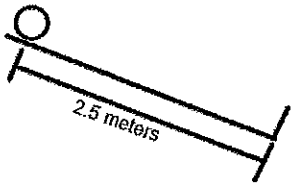
Name: Key Class: _____ Date: _____ ID: A

Motion Practice MC questions

Multiple Choice

Identify the choice that best completes the statement or answers the question.

A ball rolls down the ramp a distance of 2.5m in a time of 2.5 seconds



$S = y_i + v_i t + \frac{1}{2} a t^2$

$2.5 = 0 + 0 + \frac{1}{2} a (2.5)^2$

$a = 0.8 \text{ m/s}^2$

____ 1. A ball roles down the ramp, calculate the acceleration of the ball in m/s^2

a. -9.8
c. 0.8
b. -0.08
d. 80

____ 2. Calculate the velocity of the ball at the 2.5m mark.

a. 0.1m/s
c. 2 m/s
b. 10m/s
d. 19.6 m/s

$v_f = v_i + at$

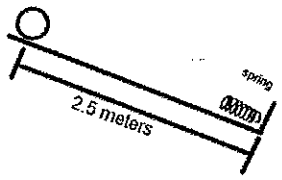
$0 + .8(2.5)$

$= 2 \text{ m/s}$

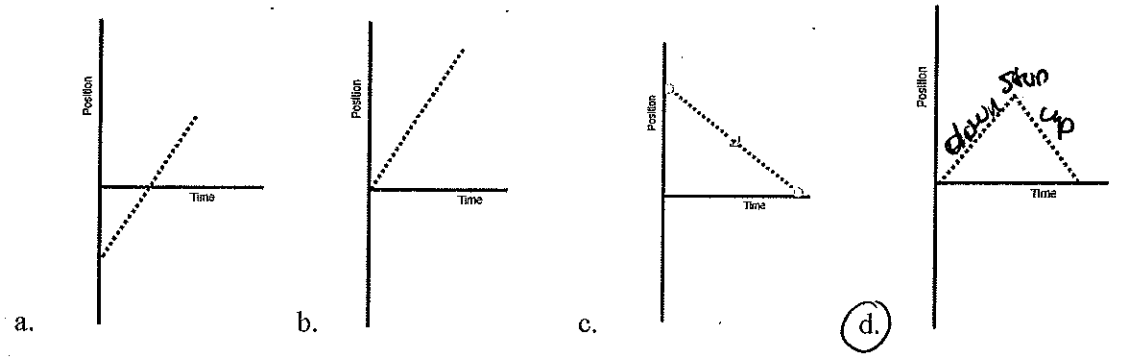
____ 3. A student is sledding down JennerJohn hill, what would be a resonable acceleration?

a. $9.8 m/s^2$
c. $-2 m/s^2$
b. $-9.8 m/s^2$
d. $+4 m/s^2$

} either depending on frame of Reference.



____ 4. A ball rolls down a ramp, hits a spring and bounces back up. Which of the following position time graphs would represent the motion of the ball going down and then back up to its original location. We are traking horizontal movement.



a. b. c. (d.)

____ 5. A little kid rolles a bowling ball at 2m/s 20m down a ally where it comes to a stop. How much time did the ball take to roll down the alley?

a. 10 seconds
c. 50 seconds
b. 25 seconds
d. This problem is missing information

Closest

$S = y_i + v_i t + \frac{1}{2} a (t_f - t_i)^2 +$

$20 = 0 + 20t + \frac{1}{2}(0 + 2) +$

$20 = 2t - 1t$

$20 = t$

1

___ 6. A plane starts from rest and accelerates along the ground before takeoff. It moves 600 meters in 12 seconds. What is its velocity at the end of 12 seconds?

$x_f = x_i + v_i t + \frac{1}{2} a t^2$

$600 = 0 + 0 + \frac{1}{2}(a)\,12^2$

$a = 8.3\ m/s^2$

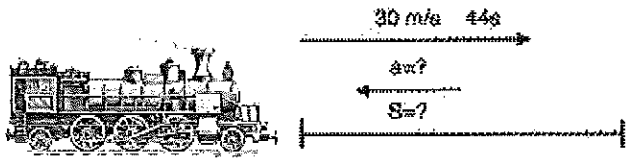
$v_f = v_i + at$

$0 + 8.3(12)$

$v_f = 100$

a. 70
b. 80
c. 90
d. 100

___ 7.



A train running at 30 m/s is slowed to a stop in 44 seconds. Find the acceleration and the stopping distance.

$S = x_i + v_i t + \frac{1}{2}(v_f - v_i)t$

$30(44) + \frac{1}{2}(0-30)\,44$

$S = 660\ m$

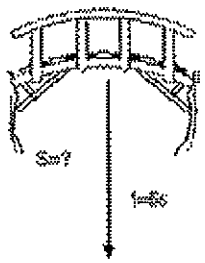
$v_f = v_i + at$

$0 = 30 + a\,44$

$a = -.68\ m/s^2$

a. a=-0.68 m/s², S=662m
b. a=-1.68 m/s², S=662m
c. a=-0.68 m/s², S=552m
d. a=-1.68 m/s², S=552m

___ 8.



$S = x_i + v_i t + \frac{1}{2} a t^2$

$= 0 + 0 + \frac{1}{2}(-9.8)5^2$

$= 122.5\ m$

5 sec -

a. 103 meters
b. 123 m
c. 143 m
d. 163 m

___ 9. A rock is thrown down from a cliff at 25 m/s. If it takes 3 seconds to hit the bottom, how high is the cliff?

$x_f = x_i + v_i t + \frac{1}{2} a t^2$

$0 + -25(3) + \frac{1}{2}(-9.8)(3)^2$

$-75 + -44$

$= -119$

a. 99 m
b. 109 m
c. 119 m
d. 129 m

___ 10. If I graph velocity (m/s) vs time (s) what will be the resulting units of my slope?

$\frac{m/s}{s/1} = \frac{m}{s} \cdot \frac{1}{s} = \frac{m}{s^2}$

a. Meters
b. m/s
c. m/s²
d. m/s³