

Answer on Question 48705, Physics, Mechanics | Kinematics | Dynamics

Question:

When exploring a planet, it was found that a rock dropped from 2.0 meters above the planet's surface took 0.50 s to fall to hit the surface. What is the acceleration due to gravity on that planet?

Solution:

Because the initial velocity of the rock is equals to zero, we can write:

$$h = \frac{1}{2} gt^2,$$

where h is the height from which rock dropped, t is the time that rock took to fall to hit the surface, g is the acceleration of gravity. From this formula we can find g :

$$g = \frac{2h}{t^2} = \frac{2 \cdot 2.0m}{(0.5s)^2} = 16 \frac{m}{s^2}.$$

Answer:

$$g = 16 \frac{m}{s^2}.$$