

Warm Up Exercise- Rearranging equations (and some review problems)

1. Rearrange the kinetic energy equation for the mass,
- m
- .

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

$$2E_k = mv^2$$

$$\frac{2E_k}{v^2} = m$$

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

$$m = ?$$

2. Rearrange this kinematics equation for the displacement,
- Δd
- .

$$(v_2)^2 = (v_1)^2 + 2a(\Delta d)$$

$$v_2^2 - v_1^2 = 2a(\Delta d)$$

$$\frac{v_2^2 - v_1^2}{2a} = (\Delta d)$$

3. Rearrange the molar concentration formula for the volume,
- V
- .

$$c = \frac{n}{V}$$

$$cV = n$$

$$V = \frac{n}{c}$$

4. Rearrange the density equation to solve for volume,
- V

$$d = \frac{m}{V}$$

$$Vd = m$$

$$V = \frac{m}{d}$$

5. Simplify:

$$\frac{3x^3}{4x^8} (2x^4)^3$$

$$= \frac{3x^3 (2x^4)^3}{4x^8}$$

$$= \frac{3x^3 (2^3 x^{12})}{4x^8} = \frac{3 \cdot 8 \cdot x^{3+12}}{4x^8} = \frac{24x^{15}}{4x^8} = 6x^7$$

6. Solve for
- x
- :
- $\frac{2(3x-2)}{2 \times 5} = \frac{(-x+4)}{2 \times 5}$
- LCD(5, 2) = 10

$$\frac{2(3x-2)}{10} = \frac{5(-x+4)}{10}$$

$$\Rightarrow 6x - 4 = -5x + 20$$

$$\Rightarrow 6x + 5x = 20 + 4$$

$$\Rightarrow 11x = 24$$

$$\Rightarrow \boxed{x = \frac{24}{11}}$$