

Study Guide

Adding and Subtracting Rational Numbers

The rules for adding and subtracting integers also apply to adding and subtracting rational numbers.

Rational Number	Form $\frac{a}{b}$
3	$\frac{3}{1}$
$-2\frac{3}{4}$	$-\frac{11}{4}$
0.125	$\frac{1}{8}$

Example 1: Add $(-2\frac{1}{3}) + 5\frac{2}{3}$.

$$\begin{aligned} (-2\frac{1}{3}) + 5\frac{2}{3} &= + (|5\frac{2}{3}| - |-2\frac{1}{3}|) \\ &= + (5\frac{2}{3} - 2\frac{1}{3}) \\ &= 3\frac{1}{3} \end{aligned}$$

Example 2: Subtract $-3.42 - 5.82$.

$$\begin{aligned} -3.42 - 5.82 &= -3.42 + (-5.82) \\ &= -9.24 \end{aligned}$$

Previously you have added pairs of numbers. To add three or more numbers, first group the numbers in pairs. Use the commutative and associative properties to rearrange the addends if necessary. Study the example at the right.

Example 3: Add $-\frac{2}{3} + \frac{4}{5} + (-\frac{5}{3})$.

$$\begin{aligned} -\frac{2}{3} + \frac{4}{5} + (-\frac{5}{3}) &= [-\frac{2}{3} + (-\frac{5}{3})] + \frac{4}{5} \\ &= -\frac{7}{3} + \frac{4}{5} \\ &= -\frac{35}{15} + \frac{12}{15} \\ &= -\frac{23}{15} \text{ or } -1\frac{8}{15} \end{aligned}$$

Find each sum or difference

1. $-\frac{9}{11} + (-\frac{13}{11})$

2. $\frac{5}{8} + (-\frac{1}{12})$

3. $-0.005 + 0.0043$

4. $\frac{3}{8} - (-\frac{1}{8})$

5. $4.59 - 2.31$

6. $-\frac{7}{5} - \frac{2}{7}$

Evaluate each expression if $x = -4$, $y = 3$, $z = -7$.

7. $x + 16$

8. $0 + y$

9. $27 - (x - z)$

10. $100 + (x + y)$

Find each sum.

11. $-36.4 + 29.15 + (-14.2)$

12. $6.5x + 12.3x + (-14.9x)$

13. $0.85 + 13.6 + (-3.01)$

14. $-9y + (-20y) + 6y$

15. $\frac{3}{5} + (-\frac{5}{8}) + \frac{1}{4}$

16. $12p + 11p + (-23p)$