

Physics

11 Advance second exam Alguniemat

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NAME:

Class:

ANSWER ALL QUESTIONS ON THIS TEST PAPER

1) A car moves according to the equation below.

$$v = 1.6 + 2.5t$$

Which of the following best solves the problem calculating the v_o & a ?

Write [Correct] in the correct box

[A]	The initial velocity $v_o = 2.5 \text{ m/s}$ The acceleration $a = 1.6 \text{ m/s}^2$	[B]	The initial velocity $v_o = 2.5 \text{ m/s}^2$ The acceleration $a = 1.6 \text{ m/s}$
[C]	The initial velocity $v_o = 1.6 \text{ m/s}^2$ The acceleration $a = 2.5 \text{ m/s}^2$	[D]	The initial velocity $v_o = 1.6 \text{ m/s}$ The acceleration $a = 2.5 \text{ m/s}^2$

2) The equation below describes the motion of your car during your trip.

$$x = 1.6t + 0.5t^2$$

Complete the following by writing the correct

answer: 1- The initial velocity $v_i = \text{m/s}$

2- The acceleration $a = \text{m/s}^2$

3- The distance moved after 4 s $x = \text{m}$

3) A car moves in a straight line with an average velocity 18 m/s. If the change in the car velocities is 4 m/s while it moved 36 m, the car acceleration is

Write [correct] inside the correct box

[A]	0.2 m/s^2	[B]	2 m/s
[C]	2 m/s^2	[D]	20 m/s^2

4) An airplane accelerates down a runway at 3.20 m/s^2 for 32.8 s until is finally lifts off the ground. Determine the distance traveled before takeoff.?

- 5) Upton Chuck is riding the Giant Drop at Great America. If Upton free falls for 2.60 seconds, what will be his final velocity and how far will he fall?
- 6) A feather is dropped on the moon from a height of 1.40 meters. The acceleration of gravity on the moon is 1.67 m/s^2 . Determine the time for the feather to fall to the surface of the moon.

- 7) Rocket-powered sleds are used to test the human response to acceleration. If a rocket-powered sled is accelerated to a speed of 444 m/s in 1.83 seconds, then what is the acceleration and what is the distance that the sled travels?
- 8) An engineer is designing the runway for an airport. Of the planes that will use the airport, the lowest acceleration rate is likely to be 3 m/s². The takeoff speed for this plane will be 65 m/s. Assuming this minimum acceleration, what is the minimum allowed length for the runway?

- 9) A motorboat is traveling at a constant velocity of 5.0 m/s when it starts to decelerate to arrive at the dock. Its acceleration is $a(t) = -14t$ m/s². (a) What is the velocity function of the motorboat? (b) At what time does the velocity reach zero? (c) What is the position function of the motorboat? (d) What is the displacement of the motorboat from the time it begins to decelerate to when the velocity is zero?
- 10) A particle starts from rest and has an acceleration function $a(t) = (5 - (10/1s)t)$ ms². (a) What is the velocity function? (b) What is the position function? (c) When is the velocity zero?