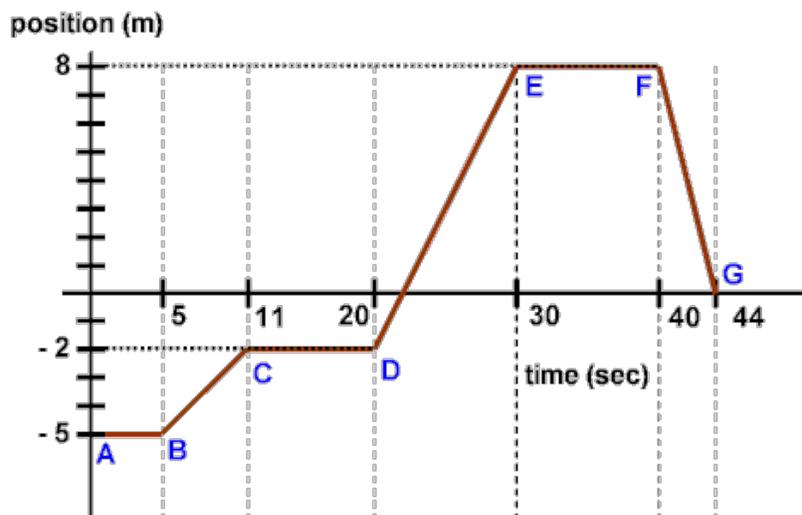


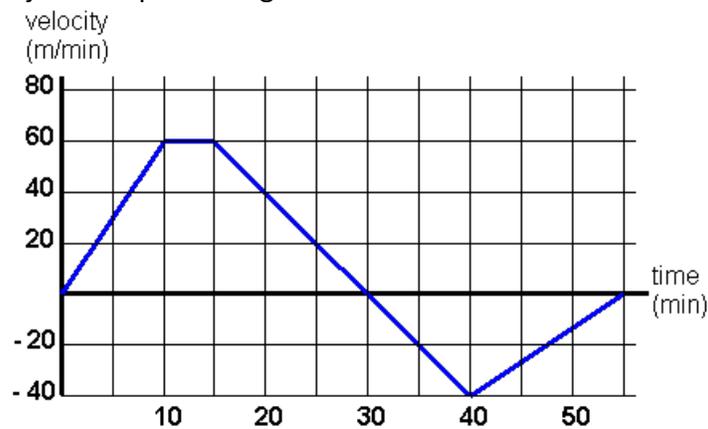
Unit 1 Review Problems:

Here are a bunch of questions to help with your studying. Make sure to go over all homework and quizzes as well. Remember, you will be given all equations on the test.

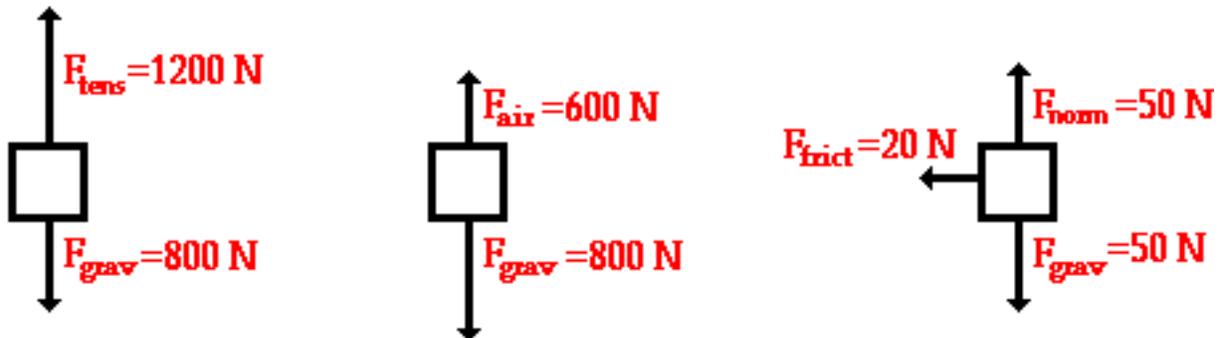
1. From your home, you walk 500m [W] to the library and then 1900m [E] to the grocery store.
 - a. What is your distance travelled?
 - b. What is your total displacement from home?
 - c. If it takes 30 minutes, what is your average speed?
 - d. If it takes 30 minutes, what is your average velocity?
2. What is required for uniform motion? (2 things)
3. For the following position-time graph, indicate
 - a. Where the object is stopped
 - b. The object is moving the fastest
 - c. The object is moving the slowest (not stopped)
 - d. Calculate the velocity of each segment



4. Sketch a velocity-time graph for the above graph
5. In the following velocity-time graph, indicate
 - a. Where the velocity is the greatest
 - b. Where the velocity is 0
 - c. Where the object is experiencing uniform motion



6. If an object accelerates from 14m/s to 29m/s in 12 seconds, what is its acceleration?
7. How long would it take an object to accelerate from 0-100m/s if it could accelerate at 30m/s²?
8. If you let an object fall (on earth) for 20 seconds, how fast would it be going?
9. Calculate the weight of an object that has a mass of 20kg
10. Describe the difference between weight, mass, and force of gravity
11. Draw a free body diagram for a ball rolling down a hill. Include all forces acting in appropriate directions (normal, friction, gravity, air resistance, etc)
12. Draw a free body diagram for a paper airplane gliding through the air.
13. Describe why you can tighten a hammer head by hitting the bottom of the handle.
14. If you are spinning, why do you slow down when you extend your arms?
15. Calculate the net force for each of the following:



16. How fast would a 100 kg box accelerate if you applied a 1000N force to it?
17. What force must you apply to a 0.02 kg object to accelerate it at a rate of 100 m/s²?
18. You accelerate your car from 0-100km/h in 6 seconds. The car has a mass of 2000 kg. What force was needed to accelerate the car that fast?
19. Describe and sketch the action-reaction force of your shoe as you walk.
20. How does a rocket apply thrust in outer space even if there is 'nothing to push against'? Explain using Newton's third law
21. A desk has a mass of 20kg. If the coefficient of static friction between the desk and the floor is 0.6, how much force would you need to apply for it to start moving?
22. A desk has a mass of 20kg. Once you get the desk moving, you find that you need to apply a force of 50N to keep it moving. Calculate the coefficient of kinetic friction.
23. Describe 2 ways you can increase friction (with examples) and 2 ways you can decrease friction (with examples)