

Chapter 2: Algebra Rational Numbers

2-1 Fractions and Decimals

rational numbers - any number that can be expressed as a fraction

Examples: $-7 = \frac{7}{1}$ $2\frac{2}{3} = \frac{8}{3}$

All integers, fractions, and mixed #s are rational #s

$$\frac{21}{21} = 100\%$$

$$\frac{20}{21} = 95\% = 0.95$$

$$\frac{19}{21} = 90\% = 90\%$$

$\frac{\text{numerator}}{\text{denominator}}$ divided by

$$\frac{1}{4} = 0.25 \quad 25\%$$

$$f \leftrightarrow d$$

$$S \rightarrow D$$

terminating decimal - it ends!

Mixed Number

$$1\frac{2}{3} = \frac{5}{3} = 1.\overline{6}$$

$$1 \boxed{A\%} 2 \boxed{A\%} 3$$

Display

$$1 _ 2 _ 3$$

$$\frac{2}{3} = 0.\overline{6} + 1.0 = 1.\overline{6}$$

a.) 0.75

b.) -0.6

$$\frac{3}{5} = 0.6 \text{ then add negative } -0.6$$

c.) $2.\overline{1}$

Bar
Notation

repetend bar
repeating digit

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

d.) $5.1\overline{6}$

Writing a Repeating Decimal as a fraction

$0.\overline{5}$ as a fraction $\left(\frac{5}{9}\right)$

$$\text{Let } N = 0.\overline{5}$$

$$\begin{array}{r} 0.5 \\ \times 10 \\ \hline 0.50 \end{array}$$

$$\begin{array}{r} 10N = 5.\overline{5} \\ - 1N = -0.\overline{5} \\ \hline 9N = 5.0 \end{array}$$

$$N = \frac{5}{9}$$

Guided Practice

e.) $-0.14 = -\frac{7}{50}$

f.) $8.75 = 8\frac{3}{4}$

g.) $0.\overline{3}$

$$N = 0.\overline{3}$$

$$\begin{array}{r} 10N = 3.\overline{3} \\ - 1N = 0.\overline{3} \\ \hline \end{array}$$

$$\frac{9}{9}N = \frac{3.0}{9}$$

$$N = \frac{3}{9} = \frac{1}{3}$$

$$h.) \quad -1.\overline{4}$$