Math 9 *Name:* _____

1.2 – Square Roots of NON-Perfect Squares *Date:* _____

Warm Up

1. Find the square of: 2.6 $\frac{3}{4}$

2. Find the square root of: 169 0.81 $\frac{25}{64}$

3. Find the number whose square root is 16 .

4. Find the number whose square is 4 .

5. Are the following PS? 144 50 $\frac{9}{15}$

6. Convert to a decimal (one decimal place only): $\frac{5}{12}$ $\frac{7}{15}$

7. For each root given below, find two consecutive perfect squares that the *radicand* of the root is between:

$\sqrt{7.6}$ $\sqrt{108.5}$ $\sqrt{\frac{9}{10}}$

Today's Lesson…

- Not all whole numbers, fractions and decimals are perfect squares.
- So, how do we find the square roots of NON-perfect squares?

Estimating Square Root of a NON-Perfect Square Decimal.

Step A: Find the two consecutive perfect squares that the *radicand* part of the root is between. The value of the root will be between the roots of the two perfect squares.

Step B: Use a number line to estimate the value of the root of the non-perfect decimal.

Examples: a. $\sqrt{7.6}$ _____

b. $\sqrt{\frac{3}{10}}$ _____

c. $\sqrt{18.1}$ _____

d. $\sqrt{0.68}$ _____

The second strategy to find the square root of a non-perfect square decimal is to use your calculator, when allowed.

Examples: a. $\sqrt{0.43} =$ b. $\sqrt{\frac{3}{7}} =$

Estimating Square Root of a NON-Perfect Square Fraction.

Step A: Simplify the fraction, if necessary.

Step B: Re-write the fraction by replacing the numerator with its closest perfect square and the denominator with its closest perfect square.

Step C: Evaluate the new perfect square fraction.

Examples: a. $\sqrt{\frac{3}{10}}$ b. $\sqrt{\frac{23}{53}}$

c. $\sqrt{\frac{60}{140}}$ d. $\sqrt{\frac{150}{246}}$

Without using a calculator, find two decimals that have square roots between 6 and 7.