

A stone dropped from a cliff hits the ground 10 seconds later. How high was the cliff?

- a. 245 m
- b. 196 m
- c. 490 m
- d. 2401 m

What is the acceleration of a car that starts from rest and reaches 50.0 km/hr after 13.0 minutes?

- a. 3.85
- b. 230.8
- c. 0.064
- d. 936.0

How long does it take a stone to fall 36 m?

- a. 2.71 seconds
- b. 7.35 seconds
- c. 13.28 seconds
- d. 8.49 seconds

SOLUTIONS

A stone dropped from a cliff hits the ground 10 seconds later. How high was the cliff?

490 m

$$d = v_i t + (1/2)a t^2$$

$v_i = 0$ because it was dropped

$$d = (1/2) (9.8 \text{ m/s}^2)(10\text{s})^2$$

What is the acceleration of a car that starts from rest and reaches 50.0 km/hr after 13.0 minutes?

I don't give units on these answers, so it's either 230.8 km/hr², or 0.064 km/min²

$a = \text{change in } v / \text{change in } t$

$a = (50 \text{ km/hr} - 0) / (13 \text{ minutes})$

$a = (50 \text{ km/hr} * 1 \text{ hr}/60 \text{ min}) / (13 \text{ min})$ OR

$a = (50 \text{ km/hr}) / (13 \text{ min} * 1 \text{ hr}/60 \text{ min})$

How long does it take a stone to fall 36 m?

2.71 seconds

$$d = v_i t + (1/2)a t^2$$

$v_i = 0$ because it was dropped

$$36 \text{ m} = (1/2) (9.8 \text{ m/s}^2) t^2$$

$$t^2 = (36 \text{ m} * 2) / (9.8 \text{ m/s}^2) = 7.35 \text{ s}^2$$

$$t = \text{sqrt} (7.35 \text{ s}^2)$$