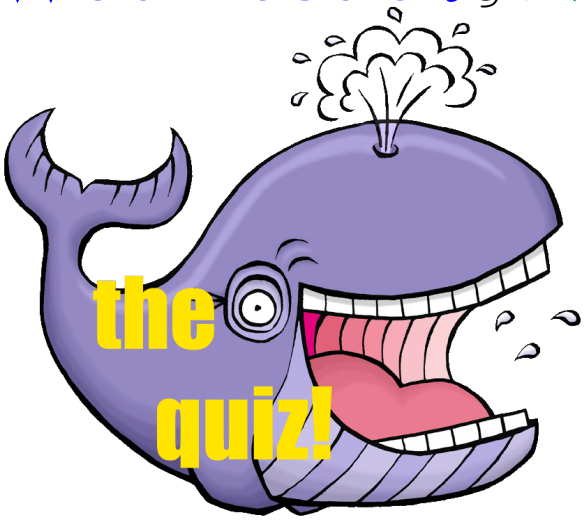
Warm Up Quiz Grade 8

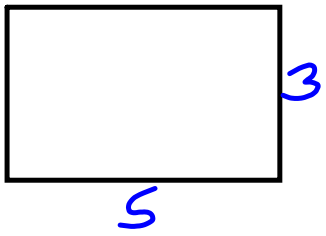
Wednesday, Nov. 16



Any questions from mid unit review???

pg30

1a) 15 is not a perfect square



1x15

3x5

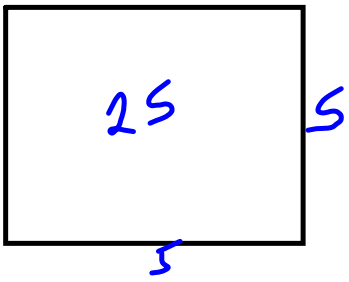
No repeats of factors so not a perfect square

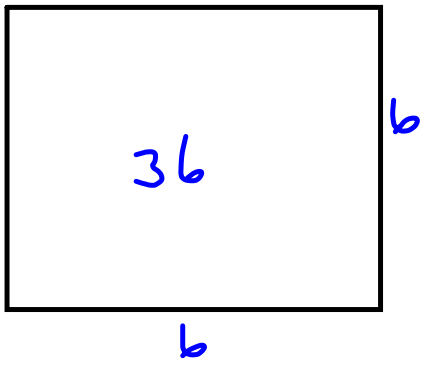
b) 26 is not a perfect, 5x5 is a square which is 25

1x26

2x13

NO Repeats





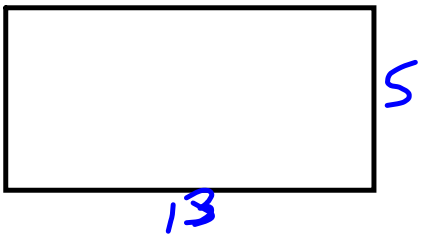
c) 65 - not a square

8x8=64, is a square

1x65

5x13

No repeats



d) 100 - perfect square

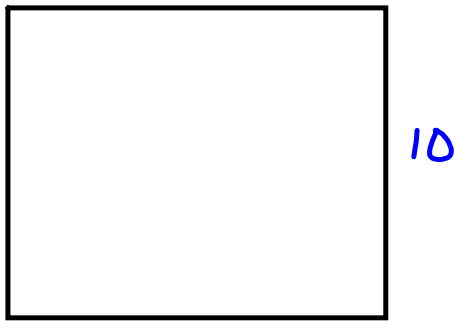
1x100

2x50

4x25

5x20

10x10 repeated so perfect square



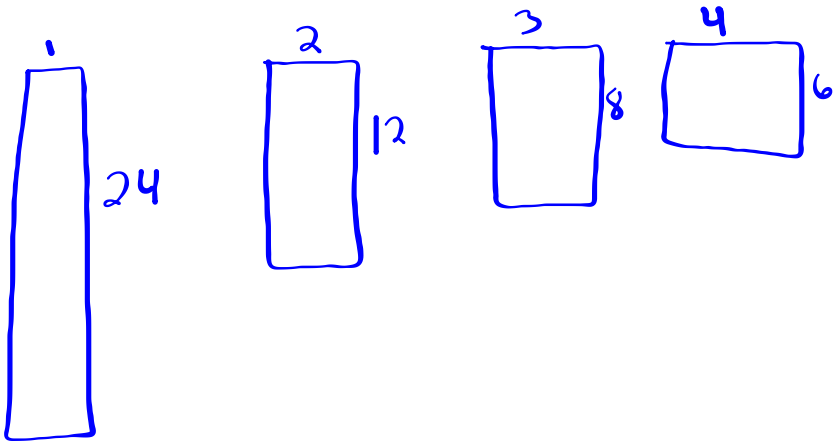
24

1 x 24

2 x 12

3 x 8

4 x 6



8 factors

↓

even # of factors

so NOT a perfect square

2a) $\sqrt{16} = 4$
$(4^2 = 16)$

b) $\sqrt{49} = 7$
$(7 \times 7 = 49)$

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

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

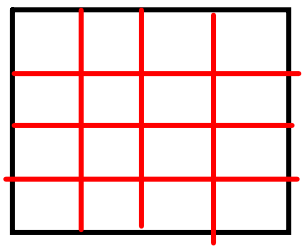
3a) $11^2 = 11 \times 11$
$= 121$

b) $\sqrt{64} = 8$
$(8 \times 8 = 64)$

c) $\sqrt{169} = 13$
$13^2 = 169$

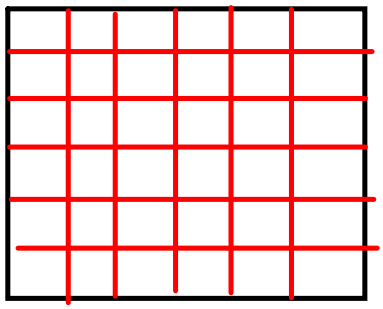
d) $\sqrt{225}$
$\sqrt{15 \times 15}$
15

4a)



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.

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

$\sqrt{16}$ $\sqrt{25}$
4 5

$\sqrt{24} \approx 4.9$

b) Side Length of Square = 9

Area = 9 x 9
= 81

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

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

$\sqrt{x^2} = x$

$\sqrt{x \cdot x} = x$

$\sqrt{36} = 6$

$9^2 = 81$

Estimate first

$\sqrt{102}$

$\sqrt{100}$ $\sqrt{121}$

10 11

≈ 10.1

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

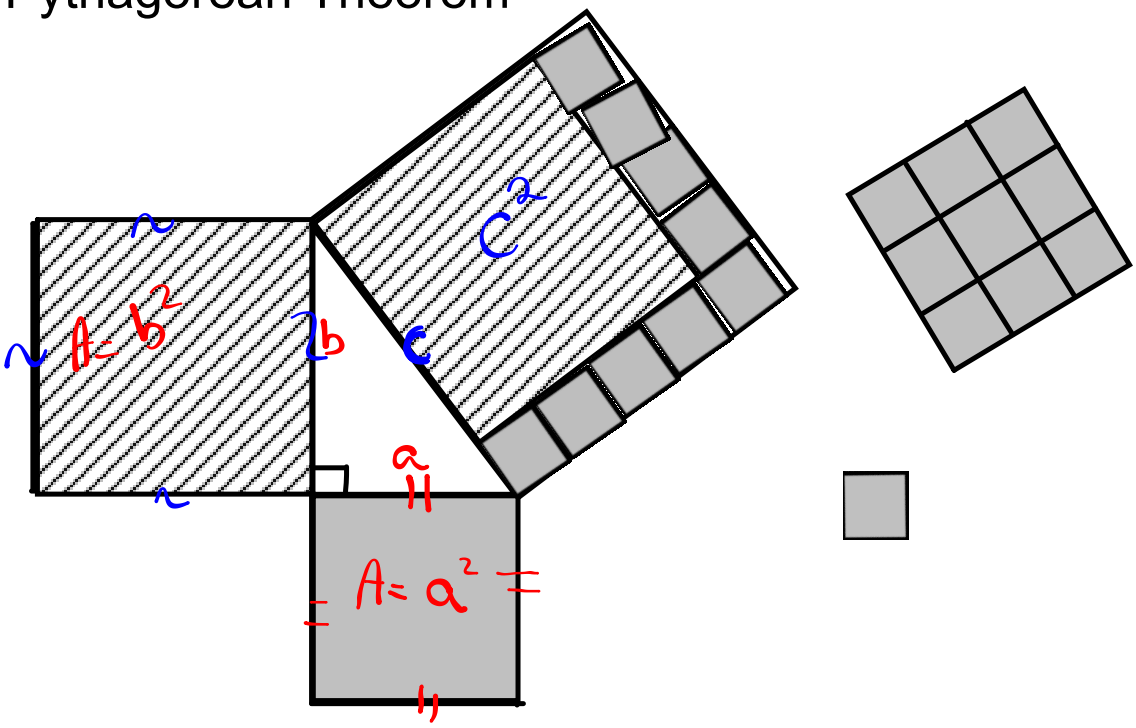
$\sqrt{79} \approx 8.8$

1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169

196

225

Pythagorean Theorem



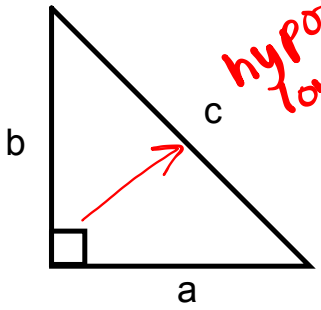
Pythagorean Theorem

- 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"



hypotenuse longest

Study

Pythagorean Theorem Equation:

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

area of the square off the hypotenuse

Rearrange

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

area of the square off the leg

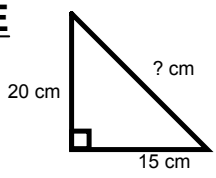
Pythagorean Theorem Equation:

c^2 is an area of a square off side c

Study

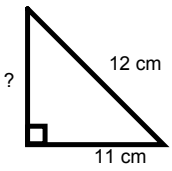
Then to find the length of the **HYPOTENUSE**

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



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

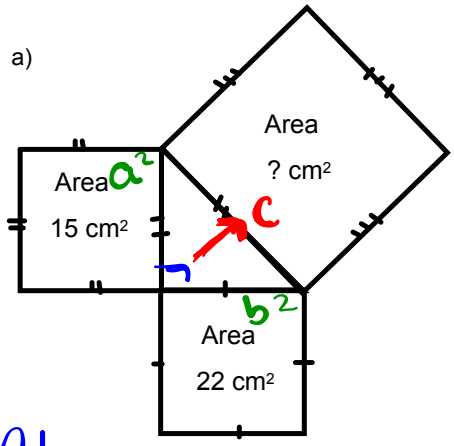
$$a = \sqrt{(c)^2 - (b)^2}$$



Example) on district assessment

Find the area of the indicated square:

a)



Already given area

$a^2 = 15\,cm^2$

$b^2 = 22\,cm^2$

$c^2 = ?$

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

$= 15cm^2 + 22cm^2$

$c^2 = 37cm^2$

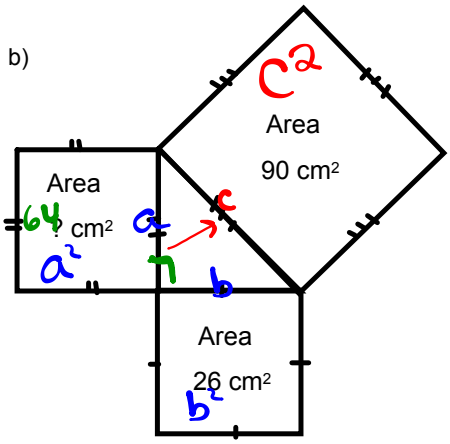
↓

side "c"

$\sqrt{c^2} = \sqrt{37}$

$c \approx 5.9\,cm$

b)



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

$a^2 = 90cm^2 - 26cm^2$

$\rightarrow a^2 = 64cm^2$

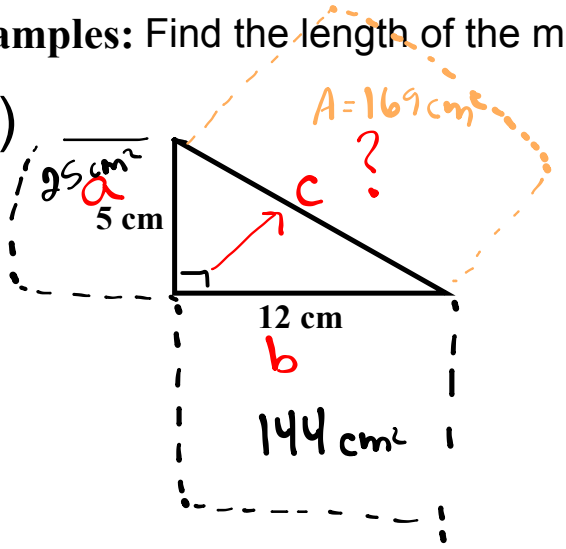
Step further To find side length

$\sqrt{a^2} = \sqrt{64}$

$a = 8cm$

Examples: Find the length of the missing side.

2a)



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

$c^2 = (5cm)^2 + (12cm)^2$

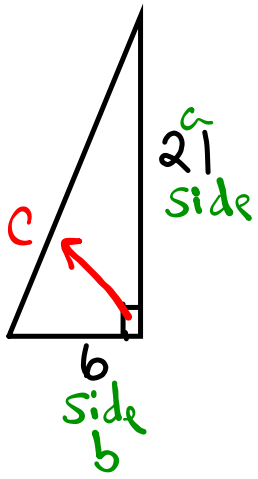
$c^2 = 25cm^2 + 144cm^2$

$c^2 = 169cm^2$

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

$c = 13cm$

2b)



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

$c^2 = (21)^2 + (6)^2$

$c^2 = 441 + 36$

$c^2 = 477$

$\sqrt{c^2} = \sqrt{477}$ ← use calculator button $\sqrt{\ }$

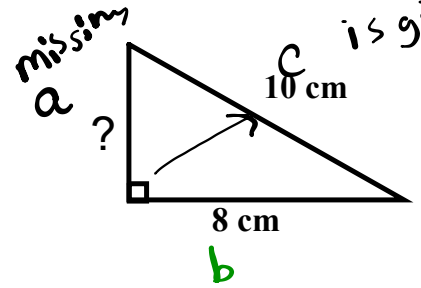
$c \approx 21.8$

Examples: Find the length of the missing side.

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

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

3a) missing a ? c is given



b

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

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

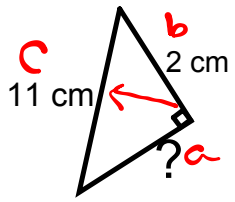
$a^2 = 100 - 64$

$a^2 = 36$

$\sqrt{a^2} = \sqrt{36}$

$a = 6\text{cm}$

3b)



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

$a^2 = (11)^2 - (2)^2$

$a^2 = 121 - 4$

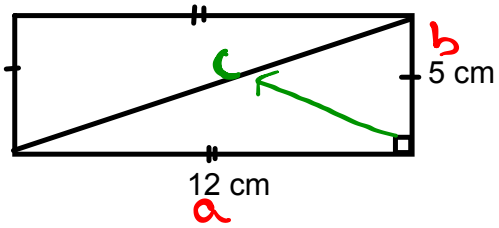
$a^2 = 117$

$\sqrt{a^2} = \sqrt{117}$

$a \approx 10.8\text{cm}$

Find the length of the diagonal of the rectangle.

ADD TO YOUR NOTES



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

$c^2 = 12^2 + 5^2$

$c^2 = 144 + 25$

$c^2 = 169$

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

$c = 13$ cm

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

$c^2 = (\quad)^2 + (\quad)^2$

$c^2 = \_\_ + \_\_$

$c^2 =$ _____

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

$c \approx$ ☐