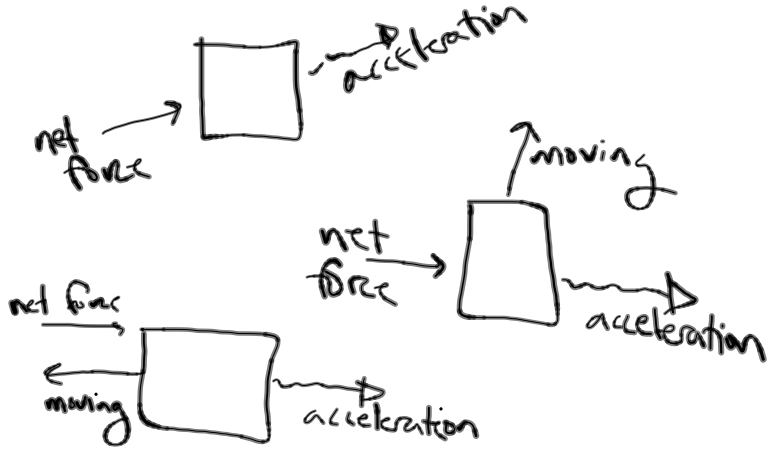
# Newton's 2nd Law:

- An object will accelerate in the direction of an unbalanced (overall, net) force




- An object's acceleration will be larger with a larger force

Force = mass × acceleration

$F = m \cdot a$

F in Newtons (N) ← units

m in kilograms (kg)

a in meters per second$^2$ $\left(\frac{m}{s^2}, m/s/s, m/s^2\right)$

↑ variables

1. (1a) $m = 0.04\ kg$ $a = 5.4\ \frac{m}{s^2}$

(1b) $F$

(2) $F = m \cdot a$

(3) $F = 0.04\ kg \cdot 5.4\ \frac{m}{s^2}$

(4) $F = 0.04 \cdot 5.4 = 0.216$

(5) $F = m \cdot a$

$= \boxed{0.216\ N \text{ towards the cat}}$

$$\frac{0.216}{0.04} = \frac{0.04 \cdot a}{0.04}$$

$5.4 = a$ ✓