MIXED NUMBERS

What Is a Mixed Number?

- A mixed number has both a whole number and a fraction. If someone ate a whole cookie and a third of another, 1 1/3 would represent how many cookies were eaten. Other mixed numbers are:

$$4 \ 2/3 \quad 3 \ 1/7 \quad 1 \ 6/9 \quad 7 \ 4/5$$

- Mixed numbers can be added, subtracted, multiplied, and divided, but there are several steps in the operations. Each operation has its own set of steps.

How to add, subtract, multiply and divide mixed numbers:

- To **add** _____ **ons must** be the _____

  o B_____

  o A_____ times this
    m_____ s have a
    n_____ numerator by
    the denominator to form a mixed number, for example,

$$12/7 = \mathbf{1 \ 5/7} \quad 21/5 = \mathbf{4 \ 1/5} \quad 13/10 = \mathbf{1 \ 3/10} \quad 3/2 = \mathbf{1 \ \tfrac{1}{2}}$$

  o Add the whole numbers; include any whole number resulting from adding the fractions.

$$5 \ 2/3 + 3 \ 5/9 \rightarrow 5 \ 6/9 + 3 \ 5/9$$

$$6/9 + 5/9 = 11/9 \rightarrow \mathbf{1 \ 2/9}$$

$$5 + 3 + 1 \ 2/9 = \mathbf{9 \ 2/9}$$

- To **subtract** mixed numbers, the **denominators must be the same**.
  - o Begin by changing one or both denominators.
  - o Subtract the fractions and reduce to lowest terms.
  - o Subtract the whole numbers.

$$6 \ 11/12 - 5 \ ¾ =$$

$$7 \ 11/12 - 5 \ 9/12 =$$

$$2 \ 2/12 = 2 \ 1/6$$

- To **multiply** mixed numbers, both **numbers must first be changed to improper fractions**.

  - o An improper fraction has a numerator larger than the denominator: **7/3, 8/5, 22/15**

  - o To change a mixed number to an improper fraction, multiply the whole number by the denominator and then add the numerator to the product. The product becomes the new numerator.

Examples:

$$5 \tfrac{1}{2} \rightarrow 11/2$$

$$3 \, 6/7 \rightarrow 27/7$$

o Once the mixed numbers have been changed to improper fractions, multiply the numerators and the denominators.

$$5 \tfrac{1}{2} \times 3 \, 6/7 =$$

$$11/2 \times 27/7 = 297/14$$

o Change the improper fraction to a mixed number by dividing

$$297/14 = 21 \, 3/14$$

- To **divi** multipli

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4 2/10 + **3** 2/5 =

_____

8 7/8 – **5** 1/3 =

_____

3 2/10 x **7** ___

_____

1 7/8 ÷ **2** ___

_____