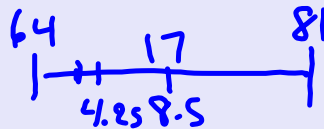
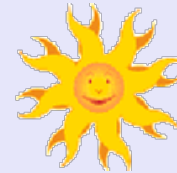




### Warm Up Math 9



1) Estimate the square root of each of the following using bench marks:

a)  $\sqrt{0.67}$

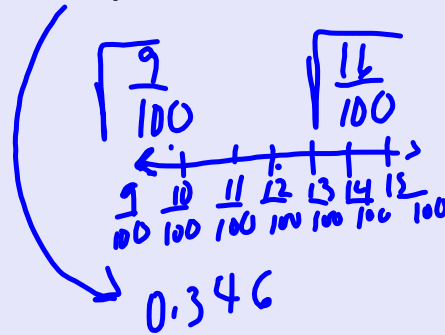
$$\begin{array}{r} 81 \\ -64 \\ \hline 0.17 \end{array}$$

$$\begin{array}{cc} \sqrt{0.64} & \sqrt{0.81} \\ \leftarrow 0.17 \rightarrow & \\ 0.8 & 0.9 \end{array}$$

$$0.64 \rightarrow 0.67 = 0.03$$

0.81

b)  $\sqrt{\frac{12}{100}}$



2) Estimate

a)  $\sqrt{\frac{15}{125}}$

$$\begin{array}{c} \sqrt{\frac{3}{25}} \\ \sqrt{\frac{1}{25}} \leftrightarrow \sqrt{\frac{4}{25}} \\ \frac{1}{25} \quad \frac{2}{25} \quad \frac{3}{25} \quad \frac{4}{25} \\ \frac{1}{5} \\ 0.27 \end{array}$$

3) Find a perfect square whose square root is between 14 and 15

### Homework solutions

Section 1.2 Questions ( 4ace, 5ace, 6ac, 7ace, 8ab, 9ac, 10ad)

4a)  $\sqrt{3.5}$

$\sqrt{1} = 1$        $\sqrt{4} = 2$

4c)  $\sqrt{53.6}$

$\sqrt{49} = 7$        $\sqrt{64} = 8$

4e)  $\sqrt{93.5}$

$\sqrt{81} = 9$        $\sqrt{100} = 10$

5a)  $\sqrt{\frac{3}{10}} = \sqrt{0.3}$

$\sqrt{0.49} = 0.7$        $\sqrt{0.64} = 0.8$

5c)  $\sqrt{\frac{95}{10}} = \sqrt{9.5}$

$\sqrt{9} = 3$        $\sqrt{16} = 4$

5e)  $\sqrt{\frac{795}{10}} = \sqrt{79.5}$

$\sqrt{64} = 8$        $\sqrt{81} = 9$

6a)  $\sqrt{\frac{8}{10}} = \sqrt{0.8}$

$\sqrt{0.64} = 0.8$        $\sqrt{0.81} = 0.9$

$\sqrt{0.8} \approx 0.9$

6c)  $\sqrt{\frac{7}{13}} \approx \sqrt{\frac{9}{16}} \approx \frac{3}{4} \approx 0.75$

OR  
 $\sqrt{\frac{7}{13}} \approx \sqrt{0.54}$

$\sqrt{0.49} = 0.7$        $\sqrt{0.64} = 0.8$

closer to 0.7  
 so estimate 0.75

7a)  $\sqrt{4.5}$

$\sqrt{4} = 2$        $\sqrt{9} = 3$

$\sqrt{4.5} \doteq 2.1$

7c)  $\sqrt{84.5}$

$\sqrt{81} = 9$        $\sqrt{100} = 10$

Estimate  
 $\sqrt{84.5} \doteq 9.2$

7e)  $\sqrt{284.5}$

$\sqrt{256} = 16$        $\sqrt{289} = 17$

$\sqrt{284.5} \doteq 16.8$

8) a)  $\sqrt{29.5}$

$\sqrt{25} = 5$        $\sqrt{36} = 6$

$\sqrt{29.5} = 5.4$

8b)  $\sqrt{\frac{5}{2}} \doteq \sqrt{\frac{4}{1}} = \sqrt{4} = 2$

or *more accurate*

$\sqrt{2.5} \doteq 1.5$

$\sqrt{1} = 1$        $\sqrt{4} = 2$

9a)  $\sqrt{4.4} \doteq 2.2$  No  
 $\sqrt{4.4} \doteq 2.1$

9c)  $\sqrt{6.6} \doteq 2.6$  ✓  
 Yes

Rounding Skill (calculator)

10a) between 3 and 4 is 3.5  
 $(3.5)^2 = 12.25$

10c) between 1.5 and 2.5 is 2  
 $(2)^2 = 4$

OR

pick # between 9 & 16 **13**

pick # between 2.25 and 6.25 **5**

## Finding a Number with a Square Root between Two Given Numbers.

Find a decimal  
that has a square root  
between 10 and 11.



### Method #1

Identify the perfect squares first.

10                      11  
↓                          ↓  
100                      121

Choose  
any number  
between them...  
and find  
the square root.

$$\sqrt{115} \approx 10.7$$

### Method #2

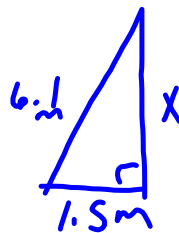
Identify any decimal first.

10                      11  
↓  
10.4  
Now square the number.  
 $(10.4)^2 = 108.16$

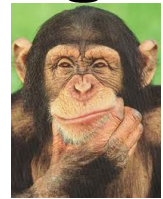
# Real Life Square Roots!!



A ladder is 6.1m long. The distance from the base of the ladder to the wall is 1.5m. Estimate how far up the wall the ladder will reach.



This looks familiar!  
Scratch my head for me. :)



$$\begin{aligned}a^2 &= c^2 - b^2 \\ &= 6.1^2 - 1.5^2 \\ &= 34.96 \\ a &= \sqrt{34.96} \\ &= 5.91\end{aligned}$$

The ladder will reach 5.91m up the wall.

How much non-slip coating will this ramp need?



Do you have all the information needed to answer this question?

$$\begin{aligned}
 c^2 &= a^2 + b^2 \\
 &= 1.5^2 + 6.6^2 \\
 &= 45.81 \\
 c &= \sqrt{45.81} \\
 &= 6.77\text{m}
 \end{aligned}$$

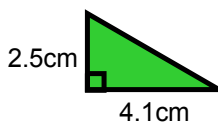
$$\begin{aligned}
 2 \Delta's &= \frac{(6.6)(1.5)(2)}{2} \\
 &= 9.9\text{m}^2
 \end{aligned}$$

$$\begin{aligned}
 A_{\text{ramp}} &= (2.2)(6.77) \\
 &= 14.894\text{m}^2
 \end{aligned}$$

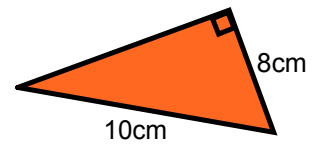
$$\begin{aligned}
 \text{Back} &= (2.2)(1.5) \\
 &= 3.3\text{m}^2
 \end{aligned}$$

$$\begin{aligned}
 \text{Total Surface Area} &= 28.094\text{m}^2
 \end{aligned}$$

Determine the unknown length.



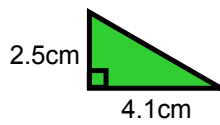
$$\begin{aligned}c^2 &= a^2 + b^2 \\ &= 2.5^2 + 4.1^2 \\ &= 23.06 \\ c &= \sqrt{23.06} \\ &\approx 4.80 \text{ cm}\end{aligned}$$



$$\begin{aligned}a^2 &= c^2 - b^2 \\ &= 10^2 - 8^2 \\ &= 100 - 64 \\ &= 36 \\ a &= \sqrt{36} \\ &= 6 \text{ cm}\end{aligned}$$

The answers are on the next page.

Determine the unknown length.



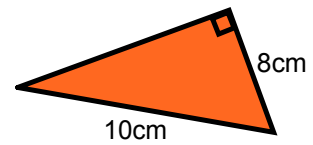
$$c^2 = a^2 + b^2$$

$$c^2 = 2.5^2 + 4.1^2$$

$$c^2 = 6.25 + 16.81$$

$$c^2 = 23.06$$

$$c \doteq 4.8\text{cm}$$



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

$$10^2 = a^2 + 8^2$$

$$100 = a^2 + 64$$

$$100 - 64 = a^2$$

$$36 = a^2$$

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

The numbers 6, 8 and 10 have a special name, do you know what it is?



Class / Homework

Period 1)



page 19, 20

4, 5, 8

12 a c

13

15 (Estimate first then answer the question \*Show work\*)

17

19

20

12a)  $\sqrt{\frac{3}{8}} = \sqrt{\frac{4}{9}} = \frac{2}{3} = 0.\bar{6}$

...

.