

Problem of The Day Nov 6/14

State whether or not the following are perfect squares

1)  $25/4$

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

→ w/o a decimal  
 → Terminating decimal.  
 → repeating

2)  $\sqrt{2.8}$

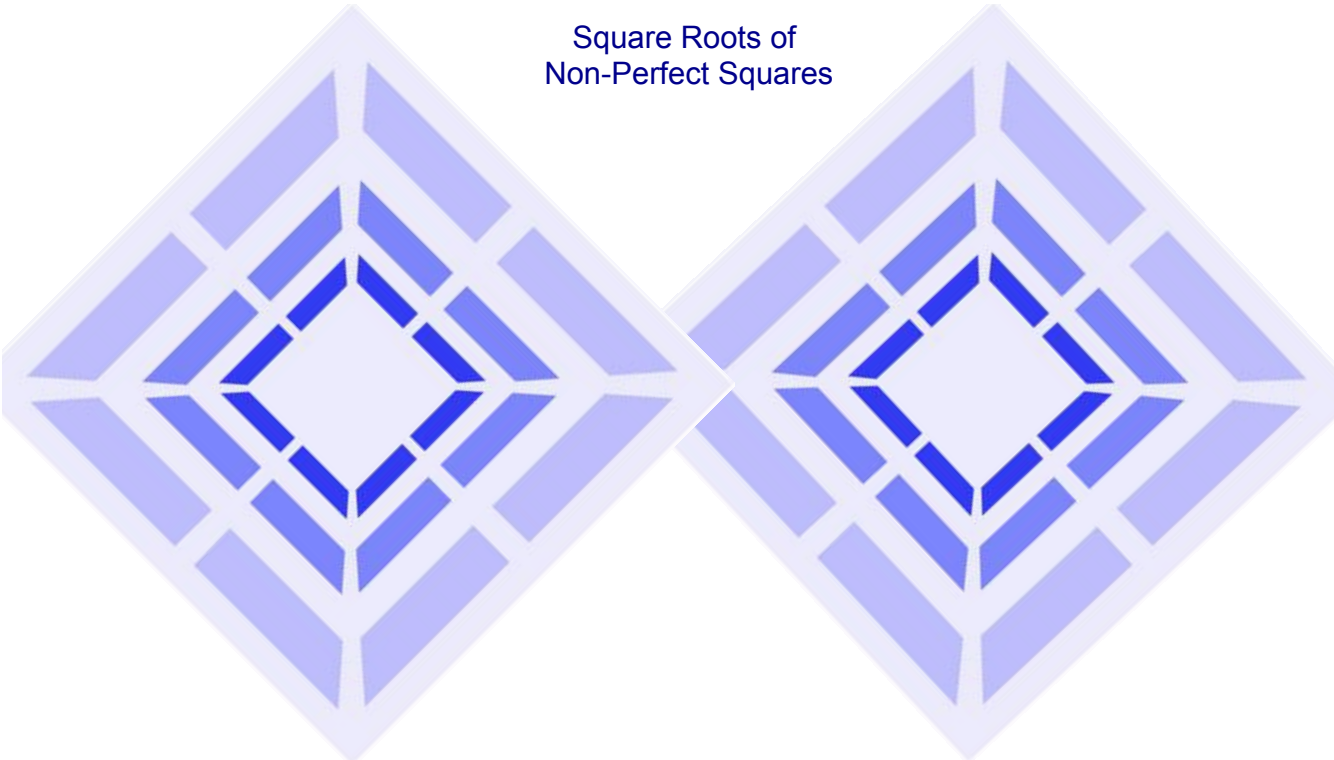
$$= 1.673320053\dots$$

(Not terminating) } Not perfect.  
 (Not repeating) }

3)  $\sqrt{0.404958678}$

$$= 0.636363 \text{ or } 0.\overline{63} = \text{Perfect square}$$

Square Roots of  
Non-Perfect Squares



Perfect Squares...

$$\sqrt{16} = 4$$

$$\sqrt{25} = 5$$

$$\sqrt{9} = 3$$

$$\sqrt{144} = 12$$

$$\sqrt{4} = 2$$

$$\sqrt{256} = 16$$

$$\sqrt{16} = 4$$



Non-Perfect Squares...

$$\sqrt{8} = 2.8284271...$$

*goes on forever*

*going on forever*

$$\sqrt{8} = \underline{2.8284271...}$$

Estimating square roots of non-perfect squares.

*closer to 9.*

Estimate the square root of 7.5.



Method #1

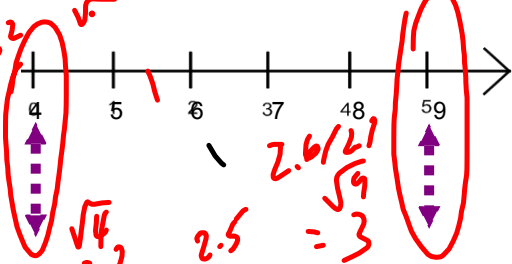
Method #2

Using Benchmarks:

Using a Calculator:

- 1 = 1<sup>2</sup>
- 4 = 2<sup>2</sup>
- 9 = 3<sup>2</sup>
- 16
- 25
- 36
- 49
- 64
- 81
- 100 = 10<sup>2</sup>

Determine what two perfect squares 7.5 is between.



Then estimate the square root of 7.5.

$\sqrt{7.5} = 2.738612788\dots$

$\sqrt{7.5} = \underline{2.7}$

If the answer does not appear to terminate (stop) or repeat, estimate the answer by rounding to the tenths place.

Estimate the square root of  $\frac{3}{7}$  .  $\frac{3}{7} \Rightarrow 3 \div 7 = 0.428571...$

- $1 = 1^2$
- $4 = 2^2$
- $9 = 3^2$
- $16 = 4^2$
- $25 = 5^2$
- $36 = 6^2$
- $49 = 7^2$
- $64 = 8^2$
- $81 = 9^2$
- $100 = 10^2$

Method #1

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

$$\sqrt{\frac{3}{7}} = \sqrt{\frac{4}{9}}$$

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

$$\sqrt{\frac{4}{9}} = \frac{2}{3} = 0.\overline{66}$$

$= 0.7$

Method #2

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

$$\sqrt{\frac{3}{7}} = \sqrt{0.428571428}$$

2. Using benchmarks or a calculator estimate the square root.

$$\sqrt{0.42871428} = 0.6546537$$

$= 0.7$

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

Method #2

Identify the perfect squares first.

Identify any decimal first.

①  $10^2$

$11^2$

100

121

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

*100 < 115 < 121*

$\sqrt{115} = 10.7$

① 10

11

10.4

②

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

*∴ (10.1 = 10.99)*



Pg 18

- 1
- 4
- 9
- 16
- 25
- 36
- 49
- 64
- 81
- 100

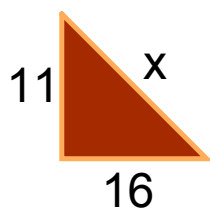
4) a)  $\sqrt{3.5} \rightarrow \sqrt{\frac{4}{2}} \cdot \sqrt{\frac{1}{1}}$

5) a)  $\sqrt{\frac{5}{10}} = \sqrt{\frac{4}{9}} = \frac{2}{3}$  Estimate.

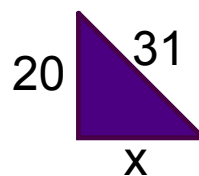
b) a)  $\sqrt{\frac{6}{10}} = \sqrt{\frac{9}{9}} = \frac{3}{3}$  or 1



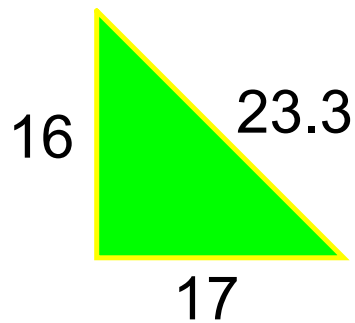
## *Pythagorean Theorem*



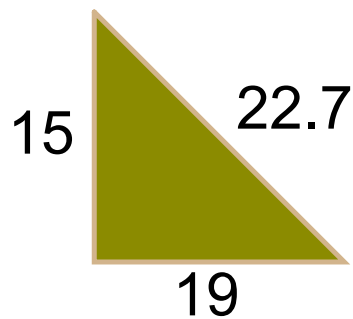
Find  
the  
value  
of  
 $x$ .



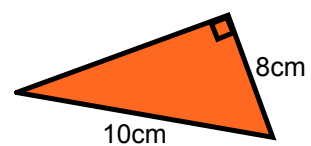
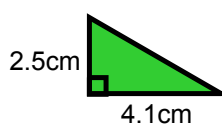
Is this a right angled triangle?



Is this a right angled triangle?

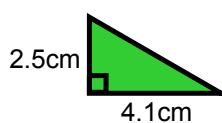


Determine the unknown length.



The answers are on the next page.

Determine the unknown length.



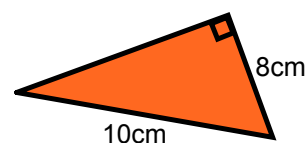
$$c^2 = a^2 + b^2$$

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

$$c^2 = 6.25 + 16.81$$

$$c^2 = 23.06$$

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



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

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

$$100 = a^2 + 64$$

$$100 - 64 = a^2$$

$$36 = a^2$$

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

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

# 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.



How much non-slip coating will this ramp need?



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

