TOPIC B: BUSINESS MATH GUIDE

Rules to follow:

FRACTIONS:

1. **Addition/Subtraction** - find the common **denominator** (bottom number) and perform the operation (add or subtract) to the **numerator** (top number) ONLY.

2. **Multiplication** – multiply the top numbers (numerators) together and then the bottom numbers (denominators) together. **E.g.** $\frac{4}{5} \times \frac{2}{9} = \frac{4 \times 2}{5 \times 9} = \frac{8}{45}$ and $\frac{1}{3} \times \frac{9}{10} = \frac{1 \times 9}{3 \times 10} = \frac{9}{30} = \frac{9 \div 3}{30 \div 3} = \frac{3}{10}$ Then just reduce it

3. **Division** – To divide a fraction, you must convert it to a multiplication problem by inverting the fraction you are dividing by (i.e. the fraction on the right) and multiply as directed above. **e.g.** $\frac{1}{3} \div \frac{4}{5} = \frac{1}{3} \times \frac{5}{4} = \frac{1 \times 5}{3 \times 4} = \frac{5}{12}$
   also $\frac{6}{11} \div \frac{1}{2}$ becomes $\frac{6}{11} \div \frac{1}{2} = \frac{6}{11} \times \frac{2}{1} = \frac{6 \times 2}{11 \times 1} = \frac{12}{11} = 1\frac{1}{11}$

4. **To reduce** a fraction to its lowest value, first try dividing the denominator or numerator into each other (above $^{6}/_{3} = 2$ or $^{8}/_{16} = {}^{1}/_{2}$. Another way is to find a common number that can be divided evenly into ***both*** numerator and denominator. ($^{36}/_{48}$ both can be evenly divided by 12, which equals $^{3}/_{4}$).

5. **Simplify -** To convert complex fractions to simple fractions *multiply* the denominator by the whole number and *add* the numerator **eg.** $7\ ^{1}/_{3} = \frac{(7 \times 3) + 1}{3} = {}^{22}/_{3}$

DECIMALS:

1. **Addition** Rule: decimal lines up.
2. **Subtraction** Rule: decimal lines up
3. **Multiplication**: To determine the proper number of decimals for multiplication: add the total number of decimal places in the problem – i.e. the sum of the number of decimals places of the multiplicand and the multiplier.

Rule: Remove the decimal; follow multiplication as for whole numbers and replace the decimal in the proper spot per the rule above. When replacing the decimal, count backward from the last digit, right to left.

4. **Division**:
   Dividend: The number you're dividing.
   Divisor: The number you're dividing by.
   Quotient: The answer you get when you divide the **dividend** by the **divisor**.

   Move the decimals of the **divisor** so that you are dividing by a whole number, move the decimal of the **dividend** by that same number of places. Divide as per long division keeping the decimal of the **quotient** in place with the decimal of the **dividend.** (Remember that when the ***last*** decimal place is a zero, it has ***no value*** and therefore should be ignored (e.g. 5.0 becomes 5, 2.340 becomes 23.4)

CONVERSIONS:

Fraction to decimals: divide the top number in the fraction (numerator) by the bottom number in the fraction (denominator). For example 4/5 = (4 divided by 5) = 0.8

Decimal to fraction: the number after the decimal over the whole number equivalent of the last decimal place that the decimal goes out to (i.e. 0.115 goes out to the thousandths so the fraction would be 115/1000).
When changing a whole number with a decimal to a fraction the whole number remains unchanged and the decimal portion is placed as described above. Examples: 9.35 = 9 35/100

Decimal to percent: move the decimal two places to the right

Percent to decimal: move the decimal two places to the left (e.g. 50% = 50/100 = 0.5)

FINANCIAL STATEMENTS:

5. Assets minus Liabilities equal Owner's Equity (Balance Sheet)
6. Revenue minus Expenses equal Net Income (Income Statement)