Newton's Second Law

1. How much force is needed to accelerate a 1000-kg car at a rate of 3 m/s²?

   answer   **Units**

   N kg m/s²
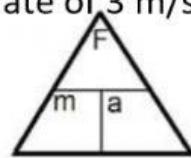
2. If a 70-kg swimmer pushes of a pool wall with a force of 250 N, at what rate will the swimmer accelerate from the wall?

   answer   **Units**

   round to 2 decimals   N kg m/s²
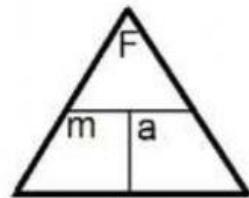
3. A weightlifter raises a 200-kg barbell with an acceleration of 3 m/s². How much force does the weightlifter use to raise the barbell.

   answer   **Units**

   N kg m/s²
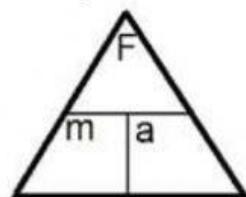
4. A dancer lifts his partner above his head with an acceleration of 2.5 m/s². The dancer exerts a force of 200 N. What is the mass of the partner?

   answer   **Units**

   N kg m/s²
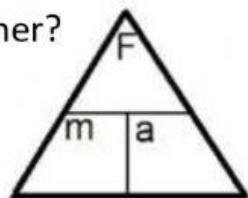
5. Newton's second law of motion states that a(n) **balanced unbalanced** force acting on an object causes it to accelerate according to the formula net force = mass x **distance acceleration**. Which means the acceleration of the object is directly proportional to the **speed force** and inversely (oppositely) proportional to the mass.

6. The two factors that affect acceleration are: **mass speed distance force weight**

7. Friction:
   a. is _____ when an object is not moving.
   b. is _____ when two objects rub against each other.
      i. _____ friction a special type of sliding friction when the object slides through a liquid or gas
   c. is _____ when the object rolls over another.