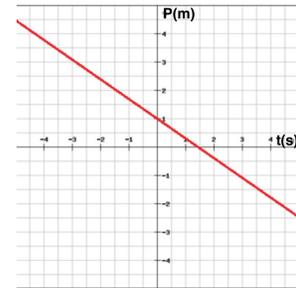
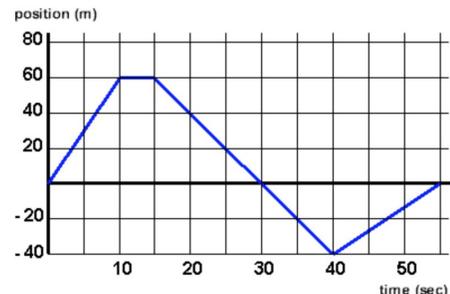


Note: There will be 25 questions: 20 multiple choice questions (20 X 3= 60) and 5 Constructed response question (5 X 8 = 40). There will be one extra credit question (10 X1 =10 points). For more information about the exam and extra credit problem, Visit [www.bari-science-lab.com](http://www.bari-science-lab.com) and click on **Brooklyn Tech**.



1. What is position function for the graph to the right?
2. Tom walks due East for 10 meters and then due North for 10 meters. Find  $d$ ?
3. What is the average speed of a car that travels 30 meters in 10 seconds, then another 50 meters in 30 seconds?
4. What is the velocity of a car that travels -40 meters in 5 seconds?
5. What is the velocity of a car that travels -50 meters in 5 seconds, then 10 meters in 5 seconds?
6. What is the acceleration of a person that goes from 0 m/s to 25 m/s in 5 seconds?
7. What is the acceleration of a person that goes from 50 m/s to 40 m/s in 10 seconds?

8. What is the average velocity during the first 10 seconds? What about 20 to 30 seconds? Where is the velocity equal to 0 m/s?



9. A car travels 90. meters due north in 15 seconds. Then the car turns around and travels 40. meters due south in 5.0 seconds. What is the magnitude of the average velocity of the car during this 20.-second interval?

10. How far will a brick starting from rest fall freely in 3.0 seconds?

11. A 2000 kg car travels at a constant speed of 12 meters per second around a circular curve of radius 30 meters. What is the magnitude of the centripetal acceleration of the car as it goes around the curve? As the car goes around the curve, the centripetal force is directed?

12. A vector makes an angle: at what angle horizontal and vertical components of the vector will be equal in magnitude?

13. A car initially traveling at a speed of 16 m/s accelerates uniformly to a speed of 20 m/s over a distance of 36 meters. What is the magnitude of the car's acceleration?

14. A ball is thrown at an angle of  $38^\circ$  to the horizontal. What happens to the magnitude of the ball's vertical velocity during the total time interval that the ball is in the air? What about the vertical acceleration?

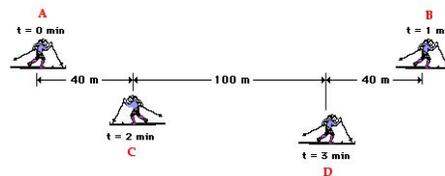
15. A girl leaves Physics classroom and walks 10 meters north to a drinking fountain. Then she turns and walks 30 meters south to math classroom. What is the girl's total displacement from the physics classroom to the math classroom?

16. One car travels 40. meters due east in 5.0 seconds, and a second car travels 64 meters due west in 8.0 seconds. During their periods of travel, the cars definitely had the same?

17. A skater increases her speed uniformly from 2.0 meters per second to 7.0 meters per second over a distance of 12 meters. The magnitude of her acceleration as she travels this 12 meters is

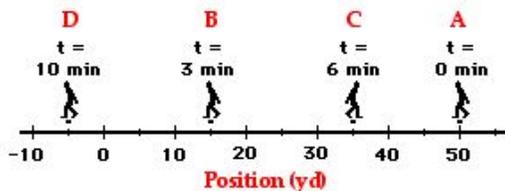
18. A ball thrown vertically upward reaches a maximum height of 30. meters above the surface of Earth. At its maximum height, the speed of the ball is

19. A child kicks a ball with an initial velocity of 8.5 meters per second at an angle of  $35^\circ$  with the horizontal, as shown. The ball has an initial vertical velocity of 4.9 meters per second and a total time of flight of 1.0 second. The horizontal component of the ball's initial velocity is approximately. The maximum height reached by the ball is approximately



20. Find displacement and the distance traveled by the skier during these three minutes.

21. Find displacement and the distance:



Instructor policy: Please bring your own calculator (You must not use your cellphone's calculator).