

Worksheet: Weight and Free Fall

(Frameworks Code)

Solve the following problems. Use the correct problem set-up.

$$F = ma$$

$$g = 9.8 \text{ m/s}^2$$

Weight Problems:

1. A car has a weight of 2300 N on Earth. What is its mass?
2. What is the weight of a 75 kg rock on Earth?
3. What is the weight of the same rock as in the previous question if it were on the moon? Remember the acceleration due to gravity on the moon is 1/6 of that on Earth.
4. What is the acceleration due to gravity on Jupiter if a 55 kg object has a weight of 1401.4 N?
5. How much does a 33.5 kg object weigh on Earth?

Free Falling Problems:

$$a = \frac{v_f - v_i}{\Delta t}$$

$$g = 9.8 \text{ m/s}^2$$

6. Find the final velocity of a free falling object after it has been accelerating for 12 seconds.
7. How long will it take a free falling object to reach a speed of 63.5 m/s?
8. A rock is dropped off of a tower and is in free fall for 5.5 s. How fast was it moving as it hit the ground?
9. Find the acceleration of a free falling object if it reaches a final velocity of 49 m/s in 5 s.
10. A water balloon was dropped out of a hot air balloon. How long does it take to reach a speed of 25 m/s?