Name: _____ Practice Ph11 1-3

1. If a little league player was to throw his fast ball (25.0 m/s) straight downwards from the top of a building 30.0 m tall, with what velocity would it strike the ground?

2. On a certain asteroid, a steel ball drops from rest, a distance of 0.80 m in 2.00 seconds. Assuming uniform acceleration due to gravity on this asteroid, what is the acceleration due to gravity on the asteroid?

3. A child on a toboggan slides down a snowy hill, accelerating uniformly at a rate of 2.80 m/s^2. When the toboggan passes the first observer it is travelling 1.40 m/s. How fast will it be moving when it passes a second observer who is 2.50 m down hill from the first observer?

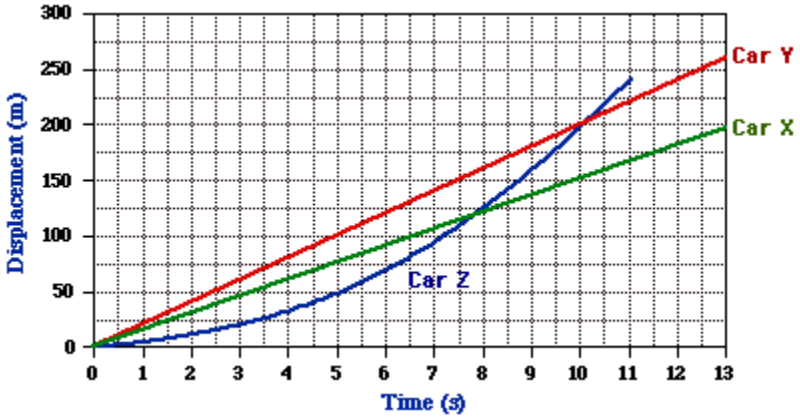
4. A ball is projected vertically with a vertical velocity v_{iy} of 60.0 m/s. How long (in seconds) is it until the ball reaches the top of it's flight?

5. A car moves with uniform acceleration **a** through displacement **d** in time **t**. During this time its velocity changes from $\mathbf{v}_i$ to $\mathbf{v}_f$. Which one of the following statements is true?

   a) At distance d/2 the velocity is $(v_i + at)/2$
   b) At time t/2 the car has travelled distance d/2
   c) At time t/2 the car travels with velocity $(v_i + v_f)/2$
   d) At distance d/2 the velocity of the car is $(v_i + v_f)/2$
   e) At time t/2 the velocity is $(v_i + at)/2$

Use the following information to answer the next 2 question(s).

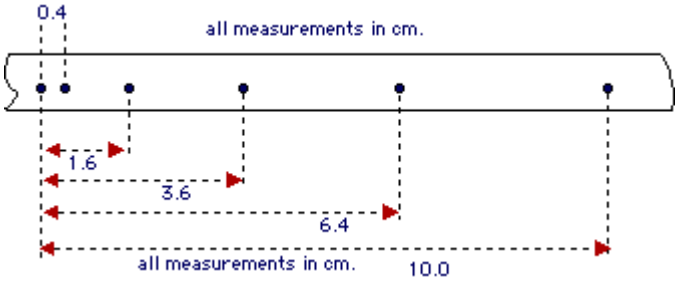
The graph below shows the motion of three cars **X**, **Y**, and **Z** along a straight road.
Car **X** is travelling at the speed limit while car **Y** is travelling at a speed in excess of the limit. The two cars pass a stationary police car **Z** at time t=0 and continue with uniform speed. The police car **Z** immediately gives chase with a constant acceleration until it reaches car **Y**.



6. The acceleration of the police car is:
   a) 10 m/s^2
   b) 2 m/s^2
   c) 4 m/s^2
   d) 6 m/s^2
   e) 8 m/s^2

7. The speed of the police car Z at the instant it overtakes car Y is:
   a) 20 m/s
   b) 30 m/s
   c) 10 m/s
   d) 50 m/s
   e) 40 m/s

8. If the period of the timer used to make the following ticker tape was 0.050 seconds, find the acceleration of the motion.



   a) 16 cm/s^2
   b) 3.2 x 10^3 m/s^2
   c) 8.9 m/s^2
   d) 3.2 m/s^2
   e) 46 cm/s

9. A runner increases speed on a straight track from 2.0 m/s to 7.0 m/s in 2.0 s. The magnitude of the average acceleration is:
   a) 2.5 m/s^2
   b) 20 m/s^2
   c) 8.0 m/s^2
   d) 5.0 m/s^2
   e) 4.0 m/s^2

10. The velocity of a car moving at 20 m/s changes to 60 m/s in 10 s. The average acceleration is:
   a) –4.0 m/s^2
   b) 40 m/s^2
   c) 8.0 m/s^2
   d) 4.0 m/s^2
   e) 3.0 m/s^2

11. If the following velocity-time data are collected in an experiment with a lab cart, how far did the cart travel between 2.0 s and 3.0 s?

time (s)	0	1.0	2.0	3.0	4.0
velocity (m/s)	0	0.80	1.6	2.4	3.2

   a) 4.0 m
   b) 2.4 m
   c) 2.0 m
   d) 1.6 m

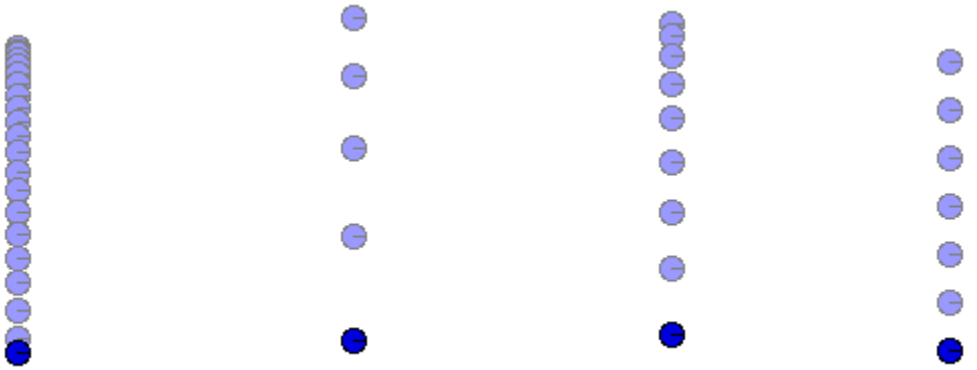
12. If you thrown a ball upwards at + x m/s how fast will the ball be moving when it returns to your hand (just before you catch it). Ignore air resistance?
   a) more than – x m/s
   b) 0 m/s
   c) – x m/s
   d) less than – x m/s

13. A hammer and a feather are dropped by an astronaut on the moon. The acceleration of gravity is 1.6 m/s^2 and there is no air on the moon. Which of the following statements is true.
   a) The hammer will hit the ground first. The time taken will be less than on earth.
   b) The hammer will hit the ground first . The time taken will be the same as on earth.
   c) They will both hit the ground at the same time. The time will be less than on earth.
   d) They will both hit the ground at the same time. The time will be more than on earth.

14. The following is a list of accelerations of gravity on different planets:

1)	Earth 9.8 m/s^2
2)	Moon 1.6 m/s^2
3)	A distant planet 20.0 m/s^2

The diagrams below have equal time intervals between flashes and show how an object falling on each planet would appear. Which one of the following diagrams is representative of an object falling on the distant planet?



a) b) c) d)

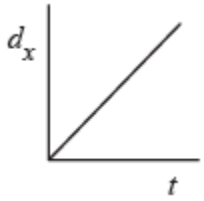
15. A baseball is thrown vertically into the air. The instantaneous acceleration of the ball at the highest point in its travel is:
    a) zero
    b) 10 m/s^2 up
    c) 10 m/s^2 down
    d) changing from 10 m/s^2 up to 10 m/s^2 down
    e) changing from 10 m/s^2 up to zero to 10 m/s^2 down

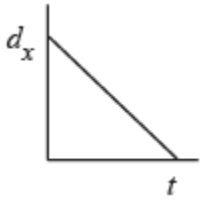
16. Two grenades, A and B, are thrown horizontally with different speeds from the top of a cliff 70 m high. The speed of A is 2.50 m/s and the speed of B is 3.40 m/s. Both grenades remain in air for 3.77 s.

    Assume that the acceleration due to gravity is 9.86 m/s^2. What is the distance between A and B if they are thrown along the same straight line?

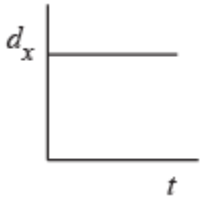
17. A stone thrown horizontally off a vertical cliff lands a horizontal distance x from the bottom of the cliff. If a stone is thrown from the same point, in the same direction, but with twice the speed, how far from the bottom of the cliff will it land?
    a) $4x$
    b) $x/2$
    c) x
    d) $2x$

18. Which of the following graphs best illustrates the horizontal displacement of a projectile as a function of time? Ignore friction.

a) 

b) 

c) 

d) 

19. A stone is thrown horizontally from the top of a 25.00-m cliff. The stone lands at a distance of 40.00 m from the edge of the cliff. What is the initial horizontal velocity of the stone?
    a) 15.60 m/s
    b) 2.260 m/s
    c) 22.05 m/s
    d) 17.70 m/s

20. A ball is thrown horizontally at 10.0 m/s from the top of a hill 50.0 m high. How far from the base of the cliff would the ball hit the ground?
    a) 45.0 m
    b) 23.6 m
    c) 31.9 m
    d) 26.4 m