CLASSWORK 3 AND REVIEW,
October, 1 2017

Fraction multiplication: $\frac{3}{4} \cdot \frac{2}{3} =.$

1. Multiply enumerators and denominators:
   $\frac{3}{4} \cdot \frac{2}{3} = \frac{3 \cdot 2}{4 \cdot 3}$
2. Simplify by using number prime factorization:
   $\frac{3}{4} \cdot \frac{2}{3} = \frac{3 \cdot 2}{4 \cdot 3} = \frac{3 \cdot 2}{2 \cdot 2 \cdot 3} = \frac{1}{2}$

Fraction division: $\frac{1}{2} \div \frac{2}{3} =$

1. Find a reciprocal (invers element) of the divisor. Reciprocal of $\frac{2}{3}$ is $\frac{3}{2}$.
2. Turn division into multiplication and simplify by using prime factorization:
   $\frac{1}{2} \div \frac{2}{3} = \frac{1}{2} \cdot \frac{3}{2} = \frac{1 \cdot 3}{2 \cdot 2} = \frac{3}{4}$

3. Does it make sense?

Lets look into the example: $\frac{1}{2} \div \frac{1}{6} =.$

It is asking How many times $\frac{1}{6}$ is in $\frac{1}{2}$?

$\frac{1}{2} \div \frac{1}{6} = \frac{1}{2} \cdot \frac{6}{1} = \frac{1 \cdot 6}{2 \cdot 1} = 3$ times!

Another example: $\frac{1}{4} \div \frac{1}{2} =$

It is asking How many times $\frac{1}{2}$ is in $\frac{1}{4}$

$\frac{1}{4} \div \frac{1}{2} = \frac{1}{4} \cdot \frac{2}{1} = \frac{1 \cdot 2}{4 \cdot 1} = \frac{1}{2}$ times!

If you still have questions, visit this website http://www.mathsisfun.com/fractions_division.html

We spoke about variable. Variable as a letter which can be anything.
Using variables, we can write the basic rules for **addition** and **multiplication** as follows:

a + b = b + a	**commutative law for addition**
ab = ba	**commutative law for multiplication**
a + (b + c) = (a + b) + c	**associative law for addition**
a(bc) = (ab)c	**associative law for multiplication**

a(b + c) = ab + ac **distributive law**

These laws can be used for simplifying calculations and rewriting expressions in a simpler form.
Some more rules for simplification:

a(b – c) = ab – ac **distributive law**
a – (b + c) = a – b – c **distributive law**
a – (b – c) = a – b + c **distributive law**

HOMEWORK 3,
October, 1 2017

1. **Watch this video:** https://www.youtube.com/watch?v=0rgrRQKravM **Print and fill the work sheets posted on the class website!!!**
2. Find the values of these algebraic expressions:

   (a) 78 + 3x for x = 8; and $\frac{2}{3}$;
   (b) 54 ÷ (x – 7) for x = 9; and 10;

3. Solve equations: *(First - open parenthesis, second - collect all Xs at the left, and numbers at the right, find X)*

   (a) $3(3x-1)=2(2x+11)$ (b) $5(x-2)=3x+20$ (c) $2(x-7)=x+11$

4. Calculate, simplify! Use prime factorization, if needed.

   (a) $\frac{3}{4}\cdot\frac{2}{3}=$ (b) $\frac{5}{9}\cdot\frac{3}{15}=$ (c) $\frac{9}{20}\cdot\frac{10}{27}=$
   (d) $\frac{9}{2}\div\frac{21}{2}=$ (e) $6\div\frac{2}{3}=$ (f) $7\div\frac{14}{3}=$

5. Simplify (Collect similar terms):

   $a^2b+2a\cdot ab-3a^2-3a\cdot a+a-ba^2-2a+2ba\cdot a=$

   $b^2a+2b\cdot ba-3ab^2-3b\cdot a+a-ab^2-2a+2ab\cdot b=$

6. *Below are some examples from a multiplication table in an unknown language. All of the products are numbers less or equal than 20.

   pe × nei = nei la nei
   nei × hato = liomu la pe
   hato × hato = nei la tano
   pe × pe = nei
   pe × tano = liomu
   hato × * = liomu la tano

What number should be there in place of *?