**Addition and Subtraction**

In Algebra we learn that subtracting is the same as adding the opposite.

For example, **7 - 2** (subtracting 2) is the same as **7 + (-2)** (adding the opposite of 2). In either case, the answer is **+5**. For those too lazy to write down the sign (which is most of us) you can write your answer as just plain old **5**.

Here are the rules for addition and subtraction when working with two numbers that might be either positive or negative:

|  |  |  |  |
| --- | --- | --- | --- |
| **Signs of numbers in the problem** | **Action** | **Sign of the Answer** | **Example** |
| Both positive numbers | Add them | **Positive** | 5 + 3 = +8  6a + 2a = +8a |
| Both negative numbers | Add them | **Negative** | - 5 - 3 = -8  -6a - 2a = -8a |
| One positive and one negative | Subtract them | Same sign as the **biggest** number | +5 - 3 = +2 -5 + 3 = -2  +6a - 2a = +4a -6a + 2a = -4a |

If you have more than two numbers to add or subtract, take them two at a time. Use the rules above to get an answer for the first two numbers - then use the rules to combine that answer with the next number until everything has been added or subtracted.

**Multiplication and Division**

**In Algebra, we learn that it is all really just multiplication.**

For example, **8 ÷ 2** (divide by 2) is the same as **8 • ½** (multiply by ½). In either case, the answer is **+4**. For those too lazy to write down the sign (which is most of us) you can write your answer as just plain old **4**.

The rules are slightly different from those for adding and subtracting. In general, signs the same answer is positive, signs different the answer is negative. Also notice that if there is no sign for the number after the multiplication symbol, then the sign is really positive:

5 • 3 = +5 • (+3) = +15 = 15

Here are the rules for multiplication and division when working with two numbers that might be either positive or negative.

|  |  |  |  |
| --- | --- | --- | --- |
| **Signs of numbers in the problem** | **Action** | **Sign of the Answer** | **Example** |
| Both positive numbers | Multiply them | **Positive** | 5 • 3 = +15  6 • 2a = +12a |
| Both negative numbers | Multiply them | **Positive** | -5 • (- 3) = +15  -6 • (- 2a) = +12a |
| One positive and one negative | Multiply them | **Negative** | +5 • (- 3) = -15 -5 • 3 = -15  +6 • (-2a) = -12a -6 • 2a = -12a |