MATH 100

WORKING WITH FRACTIONS, EXPONENTS, AND RADICALS

GOALS

- PERFORM ALL BASIC OPERATIONS WITH FRACTIONS
- APPLY PROPERTIES OF EXPONENTS TO SIMPLIFY EXPRESSIONS AND SOLVE EQUATIONS
- SIMPLIFY RADICALS

WORKING WITH FRACTIONS

ADDING / SUBTRACTING: FIND COMMON DENOMINATOR

- BRUTE FORCE: USE PRODUCT OF DENOMINATORS

e.g $\frac{1}{4} - \frac{1}{6} =$

- EFFICIENT: USE LEAST COMMON MULTIPLE (LCM)

e.g. $\frac{1}{4} - \frac{1}{6} =$

EXAMPLES:

① $\frac{1}{2} + \frac{1}{3}$

② $\frac{2}{5} - \frac{1}{6}$

③ $\frac{4}{7} - \frac{1}{14}$

④ $\frac{1}{8} - \frac{1}{2}$

⑤ $\frac{1}{2} - \frac{1}{3} + \frac{1}{4}$

⑥ $\frac{2}{5} + \frac{1}{6} + \frac{1}{3}$

MULTIPLYING/DIVIDING:

* MULTIPLY STRAIGHT ACROSS
* DIVISION = MULTIPLICATION BY RECIPROCAL

e.g. $\frac{2}{5} \cdot \frac{4}{3} =$

$\frac{2}{5} \div \frac{4}{3} =$

EXAMPLES:

① $\frac{3}{7} \cdot \frac{3}{4}$

② $\frac{1}{2} \cdot \frac{7}{8}$

③ $\frac{4}{5} \div \frac{1}{10}$

④ $\frac{7}{3} \div \frac{5}{9}$

⑤ $\frac{1}{2} \cdot \frac{3}{4} - \frac{1}{6}$

⑥ $\frac{2}{5} + \frac{1}{3} \div \frac{1}{4}$

WORKING WITH EXPONENTS / RADICALS

PROPERTY #1: RADICALS OF PRODUCTS

$$\sqrt{ab} = \sqrt{a} \cdot \sqrt{b}$$

e.g. $\sqrt{200}$

NOTE ABOUT $\sqrt{a+b}$:

EXAMPLES

① $\sqrt[3]{16}$

② $\sqrt[4]{\frac{16}{81}}$

③ $5\sqrt{12} - 2\sqrt{3}$

④ SIMPLIFY $\sqrt{75}$

⑤ SIMPLIFY $\sqrt[3]{32}$

⑥ SIMPLIFY AND COMBINE LIKE TERMS: $14\sqrt{6} - 6\sqrt{24}$

⑦ SIMPLIFY AND COMBINE LIKE TERMS: $12\sqrt{3} - 4\sqrt{75}$

⑧ $\sqrt{64x^9}$

⑨ $\sqrt[3]{\frac{27x^3}{y^{12}}}$