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UNIT 1: RATIONAL NUMBERS

SECTION 3.6: ORDER OF OPERATIONS WITH 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" and also explore SCO "Numbers 4" OR "N4". They state:

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

AND

"Explain and apply the order of operations, including exponents, with and without technology."

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.

SCO N4 means that we will work with rational numbers, especially fractions, without using calculators.

WARM UP:

Determine each quotient.

a) $8.4 \div (-1.2)$

$= -7$

b) $(-20.6) \div (-0.9)$

$= 22.\overline{8}$

c) $\left(-\frac{9}{11}\right) \div \left(\frac{7}{5}\right)$

$= \frac{-45}{55} \div \frac{77}{55}$

$= \frac{-45}{77}$

$= \frac{-9}{11} \times \frac{5}{7}$

$= \frac{-45}{77}$

d) $\left(-1\frac{2}{3}\right) \div 3\frac{1}{2}$

$= \frac{-5}{3} \div \frac{7}{2}$

$= \frac{-5}{3} \times \frac{2}{7}$

$= \frac{-10}{21}$

HOMEWORK QUESTIONS???
(pages 134 / 135 / 136, #3, 4, 6, 8, 11, 12 & 15)

6. $-5.6\text{ m} \div 3.5\text{ hours}$

$= -1.6\text{ m} \mid \text{hour}$

HOMEWORK QUESTIONS???
(pages 134 / 135 / 136, #3, 4, 6, 8, 11, 12 & 15)

8. $-12.5^{\circ}C \div -2.5^{\circ}C/\text{hour}$

$= 5 \text{ hours}$

HOMEWORK QUESTIONS???
(pages 134 / 135 / 136, #3, 4, 6, 8, 11, 12 & 15)

11. a) $1450.50 ÷ $30.75 /wk

= 47.17073 wks

48 wks

HOMEWORK QUESTIONS???
(pages 134 / 135 / 136, #3, 4, 6, 8, 11, 12 & 15)

15. $-17.28 ÷ 54 shares
= $- 0.32 / share

SECTION 3.6: ORDER OF OPERATIONS WITH RATIONAL NUMBERS

What does BEDMAS stand for?

B: Brackets
E: Exponents
D: Division
M: Multiplication } In order, from left to right.
A: Addition
S: Subtraction } In order, from left to right.

EXAMPLES:

1) $(-0.8) + 1.2 \div (-0.3) \times 1.5$

$= (-0.8) + (-4) \times 1.5$

$= (-0.8) + (-6)$

$= (-0.8) - 6$

$= -6.8$

EXAMPLES:

2) $(-3.2) - 0.9 \div [\, 0.7 - (-1.2) \,]^2$

$= (-3.2) - 0.9 \div (0.7 + 1.2)^2$

$= (-3.2) - 0.9 \div (1.9)^2$

$= (-3.2) - 0.9 \div 3.61$

$\doteq (-3.2) - 0.2493...$

$\doteq -3.4493...$

$\doteq -3.4$

0-4 Keep
5-9 +1

EXAMPLES:

3)

$$\frac{2}{3} \div \left[\frac{3}{4} + \left(-\frac{1}{2}\right)\right] \times \frac{1}{3}$$

$$= \frac{2}{3} \div \left(\frac{3}{4} - \frac{2}{4}\right) \times \frac{1}{3}$$

$$= \frac{2}{3} \div \frac{1}{4} \times \frac{1}{3}$$

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

$$= \frac{8}{9}$$

CONCEPT REINFORCEMENT:

MMS9:

Page 140: #4 and #7