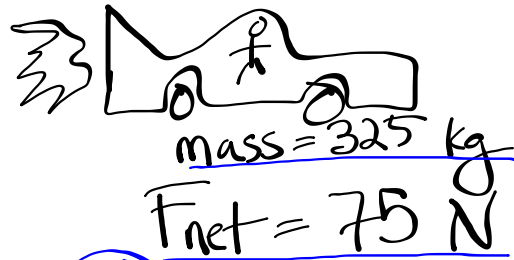# Newton's 2nd Law:

→ It takes more force to make a more massive object accelerate

→ It takes more force to accelerate an object more rapidly

$$Force = mass \times accekration$$

$$F_{net} = m \cdot a$$

$$a = \frac{F_{net}}{m}$$

mass = 325 kg

$F_{net} = 75$ N

how quickly will I accelerate?

(1a) $m = 325$ kg $F_{net} = 75$ N

(1b) $a = ?$

$$\left(a = \frac{v - v_0}{t} \right)$$

(2) $F_{net} = m \cdot a$

(3) $\dfrac{75}{325} = \dfrac{325 \cdot a}{325}$

(4) (+) $0.23 \dfrac{m}{s^2} = a$

F_{net}: requires units and direction

(5) $F_{net} = m \cdot a$

✓ $74.75 = 325 \cdot 0.23$

Newtons (N)

FBD's:

Draw the following forces —

1. Forces that are described in the problem
2. Gravity
3. Friction — opposite the direction of motion or potential motion
4. Surface forces — keep things from falling; 90° angle to the surface

Label!
Direction!
Length =
size!

upward
acceleration

constant
velocity

DRAW A FBD FOR THE
FLYBOARD!