# How to Solve Math Equalities

To solve an equality problem please follow these steps:
1. Combine like terms on both sides of the equal sign
    a. You can add or subtract factors with a number and the SAME variable

Example     3b + 5 – b + 8     =     (3b-b) = 2b     + (5 + 8) = 13     =     2b + 13

2. To combine mixed integers (positive and negatives), follow these steps:
    a. Compare the operations (symbols)
        i. If the symbols are the same     ADD
        ii. If the symbols are different     SUBTRACT
    b. If the symbols were the same, the answer will have the same symbol
    c. If the symbols were different, use the LARGER number's symbol

Examples     -4 -6 =     -10     8 – 12 =     -4     23 – 16     =     7

3. Follow the order of operations:
    a. Parentheses and brackets
    b. Exponents
    c. Multiplication and division          Solve left to right
    d. Addition and subtraction             Solve left to right

4. Use the properties of equality to move all the numbers to one side and all the like-term variables to the other side (i.e. isolate the variable).
    a. Whatever you do to one side of the equation you must do the EXACT same thing to the other side of the equation.
    b. Try to keep all the variables positive, if possible
    c. If you need to change the variable from a negative to positive multiply both sides by -1. *This will change the positive or negative number to the opposite for EVERY term.*

Example     $\underline{3h\ -5\ \ =\ \ -2h + 10}$          $\underline{5h\ -5\ \ =\ \ 10}$     =     5h = 15     h =     5
                 +2h              +2h                          +5          +5

5. To remove the number (coefficient) from a variable DIVIDE the number from both sides of the equation. Simply do the OPPOSITE (inverse) operation to the operation.

Examples     4k     =     12     Divide both sides by 4,          k =     3

                 ½ m     =     5     Divide both sides by ½ (to divide a fraction, flip it, then multiply)
                                      = Multiply both sides by 2/1     m =     10

                 $\dfrac{z}{3}$     =     9     Since z is divided by 3, MULTIPLY both sides by 3 to isolate z
                                      z     =     3 x 9          z =     27