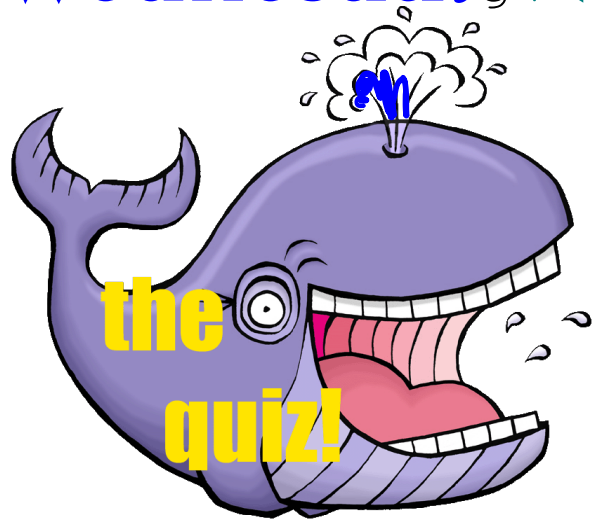


Warm Up Quiz Grade 8

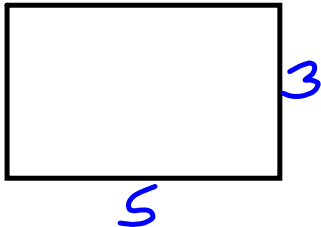
Wednesday, Nov. 15



Logan
K

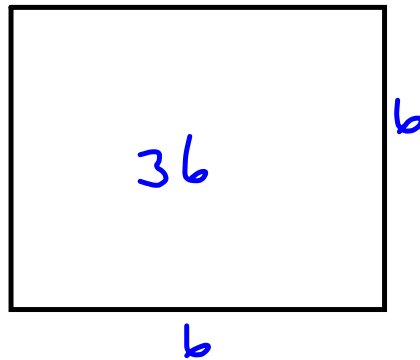
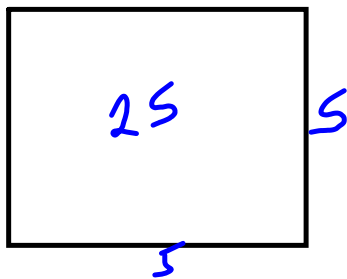
pg 30

1a) 15 is not a perfect square 😊



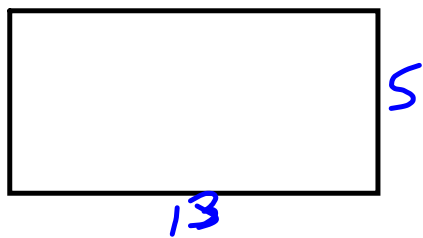
1x15
3x5
No repeats of factors so not a perfect square

b) 26 is not a perfect, 5x5 is a square which is 25



1x26
2x13
NO Repeats

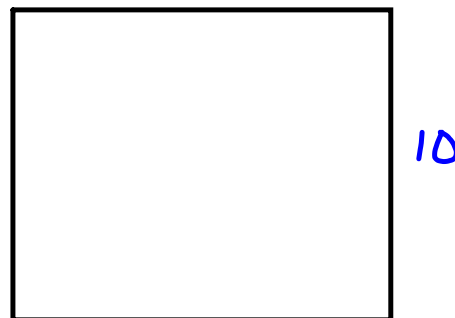
c) 65 - not a square
8x8 = 64, is a square



1x65
5x13
No repeats

d) 100 - perfect square

1x100
2x50
4x25
5x20



10x10 repeated so perfect square

2 a) $\sqrt{16} = 4$
 (4² = 16)

b) $\sqrt{49} = 7$
 (7 × 7 = 49)

c) $\sqrt{196}$
 = $\sqrt{14 \times 14}$
 = 14

d) $\sqrt{400}$
 $\sqrt{4 \times 100}$
 $\sqrt{4} \times \sqrt{100}$
 2 × 10
 20

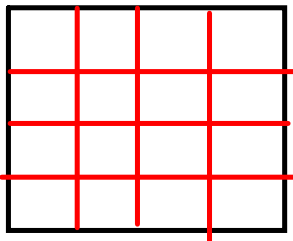
3 a) 11² = 11 × 11
 = 121

b) $\sqrt{64} = 8$
 (8 × 8 = 64)

c) $\sqrt{169} = 13$
 13² = 169

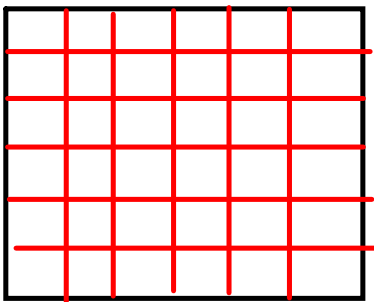
d) $\sqrt{225}$
 $\sqrt{15 \times 15}$
 15

4 a)



Area = 16
 Side Length = $\sqrt{16}$
 = 4

b)



Area = 36
 Side Length = $\sqrt{36}$
 = 6

5a) 216

- 1 x 216
- 2 x 108
- 3 x 72
- 4 x 54
- 6 x 36
- 8 x 27
- 9 x 24
- 12 x 18

16 factor
 - an even number of factors, so not a perfect square

b) 364

- 1 x 364
- 2 x 182
- 4 x 91
- 7 x 52
- 13 x 28
- 14 x 26

12 factors,
 not a perfect square

c)

- 729
- 1 x 729
- 3 x 243
- 9 x 81
- 27 x 27

7 factor
 729 is a perfect square
 $\sqrt{729} = 27$

6. If you know a square number you can find the square root by:

- using prime factorization
- product of perfect squares
- list the factors
- find what number you multiply by itself to get the square number

7a) 24 is not a perfect square, so the side length is not a whole number.

$$\text{Area} = 24$$

$$\text{Side Length} = \sqrt{24}$$

$$\sqrt{16} \\ 4$$

$$\sqrt{25} \\ 5$$

$$\sqrt{24} \approx 4.9$$

b) Side Length of Square = 9

$$\begin{aligned} \text{Area} &= 9 \times 9 \\ &= 81 \end{aligned}$$

9a) $\sqrt{12 \times 12}$
 $= 12$

b) $\sqrt{34 \times 34}$
 $= 34$

😊 10 a) $\sqrt{3}$
 $\sqrt{1}$ $\sqrt{4}$
 1 2
 $\sqrt{3} \approx 1.7$

b) $\sqrt{65}$
 $\sqrt{64}$ $\sqrt{81}$
 8 9
 $\sqrt{65} \approx 8.1$

c) $\sqrt{72}$
 $\sqrt{64}$ $\sqrt{81}$
 8 9
 $\sqrt{72} \approx 8.5$

d) $\sqrt{50}$
 $\sqrt{49}$ $\sqrt{64}$
 7 8
 $\sqrt{50} \approx 7.1$

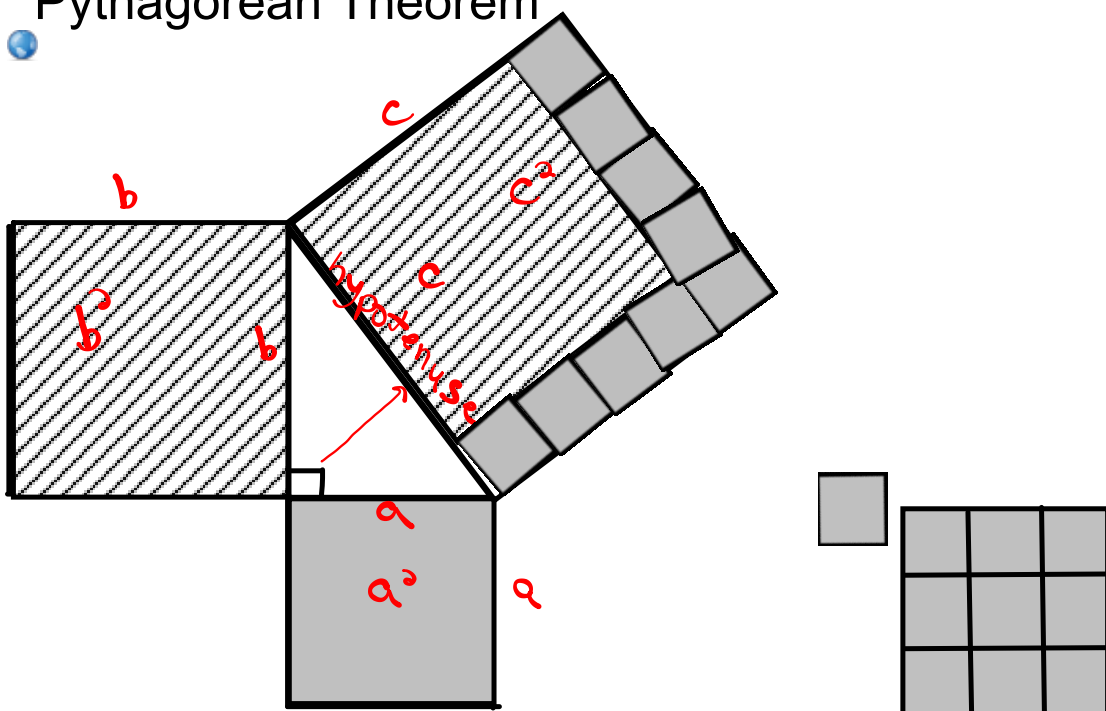
😊 11 a) $\sqrt{17}$
 $\sqrt{16}$ $\sqrt{25}$
 4 5
 $\sqrt{17} \approx 4.1$

b) $\sqrt{108}$
 $\sqrt{100}$ $\sqrt{121}$
 10 11
 $\sqrt{108} \approx 10.4$

c) $\sqrt{33}$
 $\sqrt{25}$ $\sqrt{36}$
 5 6
 $\sqrt{33} \approx 5.8$

d) $\sqrt{79}$
 $\sqrt{64}$ $\sqrt{81}$
 8 9
 $\sqrt{79} \approx 8.8$

Pythagorean Theorem

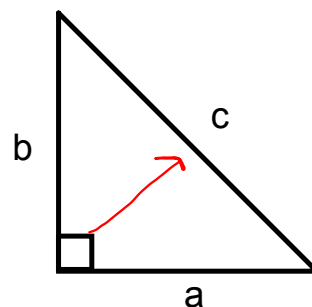


Pythagorean Theorem

- Right Angle Triangle has one angle that 90°
- the side directly across to the right angle is always the longest side, it is the **hypotenuse**.

We use "c" for the hypotenuse

- Legs are side "a" and "b"



Pythagorean Theorem Equation:

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

area of the square
off the hypotenuse

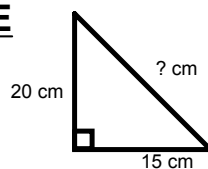
$$(c)^2 - (b)^2 = (a)^2$$

area of the square
off the leg

Pythagorean Theorem Equation:

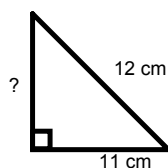
Then to find the length of the **HYPOTENUSE**

$$c = \sqrt{(a)^2 + (b)^2}$$



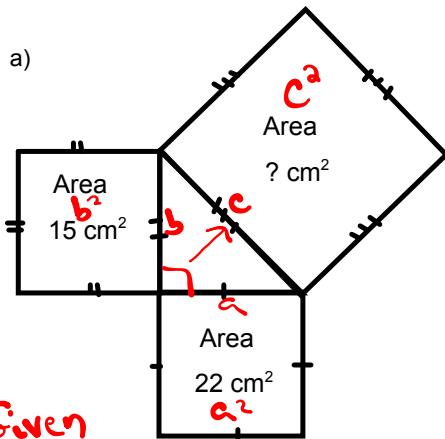
Then to find the length of a **LEG**

$$a = \sqrt{(c)^2 - (b)^2}$$



Example)

Find the area of the indicated square:



Given

$$a^2 = 22 \text{ cm}^2$$

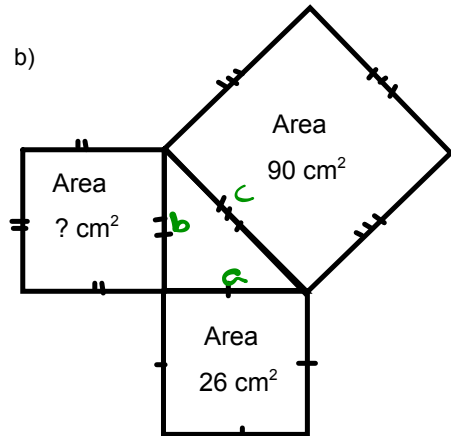
$$b^2 = 15 \text{ cm}^2$$

$$c^2 = ?$$

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

$$= 22 \text{ cm}^2 + 15 \text{ cm}^2$$

$$c^2 = 37 \text{ cm}^2$$



Given

$$c^2 = 90 \text{ cm}^2$$

$$a^2 = 26 \text{ cm}^2$$

Given longest
so subtract

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

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

$$b^2 = 90 \text{ cm}^2 - 26 \text{ cm}^2$$

$$b^2 = 64 \text{ cm}^2$$

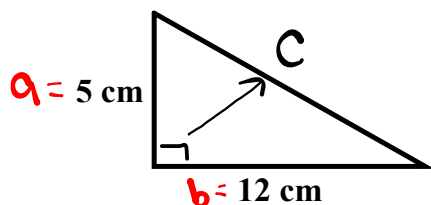
if you want side 'b'

$$\sqrt{b^2} = \sqrt{64 \text{ cm}^2}$$

$$b = 8 \text{ cm}$$

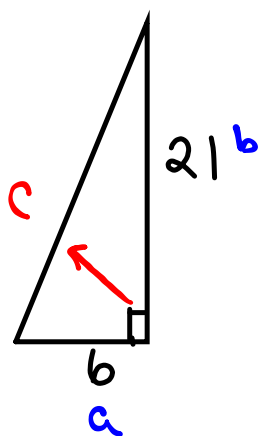
Examples: Find the length of the missing side.

2a)



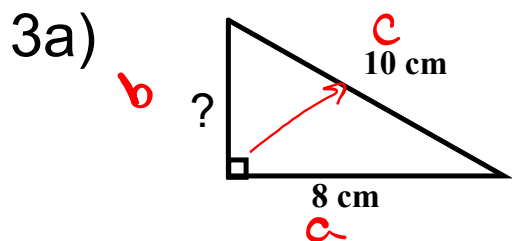
$$\begin{aligned} c^2 &= a^2 + b^2 \\ &= (5\text{cm})^2 + (12\text{cm})^2 \\ &= 25\text{cm}^2 + 144\text{cm}^2 \\ c^2 &= 169\text{cm}^2 \\ \sqrt{c^2} &= \sqrt{169\text{cm}} \\ c &= 13\text{cm} \end{aligned}$$

2b)



$$\begin{aligned} c^2 &= a^2 + b^2 \\ c^2 &= (6)^2 + (21)^2 \\ c^2 &= 36 + 441 \\ c^2 &= 477 \\ \sqrt{c^2} &= \sqrt{477} \\ c &= \sqrt{477} \\ c &\approx 21.84032 \end{aligned}$$

Examples: Find the length of the missing side. $c^2 = a^2 + b^2$
 Rearrange



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

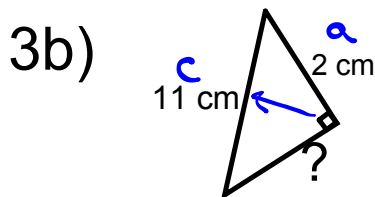
$$b^2 = (10\text{cm})^2 - (8\text{cm})^2$$

$$b^2 = 100\text{cm}^2 - 64\text{cm}^2$$

$$b^2 = 36\text{cm}^2$$

$$\sqrt{b^2} = \sqrt{36\text{cm}^2}$$

$$b = 6\text{cm}$$



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

$$b^2 = (11\text{cm})^2 - (2\text{cm})^2$$

$$b^2 = 121\text{cm}^2 - 4\text{cm}^2$$

$$b^2 = 117\text{cm}^2$$

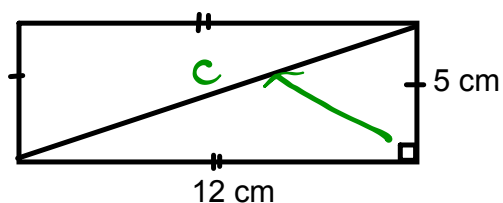
$$\sqrt{b^2} = \sqrt{117\text{cm}^2}$$

$$b = \sqrt{117} \text{ cm}$$

or

$$b \approx 10.81 \text{ cm}$$

Find the length of the diagonal of the rectangle.



ADD TO
YOUR
NOTES

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

$$c^2 = (12\text{cm})^2 + (5\text{cm})^2$$

$$c^2 = 144\text{cm}^2 + 25\text{cm}^2$$

$$c^2 = 169\text{cm}^2$$

$$\sqrt{c^2} = \sqrt{169\text{cm}^2}$$

$$c = 13\text{cm}$$



Class/Homework



Page 34:

#3(a,b)

#4(a,b)

M.