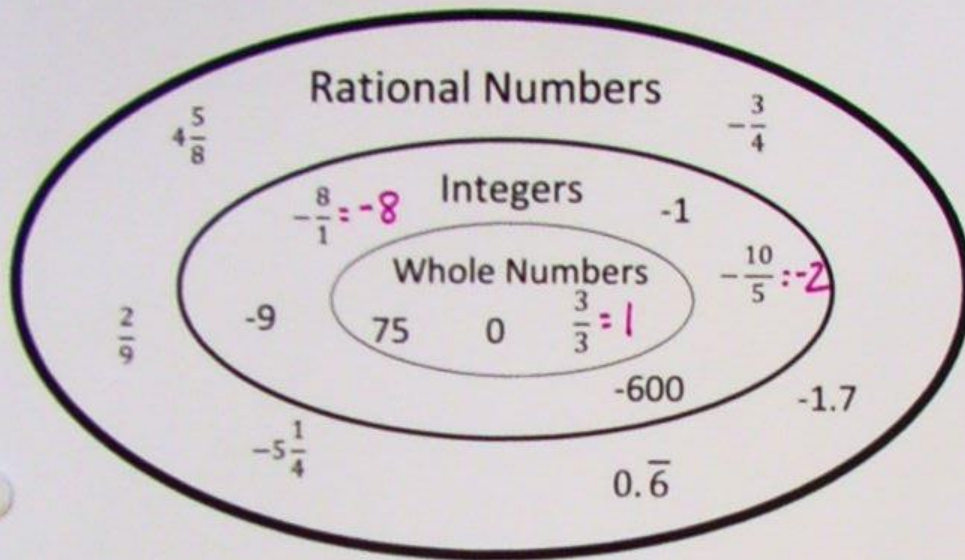


Objectives: I can identify types of rational numbers and express equivalent numbers for comparison.

Rational Numbers

Numbers have different classifications. Some numbers can be classified in multiple ways. A **rational** number is any number that you can write as a ratio, $\frac{a}{b}$ of two integers, where b is not zero. The diagram below shows relationships among rational numbers.



Always simplify numbers before classifying them. Every whole number is also an integer and a rational number. Every integer is also a rational number.

Practice

Identify the classification(s) for the following numbers by circling the classification(s) for each.

- | | | | |
|---------------------|--------------|---------|-----------------|
| 1) 5.8 | Whole Number | Integer | Rational Number |
| 2) 6 | Whole Number | Integer | Rational Number |
| 3) -10 | Whole Number | Integer | Rational Number |
| 4) $0.\overline{6}$ | Whole Number | Integer | Rational Number |
| 5) $\frac{1}{2}$ | Whole Number | Integer | Rational Number |
| 6) $-\frac{2}{3}$ | Whole Number | Integer | Rational Number |

Express each of the fractions as decimals.

1) $\frac{1}{9} = 0.\bar{1}$

2) $\frac{2}{9} = 0.\bar{2}$

3) $\frac{3}{9} = 0.\bar{3} = \frac{1}{3}$

4) $\frac{4}{9} = 0.\bar{4}$

5) $\frac{5}{9} = 0.\bar{5}$

6) $\frac{6}{9} = 0.\bar{6} = \frac{2}{3}$

7) $\frac{7}{9} = 0.\bar{7}$

8) $\frac{8}{9} = 0.\bar{8}$

9) $\frac{9}{9} = 1$

10) What pattern is shown when the denominator is 9? The numerator repeats after the decimal.

11) What fraction do you think would be equivalent to $0.\bar{14}$? $\frac{14}{99}$

$\frac{7}{14} = \frac{1}{2}$

12) What fraction do you think would be equivalent to $0.\bar{128}$? $\frac{128}{999}$

13) What fraction do you think would be equivalent to $0.\bar{32}$? $\frac{32}{99}$

Check your answers to #11 - 13 by changing your fraction to a decimal.

Write the fraction equivalent to each of the following decimal numbers.

14) $-0.\bar{2} = -\frac{2}{9}$

15) $5.\bar{3} = 5\frac{3}{9} = 5\frac{1}{3}$

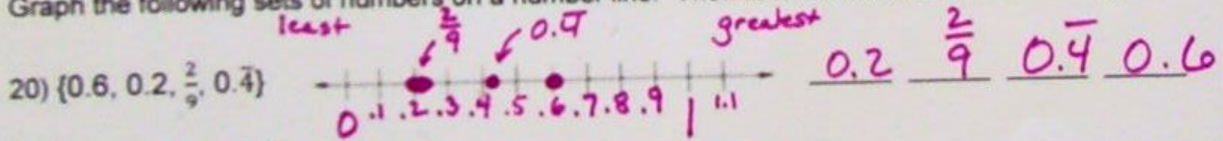
16) $0.4444444 = \frac{4}{9} = 0.\bar{4}$

17) $-0.\bar{16} = -\frac{16}{99}$

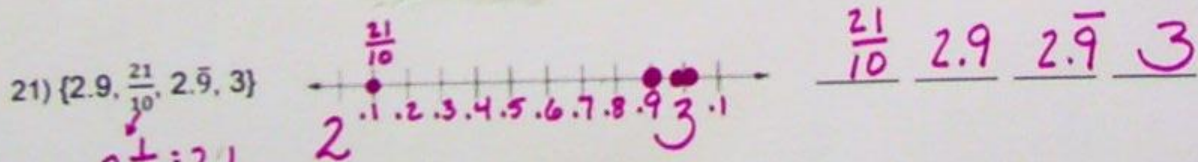
18) $4.\bar{124} = 4\frac{124}{999}$

19) $0.27272727 = \frac{27}{99} = \frac{3}{11}$

Graph the following sets of numbers on a number line. Then list them in order from least to greatest.



$0.2 < 0.2\bar{2}$



$2\frac{1}{10} = 2.1$