Notes for Fractions and Decimals

Fractions

- *Addition & Subtraction*: Get a common denominator first.

  Example: $\frac{4}{5} - \frac{2}{7}$

  Solution: $\frac{4 \cdot 7}{5 \cdot 7} - \frac{2 \cdot 5}{7 \cdot 5}$ $\rightarrow$ $\frac{28}{35} - \frac{10}{35}$ $\rightarrow$ $\frac{18}{35}$

  - *Multiplication*: Try first to cross cancel, then multiply denominators and numerators.

    Example: $\frac{6}{25} \cdot \frac{7}{8}$

    Solution: $\frac{6}{25} \cdot \frac{7}{8}$ $\rightarrow$ $\frac{21}{100}$

  - *Division*: Flip the second one and then multiply the two fractions.

    Example: $\frac{4}{15} \div \frac{12}{25}$

    Solution: $\frac{4}{15} \cdot \frac{25}{12}$ $\rightarrow$ $\frac{4}{15} \cdot \frac{25}{12}$ $\rightarrow$ $\frac{5}{9}$

Mixed numbers

- *Multiplication & Division*: First, convert the mixed numbers into improper fractions.

  Example: $4\frac{2}{3} \cdot 3\frac{3}{4}$

  Solution: $\frac{14}{3} \cdot \frac{15}{4}$ $\rightarrow$ $\frac{14}{3} \cdot \frac{15}{4}$ $\rightarrow$ $\frac{35}{2}$ $\rightarrow$ $17\frac{1}{2}$

  - *Addition & Subtraction*: It's usually easier to leave them as mixed numbers.

    Example: $26\frac{1}{3} - 24\frac{3}{4}$ (This is the hardest kind of problem!)

    Solution: $26\frac{4}{12} - 24\frac{9}{12}$ $\rightarrow$ (borrow $\frac{12}{12}$ from the 26) $\rightarrow$ $25\frac{16}{12} - 24\frac{9}{12}$ $\rightarrow$ $1\frac{7}{12}$

Decimals

- *Addition & Subtraction*: Line up the decimal points, then do the calculation.

  Example: $57.4 - 4.23$ **Solution:** $\begin{array}{r} 57.40 \\ -\ 4.23 \\ \hline 53.17 \end{array}$ (don't forget to add the extra zero!)

  - *Multiplication*: First do the calculation ignoring the decimals. Add up the number of decimal places in the original problem, and move over the answer's decimal point by that many places.

    Example: $12.34 \cdot 7.042$

    Solution: $1234 \cdot 7042$ is 8,689,828. We move the decimal 5 places to get 86.89828

- *Division*: Make the divisor (the outside number) easier by moving the decimal place.

  Example: With $360 \div 0.009$ we change the problem to $360,000 \div 9$ (ans: 40,000)

  Example: With $5400 \div 6000$ we change the problem to $5.4 \div 6$ (ans: 0.9)

Short Division Write the remainders as small digits as you go.

Example: $58741 \div 7$ (leave answer as a mixed number).

Solution: $8\ 3\ 9\ 1\ ^4/_7$ $\leftarrow$ answer   (Note: the final remainder, 4, is

    $7\ \overline{)\ 5\ 8\ ^27\ ^64\ ^11}$ written over the divisor, 7, to get $^4/_7$.)