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UNIT 1:　RATIONAL NUMBERS

SECTION 3.1:
WHAT IS A RATIONAL
NUMBER?

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MATH 9

WHAT'S THE POINT OF TODAY'S LESSON?

We will continue working on the Math 9 Specific Curriculum Outcome (SCO) "Numbers 3" OR "N3" which states:

"Demonstrate an understanding of rational numbers by: comparing and ordering rational numbers; solving problems that involve arithmetic operations on rational numbers."

What does THAT mean???

SCO N3 means that we will compare and order (largest vs smallest), add, subtract, multiply and divide fractions and any numbers that can be written as fractions. For example, sometimes we will work with 1/2 or 0.5. We have to know how to work with both.

WARM UP:

1. Which of the following numbers are rational numbers? All 4.

  a) $\dfrac{3}{1}$ b) $\dfrac{-2}{1}$ c)   -0.5 $= \dfrac{-5}{10}$ **d)   -7.45** $= -7\dfrac{45}{100}$

2. Which of the following numbers are rational numbers? 3 of them— a, c, d

  a) 4.21 $= 4\dfrac{21}{100}$ **b)   -3.121 121 112 111 12...**

  c) $2.\overline{78}$ **d)   -2.122 222 22...**

  $= 2\dfrac{78}{99}$ $= -2.1\overline{2}$

                    $= -2\dfrac{11}{90}$

NUMBER SYSTEM QUIZ
(5 - 10 min.)

RATIONAL NUMBERS

DEFINITION: A rational number is any number that can be expressed in the form of a/b where a and b are integers, and $b \neq 0$. This includes all terminating and repeating decimal numbers.

DOES A RATIONAL NUMBER ALWAYS HAVE TO LOOK LIKE A FRACTION?

EXAMPLES OF RATIONAL NUMBERS:

$$3 \qquad -4 \qquad 0 \qquad \sqrt{25} \qquad 0.75 \qquad \frac{7}{8}$$

$$\frac{-11}{4} \qquad -0.9 \qquad 0.\overline{3}$$

NEGATIVE FRACTIONS:

It doesn't matter where the negative symbol (-) is in a fraction. As long as there is one, the fraction is considered to be negative; however, we will put the negative sign with the numerator (on top) when doing calculations.

$$\frac{-3}{5} = \frac{3}{-5} = -\frac{3}{5}$$

-0.6 -0.6 -0.6

$\boxed{+/-}$

$\boxed{(-)}$

EQUIVALENT FRACTIONS:

Example: $\dfrac{1}{2} = \dfrac{2}{4} = \dfrac{3}{6} = \dfrac{5}{10}$

To form equivalent fractions, you multiply or divide the numerator and denominator of the original fraction by the same number.

Example: $\dfrac{40}{52} = \dfrac{20}{26} = \dfrac{10}{13}$

REDUCING FRACTIONS TO LOWEST TERMS:

Example: $\dfrac{15^{\div 3}}{24^{\div 3}} = \dfrac{5}{8}$

15: 1, ③, 5, 15

24: 1, 2, ③, 4, 6, 8, 12, 24

GCF = 3

To reduce fractions to lowest terms, we find the GCF (greatest common factor) of the numerator and denominator, then divide them both by this GCF. You know that your fraction is in lowest terms when the only GCF you can find is 1.

CONCEPT REINFORCEMENT

MATH MAKES SENSE 9 (MMS9):

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