⑤ How much force(N) would be required to make a 5 kg rock accelerate at $10 m/s^2$?

_____ N

⑥ A rock is dropped from a cliff as shown below. Fill in the missing values of instantaneous speed (V_t) and average speed ($V_{avg.}$) for the time intervals shown.

($V = at$)

($V_{avg} = \frac{V_f + V_i}{2}$)

t=0sec — $V_0 = 0$ m/sec

$V = at$

$V = (10)(1) = 10$

$V_{avg} = \frac{10+0}{2}$

V_{avg} = 5 m/sec for first second of fall

t=1sec — V_1 = 10 m/sec

$V_{avg} = \frac{20+0}{2}$

V_{avg} = 10 m/sec for first 2 secs of fall.

$V = at$

$V = (10)(2)$

t=2sec — V_2 = 20 m/sec

at 3 seconds:

$d = \frac{1}{2}at^2 = (5)(9) = 45 m$

$d = V_{avg} \cdot t = (15)(3) = 45 m$

$V_{avg} = \frac{30+0}{2}$

V_{avg} = 15 m/sec for first 3 seconds of fall.

$V = at$

$V = (10)(3)$

t=3sec — V_3 = 30 m/sec

What is the distance at 3 seconds?

($d = \frac{1}{2}at^2$) or ($d = V_{avg} \cdot t$) 45 m

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