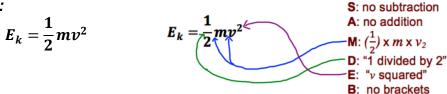# Rules for Manipulating Equations

*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***:
    - <u>BEDMAS</u> 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 <u>SAMDEB</u>
- ***Example:***

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

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S: no subtraction
A: no addition
M: $\left(\frac{1}{2}\right) \times m \times v_2$
D: "1 divided by 2"
E: "v squared"
B: no brackets

2) Opposite Operations

- ***Purpose:***
    - This is how you move the variable/number to the other side
- ***Explanation:***

| - → + | × → ÷ |
| + → - | ÷ → × |

$a^2 \rightarrow \sqrt{a^2}$ (this one is a little confusing without explanation)

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:***

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