

Pre-Algebra

Essential Question: In what ways can we represent rational numbers?

Do Now: Represent each rational number below as a fraction in the form of $\frac{a}{b}$.

A. $3\frac{1}{2}$

$$\frac{7}{2}$$

B. 0.4

$$\frac{4}{10} \rightarrow \frac{2}{5}$$

C. $0.\bar{3}$

$$\frac{1}{3}$$

D. 5

$$\frac{5}{1}$$

Reminder: Every rational number can be written as a ratio in the form of $\frac{a}{b}$ in which a and b are both integer values and $b \neq 0$.



Think About this...

Why can't we write a fraction with zero in the denominator?

We cannot divide a number by zero.

$\frac{4}{0} = \text{undefined}$ because $0 \times \frac{?}{?} = 4$
↑
does not exist!

Representing Rational Numbers as Fractions and Decimals

Fractions → Decimals

Divide the numerator by the denominator.

<p>1. $\frac{3}{4} = 0.75$</p> $\begin{array}{r} 0.75 \\ 4 \overline{)3.00} \\ \underline{-28} \downarrow \\ 20 \\ \underline{-20} \\ 0 \end{array}$	<p>2. $-\frac{5}{6} = -0.8\bar{3}$</p> $\begin{array}{r} 0.833 \\ 6 \overline{)5.000} \\ \underline{-48} \downarrow \\ 20 \\ \underline{-18} \downarrow \\ 20 \\ \underline{-18} \\ 2 \end{array}$	<p>3. $-7\frac{3}{11} = -7.\bar{27}$</p> $\begin{array}{r} 0.2727 \\ 11 \overline{)3.0000} \\ \underline{-22} \downarrow \\ 80 \\ \underline{-77} \downarrow \\ 30 \\ \underline{-22} \downarrow \\ 80 \\ \underline{-77} \\ 3 \end{array}$
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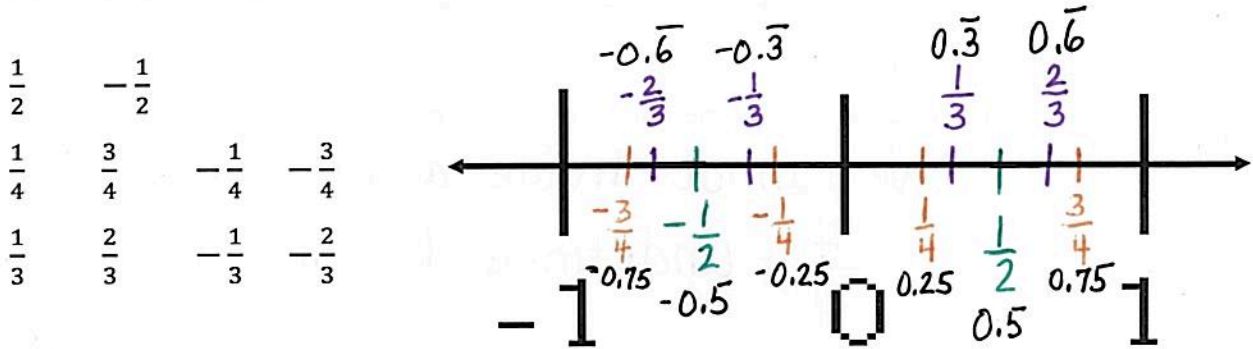
Decimals → Fractions
 Read it, Write it, Simplify.

and 0. ↑ ↑ ↓ ↑
 tenths hundredths thousandths

<p>4. 0.2</p> $\frac{2 \div 2}{10 \div 2} = \boxed{\frac{1}{5}}$	<p>5. -0.57</p> $-\frac{57}{100}$	<p>6. -2.04</p> $-2 \frac{4 \div 4}{100 \div 4} = \boxed{-2 \frac{1}{25}}$	<p>7. 3.005</p> $3 \frac{5 \div 5}{1000 \div 5} = \boxed{3 \frac{1}{200}}$
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Common Rational Numbers

Place the following "common" rational numbers on the number line below.



It's Your Turn Now

Write each rational number as a decimal using long division.

<p>8. $-\frac{5}{16} = -0.3125$</p> $\begin{array}{r} 0.3125 \\ 16 \overline{) 5.0000} \\ \underline{-48} \\ 20 \\ \underline{-16} \\ 40 \\ \underline{-32} \\ 80 \\ \underline{-80} \\ 0 \end{array}$	<p>9. $4 \frac{13}{33} = 4.\overline{39}$</p> $\begin{array}{r} 0.393 \\ 33 \overline{) 13.000} \\ \underline{-99} \\ 310 \\ \underline{-297} \\ 130 \\ \underline{-99} \\ 31 \end{array}$
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Write each rational number as a fraction in simplest form.

<p>10. -0.72</p> $-\frac{72}{100} \div 4 = \boxed{-\frac{18}{25}}$	<p>11. $1.7 = 1\frac{7}{10}$</p>	<p>12. 25.018</p> $25\frac{18}{1000} \div 2$ $\boxed{25\frac{9}{500}}$
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The TAKEAWAY

Every rational number can be written as a fraction in the form of $\frac{a}{b}$ in which a and b are both integer values and $b \neq 0$. Fractions can also be written as decimals that either

terminate or repeat.

Partner Up!



$$\begin{array}{r} 9.5 \quad 45 \\ \rightarrow \frac{20.5}{100} \end{array}$$

13. Order the numbers from least to greatest. $-\frac{1}{2}$ $\frac{9}{20}$ -1 0.5 $\frac{2}{5}$ -0.4 1
 -0.5 0.45 0.4

$$-1, -\frac{1}{2}, -0.4, \frac{2}{5}, \frac{9}{20}, 0.5, 1$$

14. What number(s) below are equivalent to $3\frac{1}{5}$? Circle all that apply. $\frac{1}{5} = 0.2$

(A) 3.2

(B) $\frac{16}{5}$
 $3\frac{1}{5}$

C. $\frac{320}{1000}$

(D) $2\frac{6}{5}$
 $\frac{16}{5}$
 $3\frac{1}{5}$

E. $-3\frac{2}{10}$