

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

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, $k = 3$

$\frac{1}{2} m = 5$ Divide both sides by $\frac{1}{2}$ (to divide a fraction, flip it, then multiply)
 = Multiply both sides by $\frac{2}{1}$ $m = 10$

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