2.4B Multiplying & Dividing Rational Numbers – Decimals

Recall the rules for multiplying and dividing integers:

SAME signs = POSITIVE answer

DIFFERENT signs = NEGATIVE answer

multiplying decimals – multiply like whole numbers

- number of decimal places in the problem = number of decimal places in the answer

dividing decimals – use long division to divide

- cannot have decimal in divisor (outside), move the decimal to the right, move the decimal on the dividend (inside) the same number of times
- complete long division
- bring decimal straight up

Ex: $-2.5 \times 3.6 = \boxed{-9}$

$$\begin{array}{r} 2.5 \\ \times\ 3.6 \\ \hline 150 \\ 750 \\ \hline 9.00 \end{array}$$

Ex: $-4.8\,(-5.2) = \boxed{24.96}$

$$\begin{array}{r} 4.8 \\ \times\ 5.2 \\ \hline 96 \\ 2400 \\ \hline 24.96 \end{array}$$

Ex: $-0.25 \div -0.05 = \boxed{5}$

$0.05\overline{)0.25} \rightarrow 5\overline{)25}$

$$\begin{array}{r} 5 \\ 5\overline{)25} \\ -25 \\ \hline \end{array}$$

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Ex: $-3.45 \div (-15) = \boxed{0.23}$

$$\begin{array}{r} 0.23 \\ 15\overline{)3.45} \\ -30 \\ \hline 45 \\ -45 \\ \hline \end{array}$$

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Ex: $-5 \div 1.5$

$1.5\overline{)5} \rightarrow 15\overline{)50.0}$

$$\begin{array}{r} 3.\overline{3} \\ 15\overline{)50.0} \\ -45 \\ \hline 50 \\ -45 \\ \hline 5 \end{array}$$

* can only use vinculum after decimal! *

Is it reasonable? (decimal wise)

$-5 \div 1.5$

$\approx -5 \div 1$

≈ -5

33?

3.3?

0.33?

330?

Recall **Order of Operations**:

1) Evaluate expressions inside grouping symbols: ( ) [ ] { } | | & fraction bars
2) Evaluate powers: 2^3
3) Multiply and Divide LEFT to RIGHT → $8 \div 2 \cdot 3$
4) Add and Subtract LEFT to RIGHT → $8 - 2 + 3$

Use Please Excuse My Dear Aunt Sally to help you remember!

Ex: $-2.54 - |6.2| + 2.3^2$

K C C

$-2.54 + -6.2 + (2.3)^2$

$-2.54 + (-6.2) + 5.29$

$-8.74 + 5.29$

$\boxed{-3.45}$

$$\begin{array}{r} 2.3 \\ \times\ 2.3 \\ \hline 69 \\ 460 \\ \hline 5.29 \end{array} \qquad \begin{array}{r} 2.54 \\ +\ 6.2 \\ \hline 8.74 \end{array} \qquad \begin{array}{r} 8.74 \\ -\ 5.29 \\ \hline 3.45 \end{array}$$

Ex: An investor owns Stocks A, B, and C. What is the mean (average) 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

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

$$= \frac{-333.63}{3}$$

$$= -111.21$$

The mean change in the value of the stocks is −$111.21.

Try These:

Find the difference. Check for reasonableness. Are your answers reasonable?

(1) 1.8 (-5.1) $\boxed{-9.18}$

(2) -6.3 (-0.6) $\boxed{3.78}$

(3) -7.2 (0.1) (-100) $\boxed{72}$