

THE SIGN RULES FOR ADDING, SUBTRACTING, MULTIPLYING, AND DIVIDING RATIONAL NUMBERS:

signs side by side
or multiplying /dividing

$$+ + = +$$

$$- - = +$$

$$+ - = -$$

$$- + = -$$

Example:

At 6 a.m., the temperature was $-3\text{ }^{\circ}\text{C}$. By 10 a.m., the temperature had risen by $6\text{ }^{\circ}\text{C}$. What was the temperature at 10 a.m.?

$$\begin{aligned} & -3 + 6 \\ = & 3\text{ }^{\circ}\text{C} \end{aligned}$$

Example:

At the beginning of June, the Frosty Snow Blower Company was \$235.46 in debt. By the end of August, the company had increased its debt by \$156.71.

a) Use a rational number to represent each amount. **-235.46 and -156.71**

b) Calculate how much debt the company had at the end of August.

$$\begin{aligned} & -235.46 + (-156.71) \\ = & -235.46 - 156.71 \\ = & -392.17 \end{aligned}$$

At the end of August, the company owed \$392.17.

Estimating if answers are positive or negative:

a) $-6.5 + 2.3$

=
$$\begin{array}{r} -6.5 \\ +2.3 \\ \hline -4.2 \end{array}$$

b) $9.75 + (-5.14)$

=
$$\begin{array}{r} 9.75 \\ -5.14 \\ \hline 4.61 \end{array}$$

c) $-0.235 + (-52.3)$

=
$$\begin{array}{r} -0.235 \\ -52.3 \\ \hline -52.535 \end{array}$$

ADDING RATIONAL NUMBERS IN FRACTION FORM:

To add fractions, they must have a COMMON, POSITIVE denominator. Then, ONLY the NUMERATORS are added working from left to right. Reduce answers where necessary.

ADDING FRACTIONS -

Examples:



$$\frac{1}{4} + \frac{3}{4}$$
$$= \frac{4}{4}$$

$$\frac{1}{4} + \frac{2}{3}$$
$$\begin{array}{l} \times 3 \quad \curvearrowright \\ \frac{3}{12} + \frac{8}{12} \quad \curvearrowleft \times 4 \\ \hline \frac{11}{12} \end{array}$$

ADDING FRACTIONS -

Example:

$$4\frac{1}{4} + 1\frac{3}{8}$$

If
then
6
5/8
8

$$= 4\frac{2}{8} + 1\frac{3}{8}$$
$$= 5\frac{5}{8}$$

ADDING FRACTIONS -

Example: $-3\frac{1}{3} + 2\frac{5}{6}$

$$\begin{array}{r} -\frac{10}{3} + \frac{17}{6} \\ -\frac{20}{6} + \frac{17}{6} \\ -\frac{3}{6} \\ -\frac{1}{2} \end{array}$$

Homework

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3. a)

$$0.8 + 1.5 = 2.3$$

↑
Begin

↑
Middle

↑
End

CONCEPT REINFORCEMENT:

MMS9:

Page 111: #5 and 7

Page 112: #9 (no estimates), 10, 11, 12, 13, 14,
and 15ab (not c)

Page 113: #16, 17, 18, 20, and 21

(All answers in the form of improper fractions are expressed as mixed numbers in the back of the book except for #14.)