5(aceg) without calculator

7(bdfhj) (without a calculator)

8 (a, c, d, f, g, i,j , l) without a calculator

9 (a, b, g, h)

10(a, b)

14

16

5. a) $\sqrt{0.36}$

0.6

$\sqrt{\frac{36}{100}}$

$\frac{6}{10}$

0.6

$\sqrt{0.0225}$

0.15

$\sqrt{\frac{225}{10000}}$

$\frac{15}{100} = 0.15$

g) $\sqrt{0.0121}$

0.11

$\sqrt{\frac{121}{10000}} = \frac{11}{100} = 0.11$

h) $\sqrt{3.24}$

1.8

$\sqrt{\frac{324}{100}} = \frac{18}{10}$

1.8

8. a) 0.12 X

b) $\sqrt{0.81} = 0.9$ ✓

c) 0.25 ✓

d) 1.69 ✓

f) $\frac{36}{81}$ ✓ ✓

g) $\frac{81}{49}$ ✓ ✓

i) 0.081 NO

9. a, b, g, h

a) $0.3 = \sqrt{0.09}$

b) $0.12 = \sqrt{0.0144}$

g) $\frac{1}{7} = \sqrt{\frac{1}{49}}$

h) $\frac{2}{5} = \sqrt{\frac{4}{25}}$

10. a) $\sqrt{12.25}$

3.5

b) $\sqrt{30.25}$

5.5

14. $5.76\,cm^2$

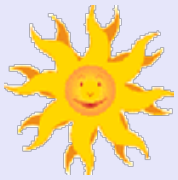
$+5.76$

$\sqrt{5.76} = S$

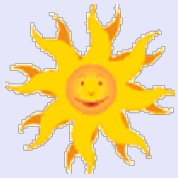
$S = 2.4\,cm$

16. $\sqrt{0.04} \neq 0.02$

$= 0.2$



Warm Up Math 9



1) Find the perfect square whose square root is a) 0.6 b) $\frac{3}{5}$

0.6^2
0.6×0.6
0.36

$\left(\frac{3}{5}\right)^2 = \frac{9}{25}$

2) Is the following fractions or decimals perfect squares? Explain

a) 0.64 yes b) 62.5 c) $\frac{49}{144}$ d) $\frac{13}{25}$

$\frac{64}{100}$ ✓

No

$\frac{625}{10}$ X

✓

yes.

X

✓

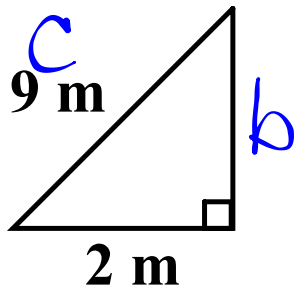
NO

THE FIRST 20 PERFECT SQUARES:

1^2	=	1 x 1	=	1	11^2 =	11 x 11 =	121
2^2	=	2 x 2	=	4	12^2 =	12 x 12 =	144
3^2	=	3 x 3	=	9	13^2 =	13 x 13 =	169
4^2	=	4 x 4	=	16	14^2 =	14 x 14 =	196
5^2	=	5 x 5	=	25	15^2 =	15 x 15 =	225
6^2	=	6 x 6	=	36	16^2 =	16 x 16 =	256
7^2	=	7 x 7	=	49	17^2 =	17 x 17 =	289
8^2	=	8 x 8	=	64	18^2 =	18 x 18 =	324
9^2	=	9 x 9	=	81	19^2 =	19 x 19 =	361
10^2	=	10 x 10	=	100	20^2 =	20 x 20 =	400

How far up the wall does the ladder reach?
Try to do this without a calculator.

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

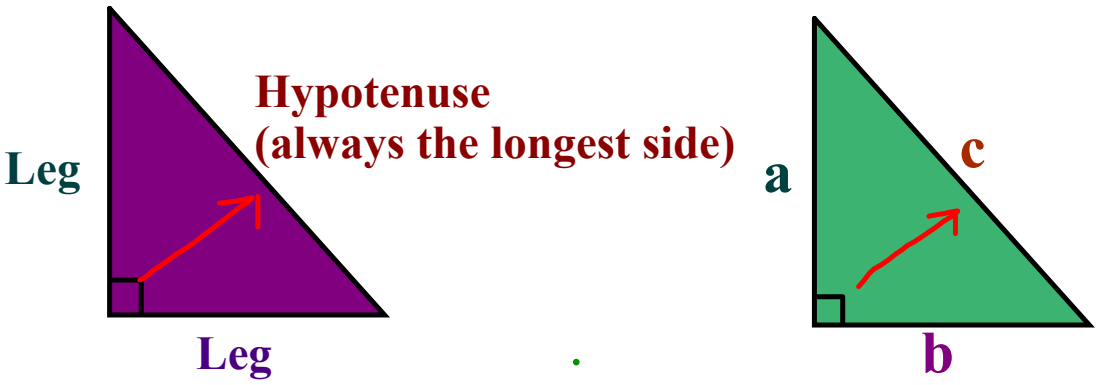


$c^2 - a^2 = b^2$

$$a^2 + b^2 = c^2$$
$$2^2 + b^2 = 9^2$$
$$4 + b^2 = 81$$
$$b^2 = 81 - 4$$
$$b^2 = 77$$
$$\sqrt{b^2} = \sqrt{77}$$
$$b \doteq 8.8 \text{ m}$$

PYTHAGOREAN THEOREM:

We know that a right triangle is a triangle containing a 90° angle.



Hypotenuse

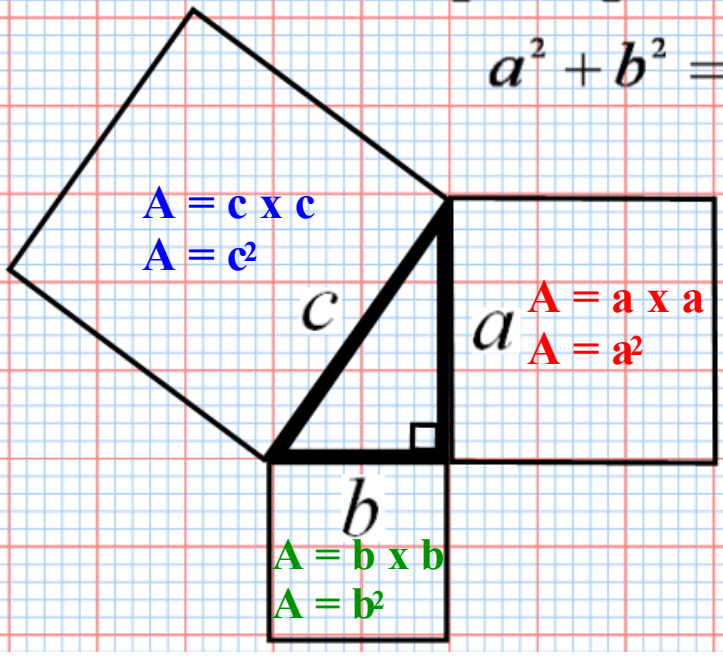
$$c^2 = a^2 + b^2$$

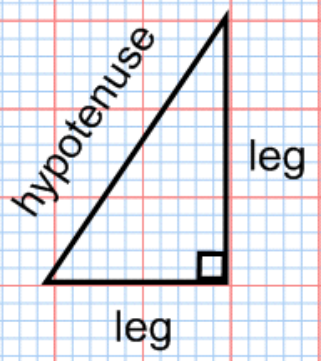
Leg

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

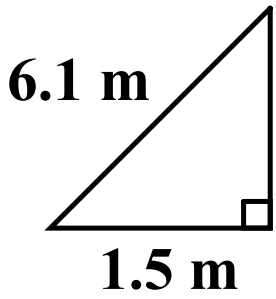
Pythagoras found out that when you have a right triangle, $leg^2 + leg^2 = hypotenuse^2$

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





Calculate how far up a wall a 6.1 m long ladder will reach if its base is 1.5 m from the wall.



Leg

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

$b^2 = 6.1^2 - 1.5^2$

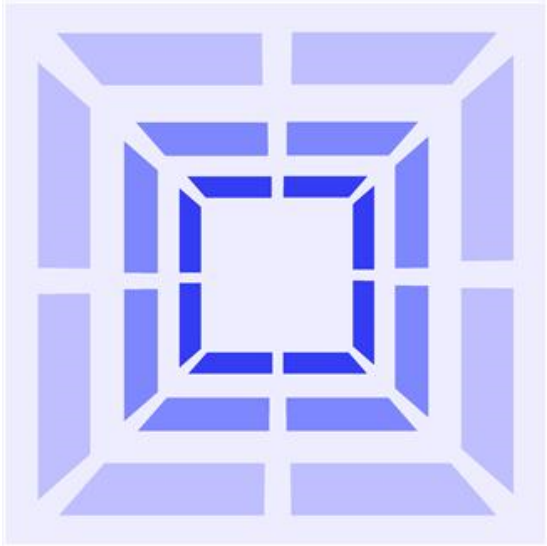
$b^2 = 37.21 - 2.25$

$b^2 = 34.96$

$\sqrt{b^2} = \sqrt{34.96}$

$b \doteq 5.9$ m

Square Roots of Non-Perfect Squares



Perfect Squares...

16

25

9

1

4

144

256

Non-Perfect Squares...

15

8

2

11

20

167

19

$\sqrt{16} = 4$

$\sqrt{8} = 2.8284271\ldots$

Non- perfect Squares cannot be written as a product of two equal numbers

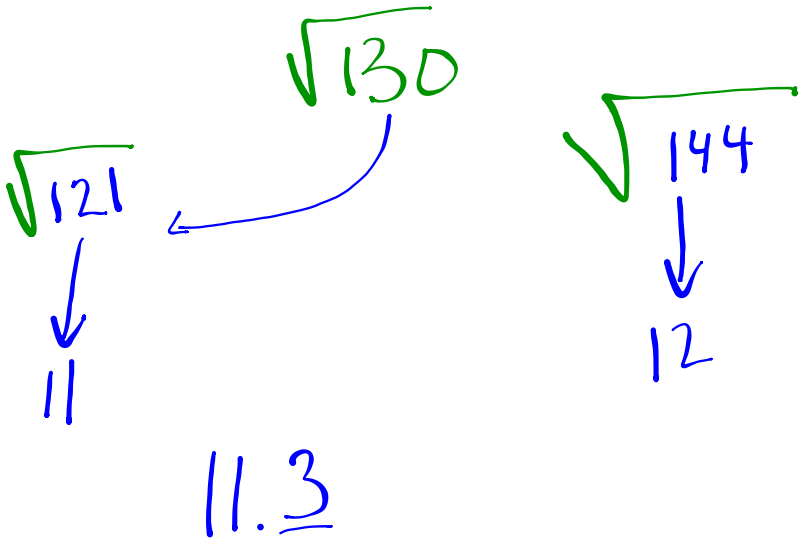
Estimating square roots of non-perfect squares.

1
4
9
16

Estimate the square root of 7.5.

Method #1	Method #2
Using a Calculator:	Using Benchmarks:
$\sqrt{7.5} \doteq 2.7$	Determine what two perfect squares 7.5 is between.
	$\sqrt{7.5} =$
	$\sqrt{4}$ $\sqrt{9}$
	2 3
	~2.8

Estimate the square root of 130



Estimate the square root of $\frac{3}{7}$.

$\frac{3}{7} = 0.43$

with

Method #1

1. Change the fraction to a decimal, then using calculator estimate the square root.

$\sqrt{0.43} \doteq 0.65$

without

Method #2

1. Find the perfect ~~squares~~ closest to the numerator and denominator.

$\sqrt{0.36}$ $\sqrt{0.43}$ $\sqrt{0.49}$

2. Take the square roots of the numbers you have chosen.

0.6 0.7

0.66

Please Complete
Questions
Pages
18 and 19.

4) a,c,e
5) a,c,e
6a,c
7) a, c, e

ENJOY!