Math 9 Date: _____ Name: _____

1.2 Ordering Rational Numbers

Recall: Rational Numbers can be expressed as a fraction

- 7, -3, 4.5, 1 ½ , and 1/3 are all _____
- Why are π (pi) and $\sqrt{2}$ not rational numbers? Enter them into your calculator and press **"="**
    - **Answer**: Because….

Skill 1) Be able to Order Rational Numbers from Smallest to Largest

Which rational number is greater?

$\frac{7}{16}$ *or* $\frac{5}{8}$?

Method 1: Using a _____ denominator

- put a **D next** to the denominator of each fraction above
- The two denominators are _____ and _____

What number is a multiple of both?

The multiples of 16 are _____ The multiples of 8 are _____

Therefore, the **common denominator between both is ____**

8 needs to multiplied by ___ to become 16, so to be proportional we need to do the same to the numerator.

$\frac{5}{8} * \frac{\quad}{\quad} = \frac{10}{16}$

Now that the denominators are the same we can compare the two rational numbers.
Reminder (when using **>** or **<**, the bigger number always gets "eaten"

___ ___

Method 2: Turn Fractions into Decimals

Recall: Each decimal place represents **10** units of the number to the left of it.

Ex. In **62 … there are _____ tens and _____ ones.**

Ex. 6.3 has 6 one's and ____ tenths. They're called tenths becuase if there were 10 "0.1's", that would be the same as _____

Therefore 0.1 could be represented as a fraction of $\frac{1}{\quad}$ and 6.3 could be represented as ____ $\frac{\quad}{10}$

Try: What fractions would 32.349 be represented as? _____

To turn Fractions into Decimals – Divide the top by the bottom (you are really dividing the numerator and denominator by the denominator to make it "out of 1"

$\frac{7}{16} = \frac{7}{16} \div \frac{16}{16} = \frac{\quad}{1}$ or just _____

$\frac{5}{8} = \frac{5}{8} \div \frac{\quad}{\quad} = \frac{\quad}{1}$ or just _____

____ > _____

Skill: Identify a Rational Number that Exists <u>Between</u> two other Rational Numbers

Ex. Identify a Fraction between -0.5 and -0.6

Strategy – Use a Number Line.

1) -0.5 and -0.6 are different in the _____'s decimal place, so we'll make a number line that goes up by increments of ____

2) **Label the two numbers on the number line with an arrow for each**

3) **Determine the number that would be IN BETWEEN each of those numbers. Our number line goes up by _____ each time but the difference between our two rational numbers is SMALLER than that**

   We'll have to use the next decimal place (_____). A decimal number between -0.5 and -0.6 is _____

   If we convert this to a fraction, we get _____ Therefore, a Fraction between -0.5 and -0.6 = _____

Skill: Estimate the Square Root of a Rational Number:

Recall: 2 x 2 = _____ . Therefore $\sqrt{4}$ = ___ The $\sqrt{9}$ = _____ because _____ x ____ = 9

Use your calculator: $\sqrt{30.25}$ = _____ because _____ x ____ = _____

Ex. Estimate $\sqrt{0.42}$ **Recall – Estimate = make the best possible guess without a calculator.**

Step 1: Use the square root of a perfect square.

We know that 0.4 = $\frac{\quad}{100}$ therefore, $\sqrt{0.42}$ = $\frac{\sqrt{\quad}}{\sqrt{100}}$

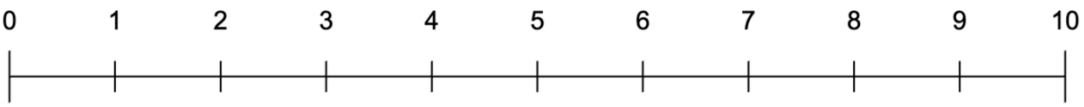
100 is a **perfect square** ___ X ____ 100 So… $\sqrt{100}$ = _____ $\sqrt{0.42}$ = $\sqrt{\quad}$

Step 2: Determine the two closest greatest squares to the number in the square.

The closest perfect square that is GREATER than 42 is _____ $\sqrt{\quad}$ = _____

The closest square that is LESS than 42 is _____ $\sqrt{\quad}$ = _____

Step 3: Place the square root of the numerator on a **number line that includes the** two other **roots determined above and the denominator (10)**



We can see that $\sqrt{42}$ *is about halfway between* $\sqrt{\quad}$ *and* $\sqrt{\quad}$ Therefore, we **can estimate** $\sqrt{0.42}$ ~ _____

If we check with a calculator… $\sqrt{0.42}$ = _____

Practice: pg 11 # 1, 2, 3a-b, 4, 7ac, 13, 14