Curriculum Outcome

N1: Demonstrate an understanding of rational numbers by: comparing and ordering rational numbers; solving problems that involve arithmetic operations on rational numbers.

Student Friendly:
“BEDMAS with fractions and decimals"

Order of Operations with Rational Numbers

Warm Up

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

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

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

$$= -6.8$$

Section 3.6
Order of Operations with Rational Numbers

Remember from operations

"BEDMAS".....order of

In the order
that
they appear

Using the Order of Operations with Decimals

Evaluate the following:

It is no difference with decimals....follow BEDMAS

1) $(-1.3) + 0.24 \times (-2)^2 \div (0.4)$

$= (-1.3) + 0.24 \times (4) \div (0.4)$

$= (-1.3) + (0.96) \div (0.4)$

$= (-1.3) + (2.4)$

$= 1.1$

BEDMAS

$$\left(\frac{2}{3}\right)^2 = \left(\frac{2}{3}\right)\left(\frac{2}{3}\right)$$

$$= \left(\frac{4}{9}\right)$$

$$\left(\frac{2}{3}\right)^2 = \frac{(2)^2}{(3)^2} = \frac{4}{9}$$

$$\left(\frac{5}{6}\right)^3 = \frac{(5)^3}{(6)^3}$$

$$= \left(\frac{125}{216}\right)$$

$\wedge$

x^y

y^x

$$\left(\frac{2}{3}\right)^{12} = \left(\frac{4096}{531\,441}\right)$$

Fractions

Remember fractions are just numbers

Use calculator to reduce

$$\left(\frac{2}{5}\right)^2 \div \left(\frac{2}{3} + \frac{4}{5}\right)$$

$$= \left(\frac{2}{5}\right)^2 \div \left(\frac{10}{15} + \frac{12}{15}\right)$$

$$= \left(\frac{2}{5}\right)^2 \div \left(\frac{22}{15}\right)$$

$$= \left(\frac{4}{25}\right) \div \left(\frac{22}{15}\right)$$

$$= \left(\frac{4}{25}\right) \times \left(\frac{15}{22}\right)$$

$$= \left(\frac{60}{550}\right)$$

$$= \left(\frac{6}{55}\right)$$

$$\frac{6}{5} \times \left(\frac{1}{4} + \frac{1}{4}\right)^2 - \frac{3}{20} \div \frac{2}{5}$$

Use calculator to reduce

$$= \frac{6}{5} \times \left(\frac{2}{4}\right)^2 - \frac{3}{20} \div \frac{2}{5}$$

$$= \frac{6}{5} \times \left(\frac{1}{2}\right)^2 - \frac{3}{20} \div \frac{2}{5}$$

$$= \frac{6}{5} \times \left(\frac{1}{4}\right) - \frac{3}{20} \div \frac{2}{5}$$

$$= \frac{6}{20} - \frac{3}{20} \div \frac{2}{5}$$

$$= \frac{3}{10} - \frac{3}{20} \div \frac{2}{5}$$

$$= \frac{3}{10} - \frac{3}{20} \times \frac{5}{2}$$

$$= \frac{3}{10} - \frac{15}{40}$$

$$= \frac{12}{40} - \frac{15}{40}$$

$$= \frac{-3}{40}$$

$\frac{3}{10} - \frac{3}{8}$

$\frac{24}{80} - \frac{30}{80}$

$-\frac{6}{80} = \frac{-3}{40}$

Do we need more practice?

1)

$$\left(-1\frac{3}{4}\right)-\left(-3\frac{1}{2}+5\right)\left(-3\frac{1}{2}+5\right)$$

Use calculator to reduce

$$=\left(\frac{-7}{4}\right)-\left[\frac{-7}{2}+\frac{5}{1}\right]\left[\frac{-7}{2}+\frac{5}{1}\right]$$

$$=\left(\frac{-7}{4}\right)-\left[\frac{-7}{2}+\frac{10}{2}\right]\left[\frac{-7}{2}+\frac{10}{2}\right]$$

$$=\left(\frac{-7}{4}\right)-\left[\frac{3}{2}\right]\left[\frac{3}{2}\right]$$

$$=\left(\frac{-7}{4}\right)-\left[\frac{9}{4}\right]$$

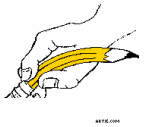
$$=\frac{-16}{4}$$

$$=-4$$

Using the Order of Operations with Fractions

Remember fractions are just numbers

BEDMAS



1) $\left(-\frac{3}{5}\right)\left(\frac{2}{5}\right)-\left(\frac{7}{30}\right)\div\left[\frac{1}{2}+\left(-\frac{1}{6}\right)\right]$

$= \left(\frac{-3}{5}\right)\left(\frac{2}{5}\right)-\left(\frac{7}{30}\right)\div\left[\frac{3}{6}+\frac{-1}{6}\right]$

$= \left(\frac{-3}{5}\right)\left(\frac{2}{5}\right)-\left(\frac{7}{30}\right)\div\left[\frac{2}{6}\right]$

$= \left(\frac{-3}{5}\right)\left(\frac{2}{5}\right)-\left(\frac{7}{30}\right)\div\left[\frac{1}{3}\right]$

$= \left(\frac{-6}{25}\right)-\left(\frac{7}{30}\right)\div\left[\frac{1}{3}\right]$

$= \left(\frac{-6}{25}\right)-\left(\frac{7}{30}\right)\times\left[\frac{3}{1}\right]$

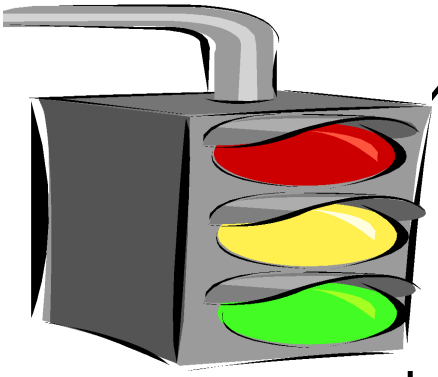
$= \left(\frac{-6}{25}\right)-\left(\frac{21}{30}\right)$

$= \left(\frac{-6}{25}\right)-\left(\frac{7}{10}\right)$

$= \left(\frac{-12}{50}\right)-\left(\frac{35}{50}\right)$

$= \frac{-47}{50}$

Class / Homework



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Questions

3cd, 4abcd, 7abd

12ad, 13d, 17

Final Answers

3c) 73

d) -0.192

4a) $\frac{1}{4}$ b) $-\frac{5}{4}$

c) $\frac{15}{8}$ d) $\frac{263}{60}$

7a) $-\frac{31}{12}$

b) $\frac{8}{9}$

d) -8

12a) $\frac{-19}{3}$

d) $\frac{17}{16}$

13d) Top = 3423.7 Bottom = -240.4

Answer = -14.2417

17) $-207.60\overline{3}$