Printout

February 7, 2023

$+ \cdot + \Rightarrow +$ $\quad + \cdot - \Rightarrow -$

$- \cdot - \Rightarrow +$ $\quad - \cdot + \Rightarrow -$

Section 3.3 Subtracting Rational Numbers

To subtract rational numbers we **ADD THE OPPOSITE.** Every subtraction problem can be rewritten as an addition problem.

Integer Examples:

a). $(+5) - (+3)$

$5 - 3$

2

b). $7 - (-4)$

$7 + 4$

11

c). $-4 - (-2) - (+3)$

$-4 + 2, -3$

$-2 - 3$

-5

d, $7 + \#\# + -2$

$= 7 - 2$

$= 5$

Decimal Examples:

a). $(+0.23) - (-1.46)$

$0.23 + 1.46$

1.69

b). $-(1.39) - (+2.41)$

$-1.39 - 2.41$

-3.80

1.39

2.41

3.80

Fraction Examples:

*** we still need common denominators to subtract fractions.

*** we still need to change mixed numbers to improper fractions.

a). $\frac{5}{7} - \frac{-3}{7}$

$5 - (-3) = 5 + 3 = 8$

Ans = $\frac{8}{7}$ ✓ $1\frac{1}{7}$ ✓

b). $1\frac{1}{4} + -(-2\frac{2}{3})$

$\frac{5 \times 3}{4 \times 3} + \frac{8 \times 4}{3 \times 4}$

$\frac{15}{12} + \frac{32}{12} = \frac{47}{12}$

Whenever there is a negative fraction, use the negative sign with the numerator.

Try These!

1. $(-8.93) - (+1.25)$

2. $3.34 - (-1.16)$

3. $\frac{-4}{5} - \frac{-1}{2}$

4. $1\frac{1}{6} - \frac{3}{4}$

Answers: 1. -10.18 2. 4.5 3. $\frac{-3}{10}$ 4. $\frac{5}{12}$

Subtraction Word Problems

1. The temperature in St. John's is 6.5^0C. In Corner Brook it is 8^0C colder. What is the temperature in Corner Brook?

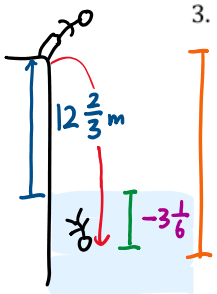
Answer: $6.5 - 8 = -1.5\ ^\circ C$

8 − 6.5

2. A piece of pipe is 146.3 cm long. A piece 13.7 cm is cut off. How long is the remaining piece?

Answer: $146.3 - 13.7\text{cm} = 132.6\text{ cm}$

146.3 − 13.7 = 132.6



3. A person climbs $12\frac{2}{3}$ meters above the water to the top of a cliff. He dives into the water and reaches $-3\frac{1}{6}$ meters below the surface. What is the difference in these heights?

Answer: $12\frac{2}{3} - \left[-3\frac{1}{6}\right]$

$\frac{38}{3} + \frac{19}{6}$

$\frac{76}{6} + \frac{19}{6} = \frac{95}{6}$ m

4. Which expression has the same answer as $-2.3 - (-3.9)$?

a). $-2.3 + (-3.9)$ b). $2.3 - (-3.9)$ c). $-2.3 - (+3.9)$ d). $-2.3 + (+3.9)$

Answer:

5. Determine the missing number in each subtraction equation.

a). $+2.5 - \boxed{X} = 3.8$

$-2.5 \quad -2.5$

$-X = 1.3$

$X = -1.3$

b). $\boxed{X} - \frac{-3}{10} = \frac{2}{5}$

$X + \frac{3}{10} = \frac{2}{5} - \frac{3}{10}$

$-\frac{3}{10}$

$X = \frac{4}{10} - \frac{3}{10}$

$X = \frac{1}{10}$

Answers: a). -1.3 b). $\frac{1}{10}$

$2.5 - \boxed{-1.3} = 3.8$

$2.5 + 1.3 = 3.8$

$3.8 = 3.8$ ✓

Do P. 98

#5, #7 (Right)

P. 106 Q5, 7, 8, 10 (Right)

Short Quiz 3.1 – 3.3
on Monday