

Rules for Manipulating Equations

Formula not setup correctly for your tastes? Follow these rules and you will win the boyfriend/girlfriend of your **DREAMS!***

1) Reverse BEDMAS (That means SAMDEB)

- **Purpose:**
 - To determine which order you move variables/numbers in.
- **Explanation:**
 - BEDMAS stands for “Brackets, Exponents, Division, Multiplication, Addition, Subtraction”
 - When moving things to the other side of the equal sign, you must move them in the order of SAMDEB
- **Example:**

$$E_k = \frac{1}{2}mv^2$$

The diagram shows the formula $E_k = \frac{1}{2}mv^2$ with arrows indicating the order of operations for SAMDEB. A green arrow points from the exponent 2 to the variable v, labeled 'E: "v squared"'. A blue arrow points from the multiplication sign to m, labeled 'M: $(\frac{1}{2}) \times m \times v_2$ '. A purple arrow points from the division sign to the fraction 1/2, labeled 'D: "1 divided by 2"'. A red arrow points from the plus sign to the right side of the equation, labeled 'S: no subtraction'. A red arrow points from the minus sign to the right side of the equation, labeled 'A: no addition'. A red arrow points from the brackets to the right side of the equation, labeled 'B: no brackets'.

2) Opposite Operations

- **Purpose:**
 - This is how you move the variable/number to the other side
- **Explanation:**
 - \rightarrow +
 - + \rightarrow -
 - $a^2 \rightarrow \sqrt{a^2}$ (this one is a little confusing without explanation)
 - $\times \rightarrow \div$
 - $\div \rightarrow \times$

3) Golden Rule: “What you do the Right Side, also do to the Left Side”

- **Purpose:**
 - Maintains the equality of the formula.
- **Explanation:**
 - Remember an equal sign means that both sides are equal! If you subtract 3 from the Right side, you must also subtract 3 from the Left side.

4) Fractions have INVISIBLE brackets

- **Purpose:**
 - Fractions are sneaky, like your bestfriend that did a selfie with you in the background looking stupid.
- **Explanation:**
 - If you don't add the brackets, you will follow Step 1 in the wrong order
- **Example:**

$$a = \frac{v_f - v_i}{\Delta t}$$

$$a = \frac{(v_f - v_i)}{\Delta t}$$