

MPM 1D Review Day #2

Order of Operations

You can remember the order of operations by using the memory aid "BEDMAS".

Brackets

Exponents

Divide and **M**ultiply from left to right

Add and **S**ubtract from left to right

Example One

Evaluate the integer expression $(2 \times 3 - 2^2) + 4(6 - 1)$.

$$= (2 \times 3 - 4) + 4(6 - 1)$$

$$= (6 - 4) + 4(5)$$

$$= 2 + 20$$

$$= 22$$

Multiplying and Dividing Integers

The following patterns describe the results of multiplying or dividing two integers:

$$\begin{array}{llll} (+) \times (+) = + & (-) \times (+) = - & (+) \times (-) = - & (-) \times (-) = + \\ (+) \div (+) = + & (-) \div (+) = - & (+) \div (-) = - & (-) \div (-) = + \end{array}$$

Evaluating Integer Expressions with Several Operations

Expressions involving many integer operations are evaluated using the same order of operations as for natural numbers.

Example Two

Evaluate the expressions.

a) $-4(-3 - 6) + (-2 + (-1))$

$$= -4(-9) + (-3)$$

$$= 36 + (-3)$$

$$= 33$$

b) $(-2)(4) + (-3)^2$

$$-8 + 9$$

$$= 1$$

Adding and Subtracting Fractions

Remember: to add / subtract fractions the denominators must be the same.

Example Three

Evaluate.

$$a) \frac{3}{5} + \frac{1}{2}$$

$$\begin{aligned} & \frac{6}{10} + \frac{5}{10} \\ = & \frac{11}{10} \quad \text{or} \quad 1 \frac{1}{10} \end{aligned}$$

b) $\frac{3}{4} - \frac{1}{7}$

$$\frac{21}{28} - \frac{4}{28} = \frac{17}{28}$$

Multiplying and Dividing Fractions

1. To multiply fractions, you do not need a common denominator. Simply, multiply the numerators together and multiply the denominators together.
2. The easiest way to divide fractions is to multiply the first fraction by the reciprocal of the second fraction.

Example Four

Evaluate.

a) $\frac{2}{5} \times \frac{1}{10}$

$$= \frac{2 \div 2}{50 \div 2}$$

$$= \frac{1}{25} \quad * \text{ Must report in lowest terms.}$$

b) $\frac{4}{5} \div \frac{1}{3}$

$$\frac{4}{5} \times \frac{3}{1} = \frac{12}{5} \quad (\text{improper fraction})$$

$$= 2 \frac{2}{5} \quad (\text{mixed number})$$

Equivalent Fractions

Fractions are considered equivalent (or equal) when you multiply or divide the numerator and denominator of one fraction by the same number to equal the second fraction.

For example, $\frac{2}{3}$ is equivalent to $\frac{10}{15}$.

Example Five

Write one fraction that is equivalent to each of the following.

$$\text{a) } \frac{4}{7} \begin{matrix} \times 2 \\ \times 2 \end{matrix} = \frac{8}{14}$$

$$\text{b) } \frac{11}{22} \begin{matrix} \times 2 \\ \times 2 \end{matrix} = \frac{22}{44}$$

$$\text{c) } \frac{1}{3} \begin{matrix} \times 7 \\ \times 7 \end{matrix} = \frac{7}{21}$$

Complete:

p. 492 # 1ace

p. 494 #4ace

p. 495 #2ace

p. 497 #1

p. 498 #1