SEPTEMBER 14, 2018

UNIT 1: RATIONAL NUMBERS

SECTION 3.3:
SUBTRACTING RATIONAL NUMBERS

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MATH 9

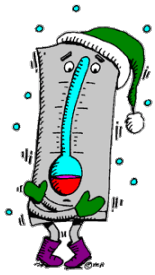
WHAT'S THE POINT OF TODAY'S LESSON?

We will continue working on the Math 9 Specific Curriculum Outcome (SCO) "Numbers 3" OR "N3" which states:

"Demonstrate an understanding of rational numbers by: comparing and ordering rational numbers; solving problems that involve arithmetic operations on rational numbers."

What does THAT mean???

SCO N3 means that we will compare and order (largest vs smallest), add, subtract, multiply and divide fractions and any numbers that can be written as fractions. For example, sometimes we will work with 1/2 or 0.5. We have to know how to work with both.



Warm Up

Determine the sum of each of the following:

1) $\frac{-3}{7}+\left(\frac{-3}{7}\right)$

2) a) 2.7 + 1.8 b) -3.7 + 4.5 c) 2.7 + (-8.7)

1) Express each fraction as a decimal.

a) $\frac{1}{5}$ b) $\frac{2}{15}$ c) $\frac{-4}{13}$

2) Express each decimal as a fraction or mixed number in simplest form.

a) **0.4** b) **-3.2** c) **1.125**

3) Determine each sum using fractions. (Show all work and reduce final answers to lowest terms.)

a) $\frac{-6}{5} + \left(\frac{-2}{5}\right)$ b) $\frac{8}{3} + \frac{5}{4}$ c) $-3\frac{2}{7} + 2\frac{1}{4}$

Problems with the homework?

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

SECTION 3.3: SUBTRACTING RATIONAL NUMBERS

Remember - Rational numbers have many forms...

Natural numbers
Whole Numbers
Integers
Rational Numbers
fractions
end
repeat

THE SIGN RULES FOR SUBTRACTING RATIONAL NUMBERS:

multiply

$+ + = +$

$- - = +$ $6-(-4)$

$+ - = -$

$- + = -$

Example:

Canada's national debt was $559 billion in 1999. By 2008, this debt had been reduced to $467 billion.

a) Write each amount as a rational number.

-559 -467

b) How much of Canada's national debt was paid back between 1999 and 2008?

$$\begin{aligned} & -467 - (-559) \\ = \; & -467 + 559 \\ = \; & 92 \end{aligned}$$

Example:

Here is part of a stock market report for several Canadian companies from February 5, 2008:

COMPANY	STOCK PRICE AT THE END OF DAY ($)	STOCK PRICE AT THE START OF DAY ($)	(END OF DAY) - (START OF DAY)
Bombardier	4.670	4.710	-0.040
CNR	50.630	51.330	-0.700
Cdn. Tire Corp.	64.840	65.970	-1.130
Potash Corp. of Sask.	144.580	144.15	0.430

What does it mean when the difference in prices is:

a) positive? The stock price went up.

b) negative? The stock price went down.

Subtracting Decimal Numbers:

a) $-2.3 - (-3.9)$

$-2.3 + 3.9$

1.6

b) $9.75 - (+5.14)$

4.61

Example:

A diver jumps off a cliff that is 14.7 m above sea level. After hitting the water, he plunges 3.8 m below the surface of the water before returning to the surface.

a) Use rational numbers to find the difference in heights from the top of the cliff to the bottom of his dive.

$14.7 - (-3.8)$

$14.7 + 3.8$

18.5m

b) The water is 5.6 m deep. What is the distance from the ocean floor to the bottom of the dive?

$5.6 - 3.8$

1.8m

SUBTRACTING RATIONAL NUMBERS IN FRACTION FORM:

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

SUBTRACTING FRACTIONS -

Examples:

$$\frac{3}{4} - \frac{1}{4} = \frac{2}{4} = \frac{1}{2}$$

$$\frac{2}{3} - \frac{1}{4} = \frac{8}{12} - \frac{3}{12} = \frac{5}{12}$$

SUBTRACTING FRACTIONS -

Example: $-\frac{5}{4} + \left(-3\frac{1}{5}\right)$

$= -\frac{5}{4} + \frac{16}{5}$ (×5, ×4)

$= -\frac{25}{20} + \frac{64}{20}$

$= \frac{39}{20}$

$= 1\frac{19}{20}$

SUBTRACTING FRACTIONS -

Example: $2\frac{1}{2} - 4\frac{7}{8}$

$= \frac{5}{2} - \frac{39}{8}$ (×4)

$= \frac{20}{8} - \frac{39}{8}$

$= -\frac{19}{8}$

$= -2\frac{3}{8}$

CONCEPT REINFORCEMENT:

MMS9:

Page 119: #3, 4, 5, 6, 7 (no estimates), 8, and 9
Page 120: #10, 11, 12, 13, 15, and 17

MID-UNIT REVIEW:

MMS9:

Page 121: #1 to #10 (ALL!)