Lesson 4: Subtracting Rational Numbers

Let's bring addition and subtraction together.

4.1: Number Talk: Missing Addend

1. Solve each equation mentally.

$247 + c = 458$ 211

$c + 43.87 = 58.92$ 15.05

$\frac{15}{8} + c = \frac{51}{8}$ $\frac{36}{8} \rightarrow 8\overline{)36}$ (4, −32, 4) $4\frac{4}{8} \div 4 \rightarrow 4\frac{1}{2}$

2. Rewrite each addition equation as a subtraction equation.

(1) Keep the first number

(2) Change your subtraction sign to addition

(3) Make the next number the opposite

(4) Solve, like usual

$6 - (-12)$ → $6 + 12$ = 18

$-11 - (-4)$ → $-11 + 4$ = −7

$2 - 7$ → $2 + -7$ = −5

4.2: Expressions with Altitude

A mountaineer is changing elevations. Write an expression that represents the difference between the final elevation and beginning elevation. Then write the value of the change. The first one is done for you.

beginning elevation (feet)	final elevation (feet)	difference between final and beginning	change
+400	+900	900 - 400	+500
+400	+50	50 - 400	-350
+400	-120	-120 - 400	-520
-200	+610	610 - (-200)	810
-200	-50	-50 - (-200)	150
-200	-500	-500 - (-200)	-300
-200	0	0 - (-200)	200

* use rules to make it easier

50 + (-400)
-120 + (-400)
610 + 200
-50 + 200
-500 + 200
0 + 200

Are you ready for more?

Fill in the table so that every row and every column sums to 0. Can you find another way to solve this puzzle?

	-12	0		5
0			-18	25
25		-18	5	-12
-12				-18
	-18	25	-12	

	-12	0		5
0			-18	25
25		-18	5	-12
-12				-18
	-18	25	-12	

4.3: Does the Order Matter?

1. Find the value of each subtraction expression.

A	B
$3-2$ 1	$2-3$ -1
$5-(-9)$ 14	$(-9)-5$ -14
$(-11)-2$ -13	$2-(-11)$ 13
$(-6)-(-3)$ -3	$(-3)-(-6)$ 3
$(-1.2)-(-3.6)$ 2.2	$(-3.6)-(-1.2)$ -2.2
$(-2\frac{1}{2})-(-3\frac{1}{2})$ 1	$(-3\frac{1}{2})-(-2\frac{1}{2})$ -1

$3+(-2)$

$5+9$

$-11+-2$

$-6+3$

$-1.2+3.6$

$-2\frac{1}{2}+3\frac{1}{2}$

$2+(-3)$

$-9+-5$

$2+11$

$-3+6$

$-3.6+1.2$

$-3\frac{1}{2}+2\frac{1}{2}$

2. What do you notice about the expressions in Column A compared to Column B?

3. What do you notice about their values?