

**Topic: 1.2 Square
Roots of Non-Perfect
Squares**

Name: _____

Class: Math 9

Date: _____

Questions/Main Ideas:

Notes:

Goals:

1. Approximate the square roots of decimals and fractions of non-perfect squares.
2. Use the Pythagorean Theorem to find the missing side of a right triangle.

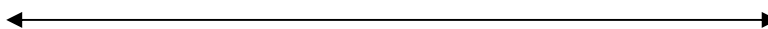
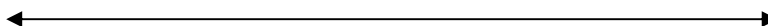
A **non-perfect square** is a number that cannot be written as the product of two equal numbers.

We can use one of two methods to estimate the square root of a non-perfect square.

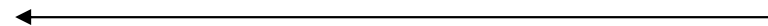
1. Use benchmarks to help estimate the square roots by determining which two perfect squares the number lies between.

a. Estimate $\sqrt{12}$

To do this we ask ourselves what two perfect squares the number 12 is between.



b. Estimate $\sqrt{22.5}$



2. For each square root, name the two closest perfect squares and their square roots.

a. $\sqrt{5.5}$

b. $\sqrt{31.5}$

c. $\sqrt{\frac{7}{10}}$

d. $\sqrt{\frac{415}{10}}$

3. The second method of estimating a square root is by using a calculator.

a. Using a calculator estimate $\sqrt{37}$

To estimate the square root of a fraction we again use benchmarks and perfect squares. To find the estimated value find the perfect square that is closest to our numerator and then do the same with our denominator.

4. Estimate the square root of each of the given fractions.

a. $\sqrt{\frac{15}{7}}$

b. $\sqrt{\frac{5}{11}}$

c. $\sqrt{\frac{2}{7}}$

In order to find a number with a square root between two given numbers we again use the perfect squares that we know.

5. Find a decimal that has a square root between:

a. 14 and 15

b. 7 and 8

p. 18 #4abcd, 5abc, 6, 7abcd, 11aceg, 13, 15, 16, 20