

Answer of question #82185-Physics- Mechanics - Relativity

A toy car runs off the edge of a table that is 1.766 m high. The car lands 0.3458 m from the base of the table. How long does it take for the car to fall? The acceleration due to gravity is 9.8 m/s^2 . Answer in units of s.

Input Data:

Table height:

$$h = 1.766\text{m}$$

Distance:

$$d = 0.3458\text{m}$$

Gravity:

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

Solution:

The condition is redundant, the flight distance does not affect the fall time.

According to the law of motion:

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

we get the time of the fall:

$$t = \sqrt{\frac{2h}{g}} = \sqrt{2 * \frac{1.766}{9.8}} = 0.6\text{s}$$

Answer:

$$t = 0.6\text{s}$$