





Why does a bowling ball and a marble fall at the same rate?

Weight ( $F_w$ ) Force _____ acceleration	Mass Inertia _____ acceleration
 _____ $F_w$ causes _____ acceleration	 _____ mass means _____ acceleration
 _____ $F_w$ causes _____ acceleration	 _____ mass means _____ acceleration

The effects of \_\_\_\_\_ and \_\_\_\_\_ on acceleration \_\_\_\_\_ each other out.

Using math:

1.0 kg = \_\_\_\_\_ N

$a = ?$

10 kg = \_\_\_\_\_ N

$a = ?$

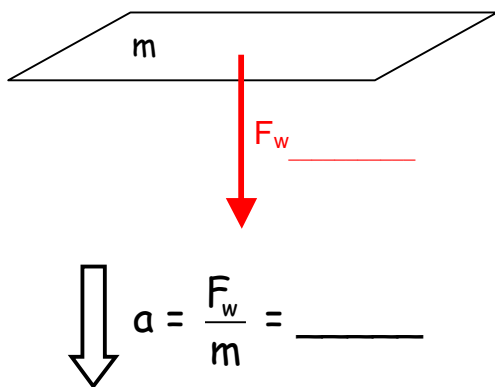
This number, \_\_\_\_\_ is called acceleration due to \_\_\_\_\_.

On the moon, the masses of heavy and light objects would be the \_\_\_\_\_, but their weights would be \_\_\_\_\_. The ratios of weight to mass would be \_\_\_\_\_ to each other, but \_\_\_\_\_ than on earth.

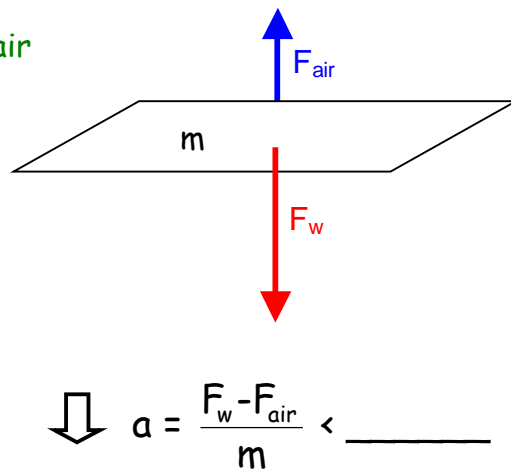
Air resistance:

- is \_\_\_\_\_
- depends on \_\_\_\_\_ and \_\_\_\_\_

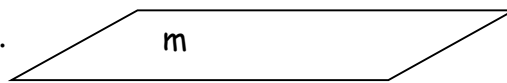
In a vacuum



In air



Draw the diagram for when the two forces are equal.



When  $F_{air} = F_w$ :

- 
- 
- 

Physics Challenge:

If two men of different weights have the same size parachutes and jump from a plane together, who will reach the ground first?

- a) the heavier      b) the lighter      c) hit at the same time

A 57 kg skydiver has a weight of 560 N. At one point the air resistance on her body is 130 N.

- a) What is the net force acting on the skydiver?  
 b) What is the skydiver's acceleration?

To solve problems involving two forces, draw diagrams and use these equations:

$$F_{net} =$$

$$F_{net} =$$

Combine equations to get,

After the skydiver, weighing 560 N, opens his parachute, the force of air resistance becomes \_\_\_\_\_N.

- a. What does his acceleration become?  
 b. In what direction is the acceleration?