Motion in 1-Dimension Review
Honors Physics

Name_____

1. A speedometer in a car does not measure the car's velocity because velocity is a
a) vector quantity and has a direction associated with it
b) vector quantity and does not have a direction associated with it
c) scalar quantity and has a direction associated with it
d) scalar quantity and does not have a direction associated with it

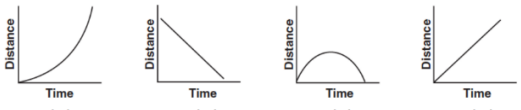
2. A girl leaves a history classroom and walks 10 meters north to a drinking fountain. Then she turns and walks 30 meters south to an art classroom. What is the girl's total displacement from the history classroom to the art classroom?
a) 20 m south
b) 20 m north
c) 40 m south
d) 40 m north

3. A high-speed train in Japan travels a distance of 300 kilometers in 3.60×10^3 seconds. What is the average speed of this train?
a) 1.20×10^{-2} m/s
b) 8.33×10^{-2} m/s
c) 12.0 m/s
d) 83.3 m/s

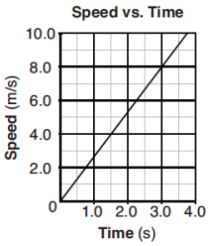
4. A car is traveling along the highway at a constant velocity of 30 m/s for 20 s. What is the acceleration of the car?
a) 0 m/s^2
b) 0.67 m/s^2
c) 1.5 m/s^2
d) 600. m/s^2

5. Which of the following quantities is not a vector quantity?
a) Time
b) Velocity
c) Acceleration
d) Displacement

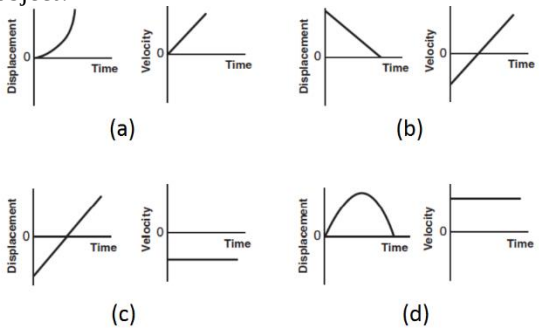
6. A cart travels with a constant nonzero acceleration along a straight line. Which graph best represents the relationship between the distance the cart travels and time of travel?



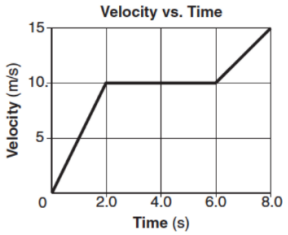
7. What is the total distance traveled by the object from 0s to 3s in the following graph?
a) 4 m
b) 8 m
c) 12 m
d) 24 m



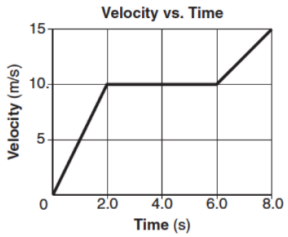
8. Which pair of graphs represent the same motion of an object?



9. In the following graph, what is the acceleration of the object at t=7 s?
a) 0 m/s^2
b) 2.5 m/s^2
c) 5.0 m/s^2
d) 12.5 m/s^2



10. In the following graph, what is the displacement traveled by the object between 0s and 6s?
a) 10 m
b) 40 m
c) 50 m
d) 60 m



11. A car traveling on a straight road at 15 meters per second accelerates uniformly to a speed of 21 meters per second in 12 seconds. The total distance traveled by the car in this 12-second time interval is
a) 36 m
b) 180 m
c) 216 m
d) 252 m

12. A race car starting from rest accelerates uniformly at 4.9 m/s^2. What is the car's speed after it has traveled 200 meters?
a) 1960 m/s
b) 62.6 m/s
c) 44.3 m/s
d) 31.3 m/s

13. A 747 jet, traveling at a velocity of 70.0 meters per second north, touches down on a runway. The jet slows to rest at the rate of 2.0 meters per second^2. Calculate the total distance the jet travels on the runway as it is brought to rest. [Show all work, including the equation and substitution with units.]

14. The speed of a wagon increases from 2.5 meters per second to 9.0 meters per second in 3.0 seconds as it accelerates uniformly down a hill. What is the magnitude of the acceleration of the wagon during this 3.0-second interval?

a) 0.83 m/s^2
b) 2.2 m/s^2
c) 3.0 m/s^2
d) 3.8 m/s^2

15. An observer recorded the following data for the motion of a car undergoing constant acceleration. What was the magnitude of the acceleration of the car?

Time (s)	**Speed** (m/s)
3.0	4.0
5.0	7.0
6.0	8.5

a) 1.3 m/s^2
b) 2.0 m/s^2
c) 1.5 m/s^2
d) 4.5 m/s^2

16. A baseball dropped from the roof of a tall building takes 3.1 seconds to hit the ground. How tall is the building? [Neglect air resistance.]

a) 15 m
b) 30 m
c) 47 m
d) 94 m

17. A ball is thrown vertically upward with an initial velocity of 29.4 meters per second. What is the maximum height reached by the ball? [Neglect air resistance.]

a) 14.7 m
b) 29.4 m
c) 44.1 m
d) 88.1 m

18. A ball thrown vertically upward reaches a maximum height of 30 meters above the surface of Earth. At its maximum height, the speed of the ball is

a) 0.0 m/s
b) 3.1 m/s
c) 9.8 m/s
d) 24 m/s

19. What is the speed of a 2.5-kilogram mass after it has fallen freely from rest through a distance of 12 meters?

a) 4.8 m/s
b) 15 m/s
c) 30 m/s
d) 43 m/s

20. A basketball player jumped straight up to grab a rebound. If she was in the air for 0.80 second, how high did she jump? [Show all work, including the equation and substitution with units.]