**COMBINING LIKE TERMS**

We are going to add like terms again.

However, this time we are going to go add another aspect of like terms.

**We are going to include variables with exponents**.

The good part is that all of the terms will only have one sign.  You won't have to worry about re-writing the problem to get one sign for each term.  In the future, there could very well be signs touching, but not here.

Also, you won't have to be in the correct order (Again, in the future, they will have to be in a specific order).

As long as you have simplified all of the terms correctly with their correct signs, the order will not matter.

Once again, you first decide which terms can go together.  X's with X's, A's with A's, and constants with constants (numbers without a letter).

But, now, we are going to include variables with exponents.

Letters with exponents can only go with other variables that are exactly the same and have the same exponent.

For example, $x^{2}$ cannot be put together with **x**.

**X2 + X** is simplified. These two terms are different. That is the final answer.

It's like they are both dogs, but one is a Pug and the other is a German Shepherd.

Each term has to be exactly the same.  Do not force them together.

But…

a4 and a4 can go together. They are both the same. They are the same type of apple!

5a4 + 7a4 = **12a4**.

You have +5 granny apples and +7 granny apples.

That gives you a total of 12 granny apples.

**Example 1)**

-X2 -X2= -2x2

They each have one sign.

They are both x2. This means they are the same and can be combined.

They are both negative (the same sign), so they will be added.

There is one of each, so you get **2** of them.

The sign will be negative.

Final Answer: **-2x2.**

**Example 2)**

5 – x + 4x3 – 11 – 9x3

They all have one sign.

Which of these terms can go together?

**The +5 and the -11** = **-**6

They are both numbers. No variables.

Subtract since they are different signs. The bigger number is negative.

The answer is negative.

**The +4x3 and the -9x3** = -5x3

-They are both x3, so they can go together.

-The signs are different, so you subtract.

Subtract the smaller one from the bigger one.

The bigger one is negative, so the answer will be negative.

**The -x** is left over = -x

FINAL ANSWER: **-5x3 – x - 6** (the order does not matter, but keep the correct sign!)

**Example 3)**

6x2 -12 + 3y + 8y + 4 – 9x2 + b

They all have one sign.

Can any terms go together?

+6x2 and -9x2

Both these terms have an x2, so they are like terms.

They have different signs so you subtract. The bigger number is negative.

The answer is negative.

**-3x2**

-12 and +4

Neither of these terms have letters. They are constants. They can go together.

They are different signs so you subtract. The bigger number is negative

The answer is negative.

**-8**

+3y and +8y

Both of these terms have y. They are like terms that can go together.

They have the same sign, so add them. The bigger number is positive.

The answer is positive.

**+11y**

+b

There is one term left over.

**+b**

Put the terms together. Make sure you keep the sign of each term no matter which order you put them in…

Acceptable answers…

**-3x2 -8 + 11y + b**

**-8 +b -3x2 + 11y**

**b – 3x2 +11y – 8**

**As long the terms keep their same sign (+/-), the order doesn’t matter. There are more acceptable answers. These are just a few.**