Lesson 2.4

Multiplying and Dividing Rational Numbers (Decimals)

Essential Question

How can you use what you know about multiplying and dividing integers to multiply and divide decimals?

Same rules!

+	−	−
−	+	−
−	−	+

Same sign --> Positive

Different signs --> Negative

Example 1:

Find $-2.5 \cdot 3.6$ = −9

$$\begin{array}{r} {}^{1}2.5 \\ \times\ 3.6 \\ \hline {}^{1}150 \\ +750 \\ \hline 900 \end{array}$$

Different signs = Negative

Multiply as if there are no decimals.

There is one decimal place in 2.5 and one decimal place in 3.6, so move two decimals to the left in your answer.

Example 2:

Est: $12 \div (-4) = -3$

Find $12.48 \div (-4.8)$ = −2.6

$$4.8\overline{)12.48}$$

$$48\overline{)124.8}$$

$$\begin{array}{r} 2.6 \\ 48\overline{)124.8} \\ -96 \\ \hline 288 \\ -288 \\ \hline 000 \end{array}$$

$$\begin{array}{r} {}^{1}48 \\ \times\ 2 \\ \hline 96 \end{array}$$

$$\begin{array}{r} {}^{4}48 \\ \times\ 5 \\ \hline 240 \end{array} \qquad \begin{array}{r} 240 \\ +48 \\ \hline 288 \end{array}$$

We don't want a decimal in our divisor (the number on the outside), so we multiply both numbers by a multiple of 10. (10 for one decimal place, 100 for two decimal places, etc.)

Multiply or divide.

1. $1.8(-5.1) = -9.18$

$$\begin{array}{r} 1.8 \\ \times\ 5.1 \\ \hline 18 \\ +900 \\ \hline 9.18 \end{array}$$

2. $-7.2 \cdot 0.1 \cdot (-100)$

$-7.2 \cdot (-10)$

72

3. $-3.45 \div (-1.5) = +2.3$

$1.5\overline{)3.45}$

$$\begin{array}{r} 2.3 \\ 15\overline{)34.5} \\ -30 \\ \hline 45 \\ -45 \\ \hline 0 \end{array}$$

4. $6.45 \div (-30) = -0.215$

$$\begin{array}{r} .215 \\ 30\overline{)6.450} \\ -60 \\ \hline 45 \\ -30 \\ \hline 150 \\ -150 \\ \hline 0 \end{array}$$

Example 3:

An investor owns Stocks A, B, and C. What is the mean change in the value of the stocks?

Account Positions

Stock	Original Value	Current Value	Change
A	600.54	420.15	−180.39
B	391.10	518.38	127.28
C	380.22	99.70	−280.52

$180.39 + 280.52 = 460.91$

$460.91 - 127.28 = 333.63$

$$\frac{-180.39 + 127.28 + (-280.52)}{3} = \frac{-480 + 127.28}{3}$$

$$\frac{-333.63}{3} \rightarrow 3\overline{)333.63}$$

$$\begin{array}{r} 111.21 \\ 3\overline{)333.63} \\ -3\downarrow \\ \hline 03 \\ -3\downarrow \\ \hline 03 \\ -3\downarrow \\ \hline 06 \\ -6 \\ \hline 03 \\ -3 \\ \hline 0 \end{array}$$

$= -111.21$