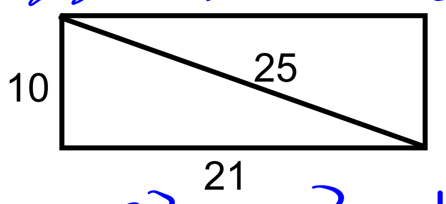
Warm Up Grade 8

Nov. 21, 2017



Is the quadrilateral a rectangle?

NO it's not

$c^2 \mid a^2 + b^2$

$25^2 \mid 21^2 + 10^2$

$625 \mid 441 + 100 =$

541

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

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

c

$\sqrt{13}$

$\sqrt{9}$ $\sqrt{16}$

3 4

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

49 $36 + 13$

49

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 △.

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

49 9 + 25

34

It will not form a right triangle.

11

Pythagorean Triples	Legs	Hypotenuse	
3,4,5	3, 4	5	
6,8,10 9,12,15	6, 8	10	
12, 16,20	12, 16	20	
15, 20,25 16,24.30	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 $25^2 + 60^2$

625 + 3600

4225 4225

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

12 a) 14, 48, ___

$14^2 + 48^2$

$196 + 2304$

2500

missing $\sqrt{2500}$

50

b) 24, 32, ___

$24^2 + 32^2$

$576 + 1024$

1600

missing $\sqrt{1600}$

40

c) 12, 37 ___

$12^2 + 37^2$

$144 + 1369$

1513

missing term $\sqrt{1513}$

38.9

not a triple

$37^2 - 12^2$

$1369 - 144$

1225

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

14. 73, 55, 48

73^2 $55^2 + 48^2$

5329 $3025 + 2304$

5329

Yes it is a rectangle

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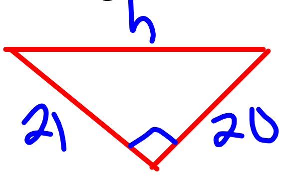
Homework Solutions

2) Must label the longest side (opposite to 90°), 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

4a)



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

$c^2 = 20^2 + 21^2$

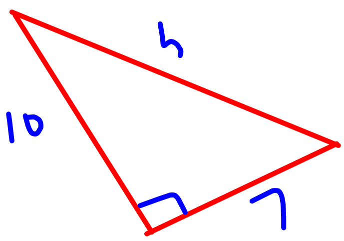
$c^2 = 400 + 441$

$c^2 = 841$

$\sqrt{c^2} = \sqrt{841}$

$c = 29$

b)



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

$c^2 = 10^2 + 7^2$

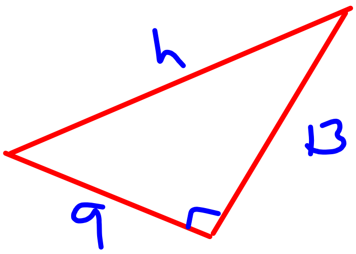
$c^2 = 100 + 49$

$c^2 = 149$

$\sqrt{c^2} = \sqrt{149}$

$c = 12.2$

c)



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

$c^2 = 9^2 + 13^2$

$c^2 = 81 + 169$

$c^2 = 250$

$\sqrt{c^2} = \sqrt{250}$

$c = 15.8$

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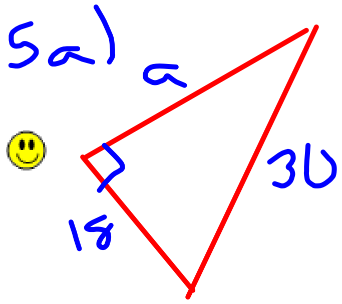
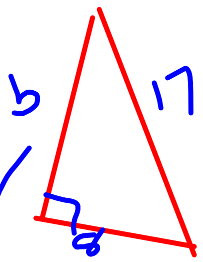
Homework Solutions

5a)



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

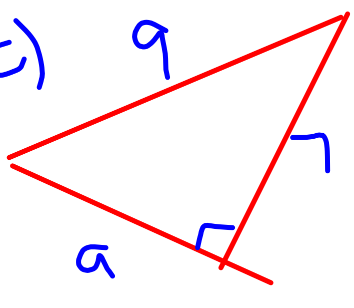
b)



b = 15 cm

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

c)

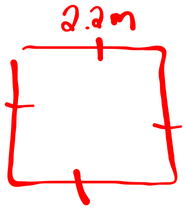


$$c^2 = a^2 + b^2$$
$$9^2 = a^2 + 7^2$$
$$81 = a^2 + 49$$
$$81 - 49 = a^2 + 49 - 49$$
$$32 = a^2$$
$$\sqrt{32} = \sqrt{a^2}$$
$$5.7 = a$$

Applying the Pythagorean Theorem

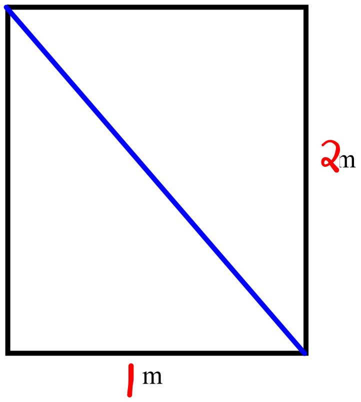
Now that we know how to use the Pythagorean Theorem, we will apply it to "real life" situations.

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.

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

$c^2 = (1m)^2 + (2m)^2$

$c^2 = 1m^2 + 4m^2$

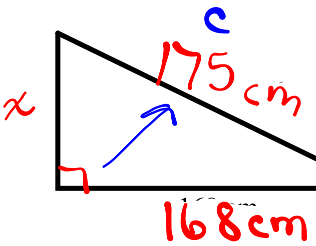
$c^2 = 5m^2$

$c = \sqrt{5} \approx 2.23m$

or 2.2 m

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

2) A ramp is used to load a snowmobile 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.



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

$a^2 = (175cm)^2 - (168cm)^2$

$a^2 = 30625cm^2 - 28224cm^2$

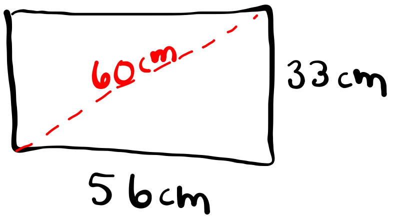
$a^2 = 2401 cm^2$

$\sqrt{a^2} = \sqrt{2401 cm^2}$

$a = 49 cm$

The ramp is 49 cm 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?



$c^2 \quad a^2 + b^2$

$(60\text{ cm})^2 \quad (33\text{cm})^2 + (56\text{cm})^2$

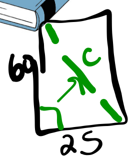
$1089\text{cm}^2 + 3136\text{cm}^2$

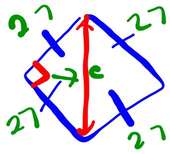
$3600\text{cm}^2 \quad 4225\text{cm}^2$

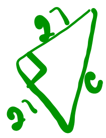
Not same

So not rectangle

Class/Homework







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

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