

Objectives for Unit # 2: Motion Part II

You should be able to do the following:

(These objectives are also posted on our web page.)

1. Distinguish between a *direct* and an *indirect* relationship of the variables on a graph.
2. Use proper form and units to solve problems. Problems can involve distance, time, velocity and acceleration.
3. Given a verbal description of an object's motion, draw this motion on a graph.
4. Explain the difference between speed and velocity.
5. Calculate the speed, distance or time of an object's motion given the relationship, $v = \frac{d}{t}$.
6. Given words or a graph of an object's motion, draw a proper motion map of this motion.
7. Explain the relationship between the slope of the line on a position-time graph and velocity.
8. Explain the relationship between the slope of the line on a velocity-time graph and acceleration.
9. Calculate the slope of a line on graph (as described above).
10. Given a graph, calculate the slope of the line.
11. Given a position-time graph, draw the velocity-time graph. Given a velocity-time graph, draw the position-time graph.
12. Match a position-time graph with its corresponding velocity-time graph.
13. Given a velocity-time graph, draw the corresponding acceleration graph.
14. Given a position-time graph, determine whether the object is not moving, moving with a constant speed, speeding up or slowing down. Evaluate whether the object's velocity is positive or negative.
15. Given a velocity-time graph, determine whether the object is not moving, moving with a constant speed, speeding up or slowing down. Evaluate whether the acceleration is positive or negative.
16. Given a position-time graph, calculate the average velocity for a certain time interval. Given a velocity-time graph, calculate the average acceleration for a certain time interval.
17. Draw a general position –time graph for these situations. The object may start at the origin or it may start away from the origin in either the positive or negative direction. Draw one for an object:
 - a. That is stopped
 - b. That is speeding up in the positive direction
 - c. That is speeding up in the negative direction
 - d. That is moving at constant speed in the positive direction
 - e. That is moving at constant speed in the negative direction
 - f. That is speeding up and then slows down
18. Calculate the acceleration, velocity or time interval of an object given the relationship, $a = \frac{\Delta v}{\Delta t}$ and $\Delta V = Vf - Vi$
19. Discuss how scientists can use satellite tags to track animals. Give examples of how this information can be valuable.
20. Tell what it means about an objects motion when the acceleration is positive and what it means if acceleration is negative.
21. Given a speed v time graph, calculate the acceleration. Given a speed v time graph, calculate the total distance the object has traveled (See worksheet 4.3 Acceleration and Speed-Time Graphs)
22. Given one of the following four items, (1) a position v time graph, (2) a velocity v time graph, (3) a verbal description, or (4) a motion map, draw or describe the other 3 items.

Your textbook has many useful practice problems at the end of each chapter. Use this table to practice for your test. I have selected the questions appropriate for your test.

Section	Chapter 4
Vocabulary	#9-13
Concepts	#7-13
Problems	#1-20, 23-24
Applying your Knowledge	1, 3-6

Don't forget to try the section (4.3 text page 99) review.

For any test, you should review all class notes, all lab activities, all practice worksheet, and all homework assignments.