

Lesson 2.1

Rational Numbers

(Any number that can be written as a ratio of two integers.)



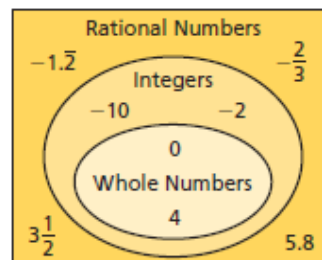
Key Idea

2.1 Notes

Get out your spiral notebooks!

Rational Numbers

A **rational number** is a number that can be written as $\frac{a}{b}$ where a and b are integers and $b \neq 0$.



Terminating decimal- A decimal that terminates, or ends.

Repeating decimal- A decimal with a pattern that repeats indefinitely, indicated by a line over the portion that repeats.

Example 1:

a. Write $-2\frac{1}{4}$ as a decimal.

$$\frac{1}{4} = 1 \div 4 = 0.25$$

$$\rightarrow -2.25$$

b. Write $\frac{5}{11}$ as a decimal.

$5 \div 11$

$0.\overline{4545}$

$$\begin{array}{r} 11 \overline{) 5.0000} \\ \underline{-44} \\ 60 \\ \underline{-55} \\ \star 50 \\ \underline{-44} \\ 60 \\ \underline{-55} \\ 5 \end{array}$$

What repeats is the "45," not just the "4" or "5".
Writing $0.\overline{4545}$ or $0.45\overline{45}$ would be redundant.

★ At this point we can tell that the decimal will repeat. To be sure, we can keep going and see that we will continue to have "454545...".

Write the rational number as a decimal.

1. $-\frac{6}{5}$

$$\begin{array}{r} 1.2 \\ 5 \overline{) 6.0} \\ \underline{-5} \\ 10 \\ \underline{-10} \\ 0 \end{array}$$

-1.2

2. $-\frac{7}{8}$

$$\begin{array}{r} 0.875 \\ 8 \overline{) 3.000} \\ \underline{-24} \\ 60 \\ \underline{-56} \\ 40 \\ \underline{-40} \\ 0 \end{array}$$

-7.375

$$\begin{array}{r} 3 \overline{) 27} \\ \underline{\times 5} \\ 135 \end{array}$$

$$\begin{array}{r} 5 \overline{) 27} \\ \underline{\times 8} \\ 216 \end{array}$$

$$\begin{array}{r} 4 \overline{) 27} \\ \underline{\times 7} \\ 189 \end{array}$$

3. $1\frac{5}{27} = \frac{32}{27}$

$$\begin{array}{r} 1.1851 \\ 27 \overline{) 32.000} \\ \underline{-27} \\ \star 450 \\ \underline{-27} \\ 280 \\ \underline{-216} \\ 140 \\ \underline{-135} \\ \star 50 \\ 27 \end{array}$$

$1.\overline{185}$

Example 2:

Write -0.26 as a fraction in simplest form.

$$\frac{-0.26}{1} = \frac{-26}{100} = \boxed{-\frac{13}{50}}$$

$$2 \text{ decimal places} = \frac{?}{100}$$

Write the decimal as a fraction or a mixed number in simplest form.

4. 0.125

$$\frac{125 \div 25}{1000 \div 25}$$

$$\frac{5 \div 5}{40 \div 5}$$

$$\boxed{\frac{1}{8}}$$

5. -10.25

$$-10\frac{25}{100}$$

$$\boxed{-10\frac{1}{4}}$$

Example 3:

The table shows the elevations of four sea creatures relative to sea level. Which of the sea creatures are deeper than the whale? Explain.

Creature	Elevation (kilometers)
Anglerfish	$-\frac{13}{10}$ Between -1.5 and -1
Squid	$-2\frac{1}{5}$ Between -2.5 and -2
Shark	$-\frac{2}{11}$ Between -0.5 and 0
Whale	-0.8 Between -1 and -0.5

The squid and the anglerfish

