

Secondary 2
lesson 0.1

Fractions and Order of Operations

Objective:

By the end of the lesson you will be able to:

Combine and Reduce Fractions.

Understand and correctly use Order of Operations

Fraction Rules

Add and Subtract

- Get a least common denominator for all fractions
- Add or subtract numerators as usual
- Leave denominator the same
- Reduce as far as possible (no mixed numbers)

***If you have a mixed number, change it to an improper fraction.**

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

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

Examples (simplify):

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

$$2) -\frac{3}{5} - \frac{1}{3}$$

$$3) 3 + \frac{2}{3}$$

$$4) \frac{1}{6} + 2\frac{2}{3}$$

Fraction Rules

Multiply

- Change any mixed numbers to fractions
- Reduce (cancel) everything possible then
- Multiply straight across

Example: Find the product. $\frac{3}{4} * \frac{22}{9} = \frac{3*22}{4*9} =$

***The denominators DON'T have to be the same.**

Examples (simplify):

$$5) \frac{4}{3} * \frac{-1}{2}$$

$$6) \frac{4}{3} \cdot \frac{2}{3}$$

$$7) \frac{14}{2} \cdot \frac{2}{4}$$

$$8) 20 \cdot \frac{2}{3}$$

***If you have a whole number, put it over a 1. It does not change the number and it makes it easier to work with.**

Fraction Rules

Divide

- Change any mixed numbers to fractions
- Turn the second number upside down (reciprocal)
- Change divide to multiply
- Reduce (cancel) everything possible
- Multiply straight across

Ex: Find the quotient. $\frac{3}{4} \div \frac{21}{8} = \frac{3}{4} * \frac{8}{21} = \frac{3*8}{4*21} =$

Examples (simplify):

$$9) \frac{4}{3} \div \frac{4}{6}$$

$$10) \frac{2}{3} \div \left(\frac{-5}{12}\right)$$

$$11) \left(-1\frac{3}{5}\right) \div \left(\frac{6}{15}\right)$$

$$12) 20 \div \frac{1}{2}$$

Fraction Rules

Reduce Fractions

- Be careful when reducing any fraction that has addition or subtraction. The denominator goes with each term on top.
- Be sure you have common units before reducing

Examples: $\frac{2 + 4}{2}$ $\frac{2x + 6}{3}$ $\frac{3 \text{ feet}}{3 \text{ inches}}$ $\frac{\sqrt{6}}{3}$

Examples (simplify):

$$13) \frac{4 + 2x}{12}$$

$$14) \frac{2x + 5}{2}$$

$$15) \frac{\sqrt{24}}{3}$$

Order of Operations – Steps you need to follow when simplifying or solving math problems.

1st: Simplify the expressions inside the grouping symbols.

2nd: Evaluate all powers

3rd: Do all multiplication and division from left to right

4th: Do all addition and subtraction from left to right

*This is a 'map' of the order we MUST follow when doing math problems.

This is one way to remember the order of operations:

Order of Operations

Please Excuse My Dear Aunt Sally!

Parentheses (or other grouping symbols)

Exponents

Multiplication and

Division (left to right)

Addition and

Subtraction (left to right)

Let's practice. Simplify the following.

$$16) 5 + 3 \div 2 + 2$$

$$17) (3 * 6) \div 3^2$$

$$18) -2(3)^2$$

$$19) -3^2$$

$$20) 5 - 3(6)$$

$$21) (-3)^2$$

Please Excuse My Dear Aunt Sally!

Parentheses (or other grouping symbols)

Exponents

Multiplication and

Division (left to right)

Addition and

Subtraction (left to right)

Evaluate: (evaluate just means to simplify).

$$22) \frac{6^2 - 4^2}{2(3-2)} - 2^3$$

$$23) 3x^2 \text{ for } x = 2.$$

$$24) 3 - (-3 + 3)(-6)$$

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Assignment:

Packet 0.1A and 0.1B

Due at the start of next class