples, it will form a right  $\Delta$ .

$$3, 5, 7 \qquad 7^2 \qquad 3^2 + 5^2$$

$$\qquad 49 \qquad 9 + 25$$

$$\qquad \qquad \qquad 34$$

It will not form a right triangle.

11

Pythagorean Triples	Legs	Hypotenuse
3,4,5	3, 4	5
6,8,10	6, 8	10
12, 16, 20	12, 16	20
15, 20, 25	15, 20	25
21, 28, 35	21, 28	35

b) Take the original triple, and multiply each by the same number

c) Triple 5, 12, 13

More Triples

10, 24, 26

15, 36, 39

20, 48, 52

25, 60, 65

$$65^2 \qquad 25^2 + 60^2$$

$$4225 \qquad 625 + 3600$$

$$\qquad \qquad 4225$$

Homework Solutions pg. 43 # 9,10,12(a,c), 14

$$12 a) 14, 48, \underline{\quad}$$



$$14^2 + 48^2$$

$$196 + 2304$$

$$2500$$

missing  $\sqrt{2500}$   
50

$$b) 24, 32, \underline{\quad}$$

$$24^2 + 32^2$$

$$576 + 1024$$

$$1600$$

missing  $\sqrt{1600}$   
40

$$c) 12, 37, \underline{\quad}$$

$$12^2 + 37^2$$

$$144 + 1369$$

$$1513$$

missing term  $\sqrt{1513}$   
38.9  
not a triple

$$\begin{array}{r} 37^2 - 12^2 \\ 1369 - 144 \\ 1225 \end{array}$$

$$\sqrt{1225} = \boxed{35}$$

$$14. 73, 55, 48$$

$$73^2$$

$$5329$$

$$55^2 + 48^2$$

$$3025 + 2304$$

$$5329$$

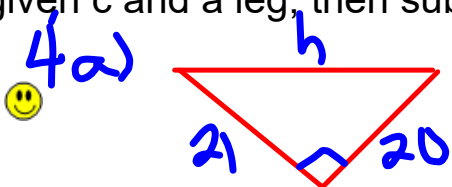
Yes it is a rectangle

Page 48-49 #2, #3, #4a, #5a

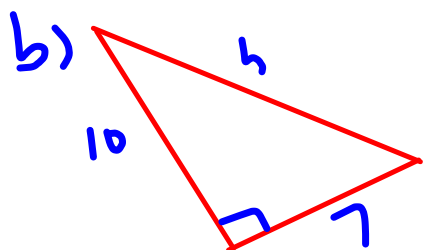
Homework Solutions

2) Must label the longest side (opposite to  $90^\circ$ ), the hypotenuse,  $c$ .

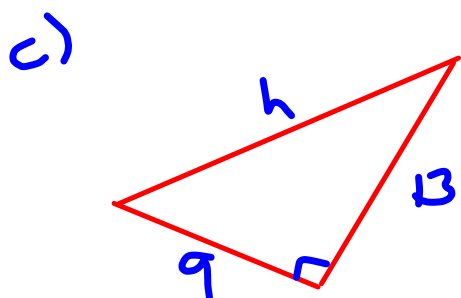
The other two sides does not matter which is a or b.

3) When given legs and asked to find longest side,  $c$  then add. When given  $c$  and a leg, then subtract

$$\begin{aligned}c^2 &= a^2 + b^2 \\c^2 &= 20^2 + 21^2 \\c^2 &= 400 + 441 \\c^2 &= 841 \\\sqrt{c^2} &= \sqrt{841} \\c &= 29\end{aligned}$$

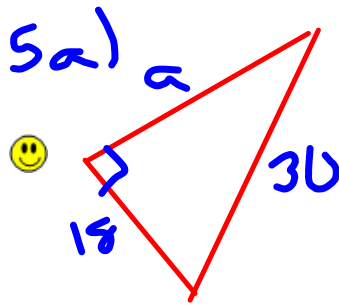


$$\begin{aligned}c^2 &= a^2 + b^2 \\c^2 &= 10^2 + 7^2 \\c^2 &= 100 + 49 \\c^2 &= 149 \\\sqrt{c^2} &= \sqrt{149} \\c &= 12.2\end{aligned}$$

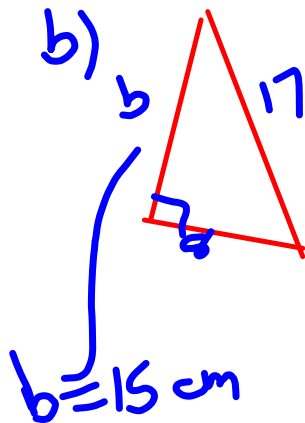


$$\begin{aligned}c^2 &= a^2 + b^2 \\c^2 &= 9^2 + 13^2 \\c^2 &= 81 + 169 \\c^2 &= 250 \\\sqrt{c^2} &= \sqrt{250} \\c &= 15.8\end{aligned}$$

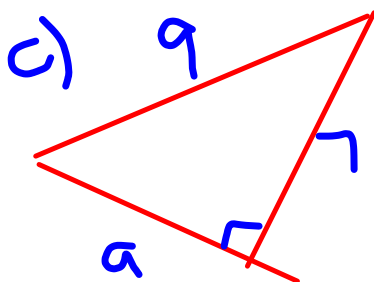
Page 48-49 #2, #3, #4a, #5a  
Homework Solutions



$$\begin{aligned}
 c^2 &= a^2 + b^2 \\
 30^2 &= a^2 + 18^2 \\
 900 &= a^2 + 324 \\
 900 - 324 &= a^2 + 324 - 324 \\
 576 &= a^2 \\
 \sqrt{576} &= \sqrt{a^2} \\
 24 &= a
 \end{aligned}$$



$$\begin{aligned}
 c^2 &= a^2 + b^2 \\
 17^2 &= a^2 + 8^2 \\
 289 &= a^2 + 64 \\
 289 - 64 &= a^2 + 64 - 64 \\
 225 &= a^2 \\
 \sqrt{225} &= \sqrt{a^2} \\
 15 &= a
 \end{aligned}$$



$$\begin{aligned}
 c^2 &= a^2 + b^2 \\
 9^2 &= a^2 + 7^2 \\
 81 &= a^2 + 49 \\
 81 - 49 &= a^2 + 49 - 49 \\
 32 &= a^2 \\
 \sqrt{32} &= \sqrt{a^2} \\
 5.7 & \text{ ca}
 \end{aligned}$$

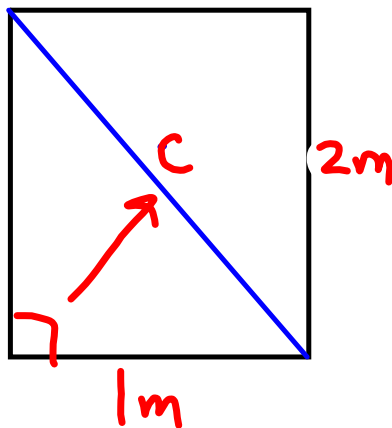
## Applying the Pythagorean Theorem

Now that we know how to use the Pythagorean Theorem, we will apply it to "real life" situations.

A doorway is 2.0 m high and 1.0 m wide. A square piece of plywood has side length 2.2 m. Can the plywood fit through the door?

**Always start with a diagram and fill in what you know.**

**Ask yourself, What shape is the doorway? What is the longest part of the doorway?**



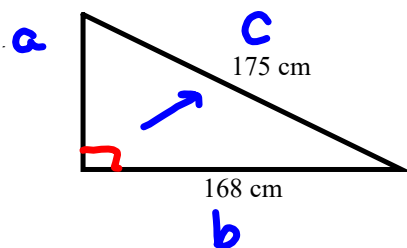
The longest part is the diagonal.  
To find the length of the diagonal,  
use Pythagorean Theorem. } c

$$\begin{aligned}c^2 &= a^2 + b^2 \\c^2 &= 2^2 + 1^2 \\c^2 &= 4 + 1 \\c^2 &= 5 \\\sqrt{c^2} &= \sqrt{5} \\c &= \sqrt{5} \text{ or } 2.2 \text{ m}\end{aligned}$$

A piece of plywood 2.2 m long could fit through the door.

- 2) A ramp is used to load a snow machine onto a trailer. The ramp as a horizontal length of 168 cm and sloping length of 175 cm. The side view is a right triangle. How high is the ramp?

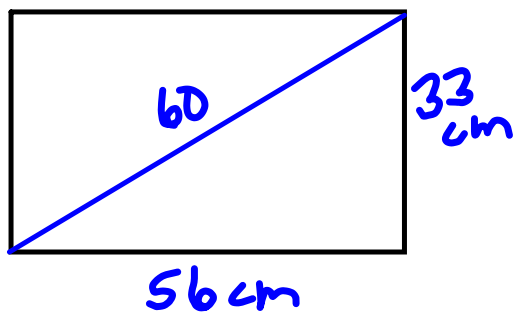
Remember start by drawing a diagram and filling in what you know.



$$\begin{aligned}a^2 &= c^2 - b^2 \\a^2 &= (175\text{cm})^2 - (168\text{cm})^2 \\a^2 &= 30625 - 28224 \\a^2 &= 2401 \\\sqrt{a^2} &= \sqrt{2401} \\a &\approx 49\text{cm}\end{aligned}$$

The ramp is 49cm high.

Marina helped her dad build a small rectangular table for her bedroom. The tabletop has a length of 56 cm and a width of 33 cm. The diagonal of the tabletop measures 60 cm. Does the tabletop have square corners? How do you know?



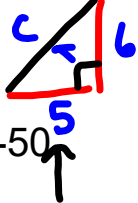
$$\begin{aligned} \text{Does } c^2 &= a^2 + b^2 \\ 60^2 & \quad 33^2 + 56^2 \\ 3600 & \quad 1089 + 3136 \\ & \quad 4225 \end{aligned}$$

The table does not have square corners.  
Not a Rectangle



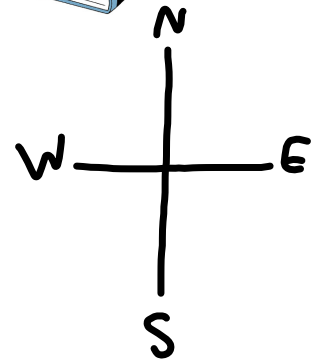


# Class/Homework



Page 49-50

#6, #7, #8(b), #9, #10, #11, #13, #16



7) 10cm, 24cm

