Name: Number: Date:

Unit P1 Review (Motion)

1. Define the following terms in your own words.
   (a) Velocity:

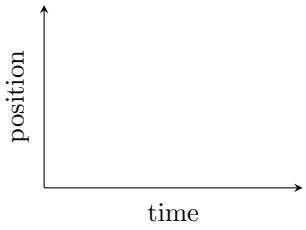
   (b) Acceleration:

2. What is the acceleration of a car moving at a constant speed in a straight line? How do you know?

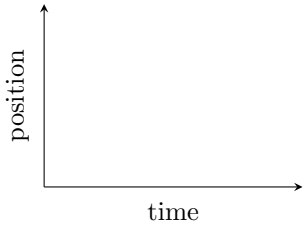
3. What are the three ways to accelerate?

4. Draw the following distance-time graphs.

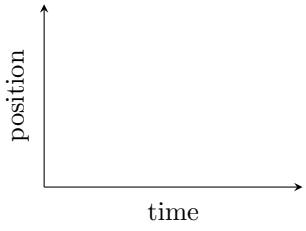
   (a) Not moving

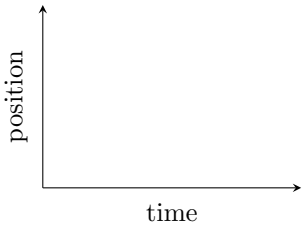
   (b) Forward at a constant speed

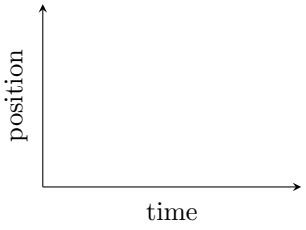
   (c) Backward at a constant speed

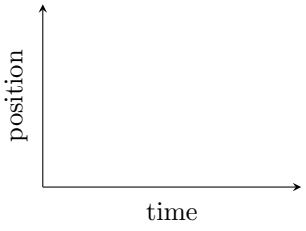
   (d) Forward and speeding up

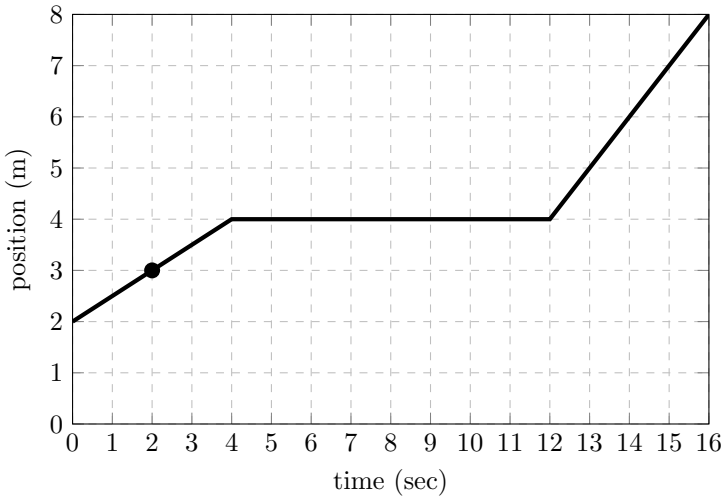
   (e) Backward and speeding up

   (f) Forward and slowing down

5. The motion of an object during a 16 second time period is graphed below.



   (a) What is the object's position at 2 seconds?

   (b) How far has the object traveled from the beginning of the motion ($t = 0\,\text{s}$) to the point indicated by the dot on the graph ($t = 2\,\text{s}$)?

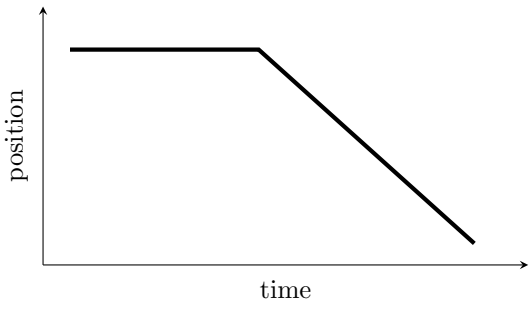
   (c) What is the object doing at 2 seconds? (for example, moving forward and speeding up, moving backward at a constant speed, standing still, etc.)

   (d) What distance did the object between when it started ($t = 0\,\text{s}$) and ended ($t = 16\,\text{s}$) its motion.

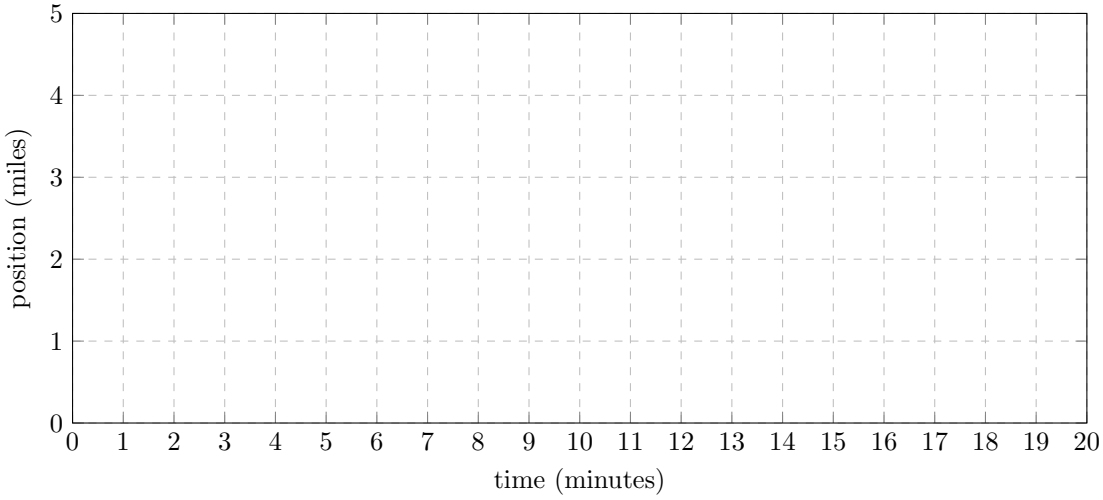
   (e) What is the velocity of the object between 0 seconds and 4 seconds?

   (f) What is the velocity of the object between 12 seconds and 16 seconds?

6. A position versus time graph of a car is shown below. Explain in at least two sentences what the car is doing.



7. Draw a graph for the following situation:
   (a) I start at school and drive forward 2 miles in 4 minutes.
   (b) Then I get stopped at a red light for 1 minute.
   (c) The light turns green and I go forward 2 miles in 5 minutes.
   (d) I turn around and go back to school because I forgot my phone. It makes me 6 minutes to get back.
   (e) It then takes me 4 minutes to go 1 mile forward because of traffic.



8. How much time does it take for a car to travel at 28.4 m/s to travel 3000 meters?

Knowns/Unknowns	Plug & Chug	Answer w/ Units

9. If a car is initially traveling forward at 15 m/s, how fast will it be going in 1.2 seconds if the acceleration is -10 m/s/s?

Knowns/Unknowns	Plug & Chug	Answer w/ Units

10. What is the speed of an object that travels 35 meters in 9 seconds?

Knowns/Unknowns	Plug & Chug	Answer w/ Units

11. How far will a train moving at 15.7 m/s go in 50 seconds?

Knowns/Unknowns	Plug & Chug	Answer w/ Units

12. A bird flies at a speed of 5.56 m/s. How much time does it take for the bird to fly 6000 m?

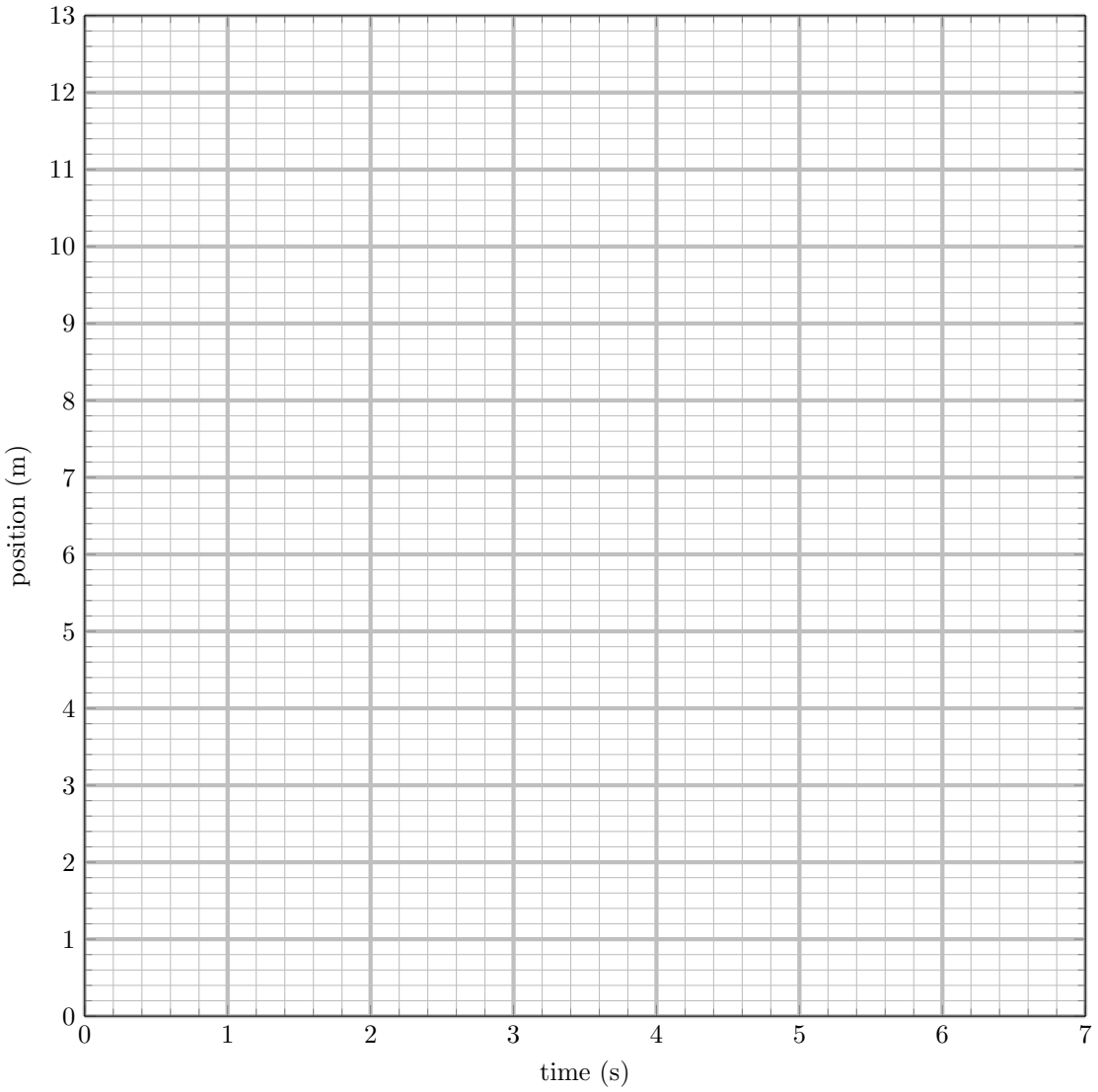
Knowns/Unknowns	Plug & Chug	Answer w/ Units

13. A rocket accelerates from rest to 400 m/s in 75 seconds. What is its acceleration?

Knowns/Unknowns	Plug & Chug	Answer w/ Units

14. Given the following data, make a graph of position vs. time of the motion of this object. Fit a straight line to the data graphed.

Time (s)	Postion (m)
0.8	1.6
1.6	3.2
2.0	4.0
2.8	5.6
4.0	8.0
6.0	12.0



15. Use the graph to determine the velocity of the car.