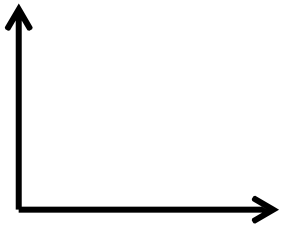
Name:_____

Introduction to Position-Time Graphs

Position-Time Graphs tell you where an object is located over a period of time. The slope of the graph tells you how fast the object is moving.

The sign of the slope indicates direction of motion. What would a graph look like if an object is…

Moving away from 0 meters



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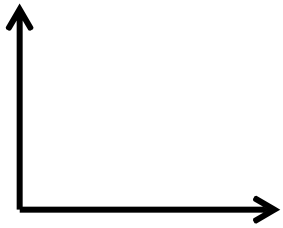
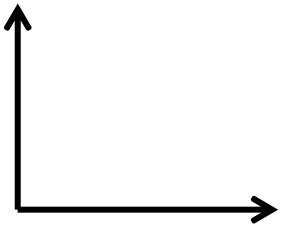
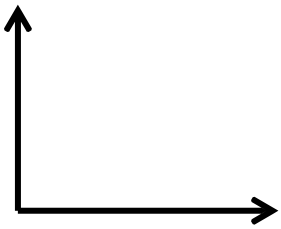


Moving towards 0 meters.

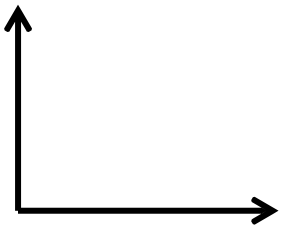


The steepness of the line indicates how fast an object is moving. What would a graph look like if an object is…

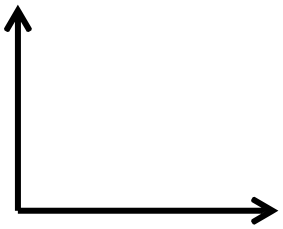
Moving slowly away from 0 m.



Moving quickly away from 0 m.

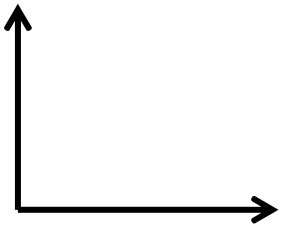


Moving slowly towards 0 m.

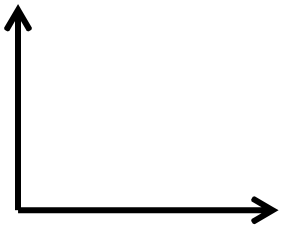


If an object's motion changes, the slope of the line changes. What would a graph look like if an object is…

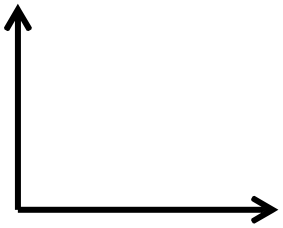
Moves slowly then quickly away from 0 m.



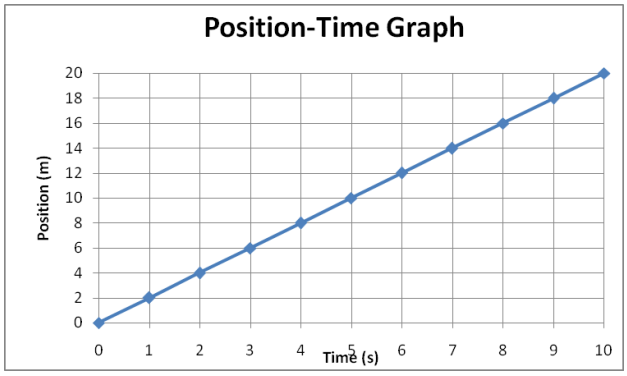
Moves quickly towards 0 m, then stops.

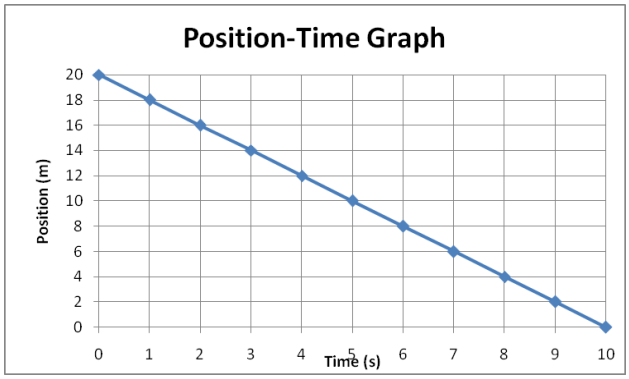


Is not moving, the moves slowly towards 0 m.



Practice: Answer the following questions using the graphs



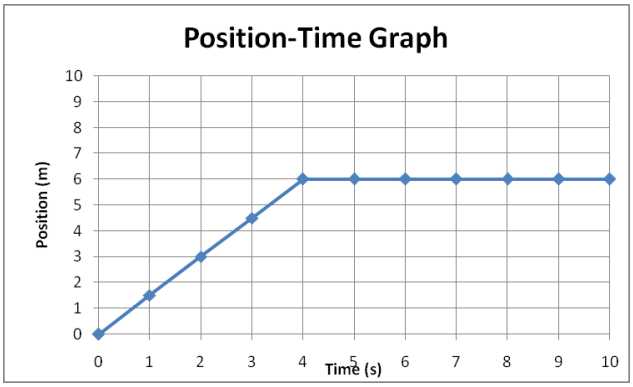


1. When time increases, what happens to the distance?
2. Describe the object's motion.
3. What is the velocity of the object?
4. When time increases, what happens to the distance?
5. Describe the object's motion.
6. What is the velocity of the object?

7. Is the object's motion constant? Explain.

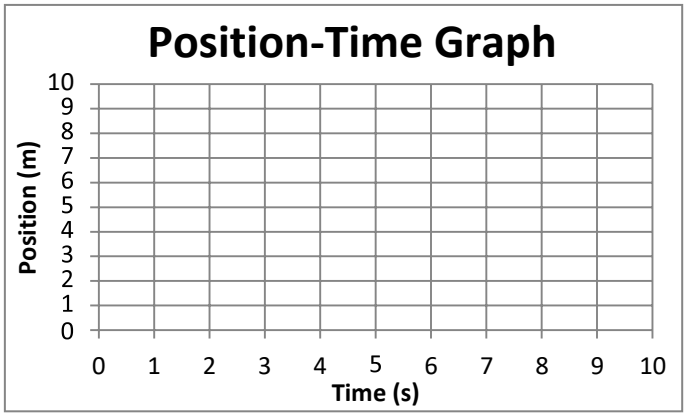
8. What is the velocity during the first 4 seconds?

9. What is the velocity during the last 6 seconds?



Drawing Position-Time Graphs

Problem 1: A car travels 6 meters in 3 seconds. It then stops for 5 seconds. Then the car goes 2 meters in 2 seconds.

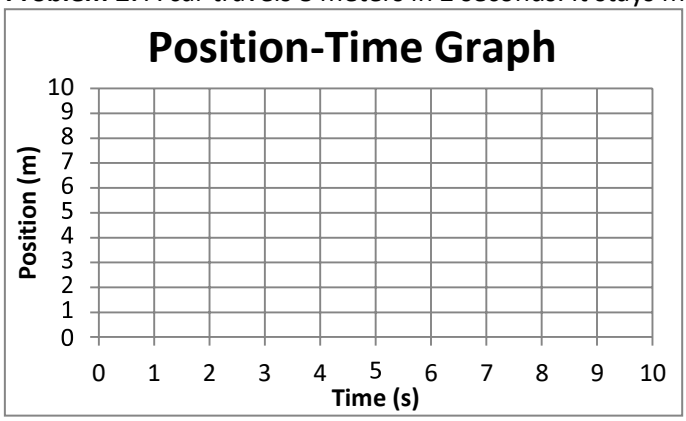


a. What is the velocity of the car for the first 3 seconds?

b. What is the velocity of the car from times 3-8 seconds?

c. During which time is the car moving faster, 0-3s or 8-10s? How could you know this without calculating the velocity?

Problem 2: A car travels 8 meters in 2 seconds. It stays motionless for 3 seconds. It then goes -5 meters in 5 seconds.

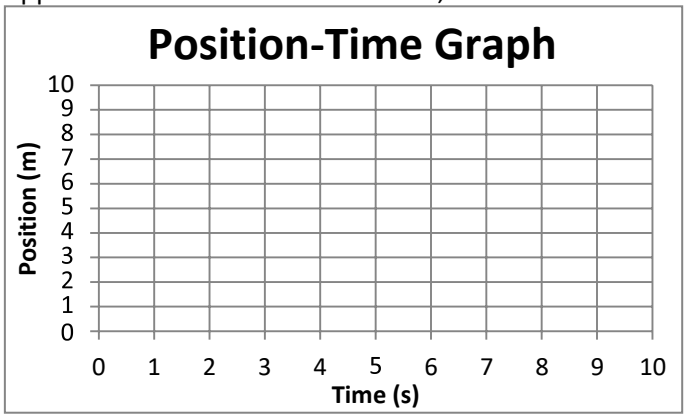


a. What is the velocity of the car for the first 2 seconds?

b. What is the velocity of the car from times 2-5 seconds?

c. What is the velocity of the car from times 5-10s?

Problem 3: A car travels 5 meters in 2 seconds. The car then stays motionless for 2 seconds. It then moves 5 meters in the opposite direction in 4 seconds. Last, the car moves forward at 3m/s for 2 seconds.



a. What is the velocity of the car for the first 2 seconds?

b. What is the velocity of the car from times 4-8 seconds?

c. How far did the car move from 8-10s?

Name: KEY

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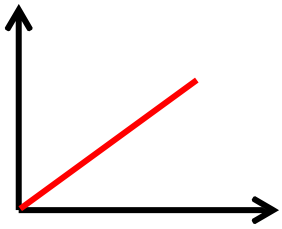

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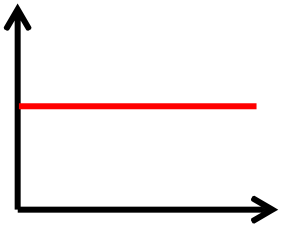
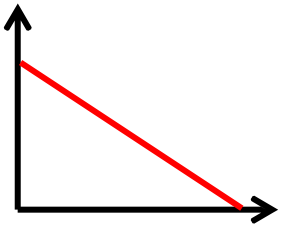


Moving towards 0 meters.



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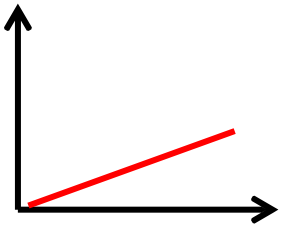
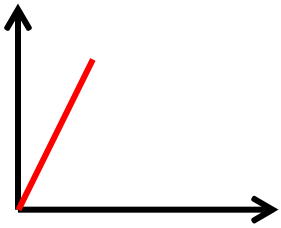


Moving quickly away from 0 m.



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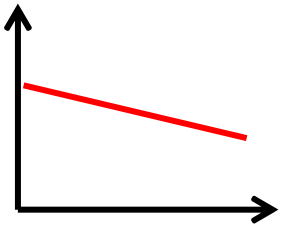

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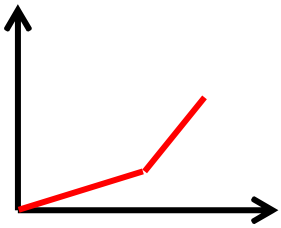

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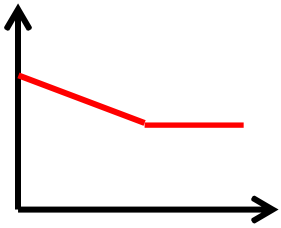

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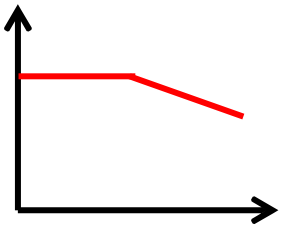

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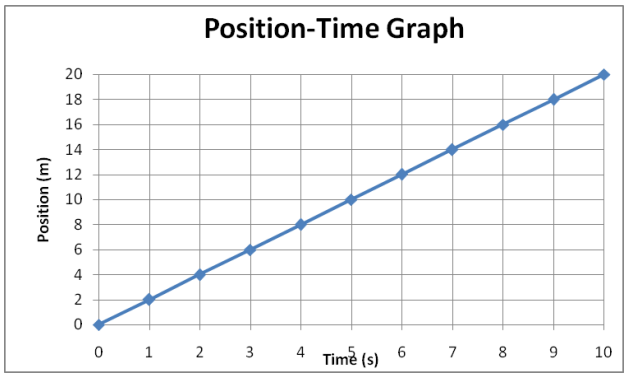
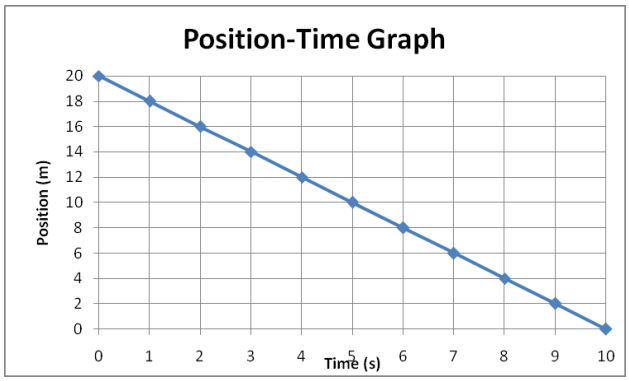


1. When time increases, what happens to the distance?
   it increases
2. Describe the object's motion.
   Constant positive velocity
3. What is the velocity of the object?
   2 m/s



4. When time increases, what happens to the distance?
   It decreases
5. Describe the object's motion.
   constant negative velocity
6. What is the velocity of the object?
   -2 m/s

7. Is the object's motion constant? Explain.

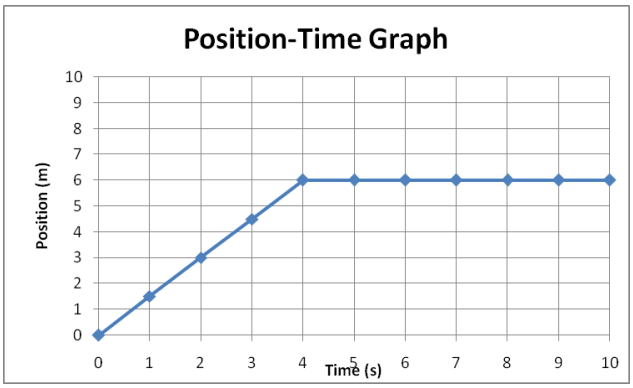
No, it move forward at a constant rate, then stops

8. What is the velocity during the first 4 seconds?

1.5 m/s

9. What is the velocity during the last 6 seconds?

0 m/s



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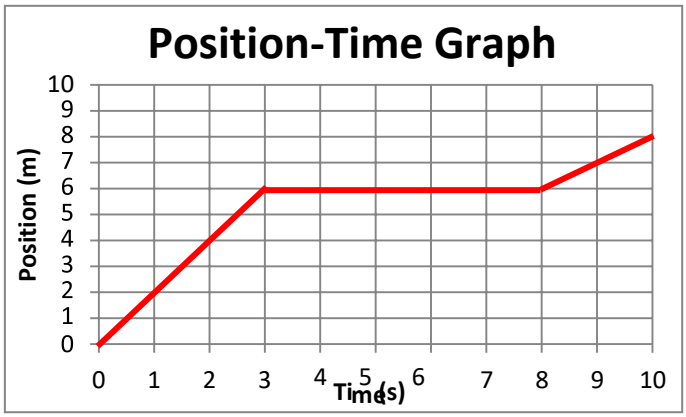


a. What is the velocity of the car for the first 3 seconds?

6 m/3 s = 2 m/s

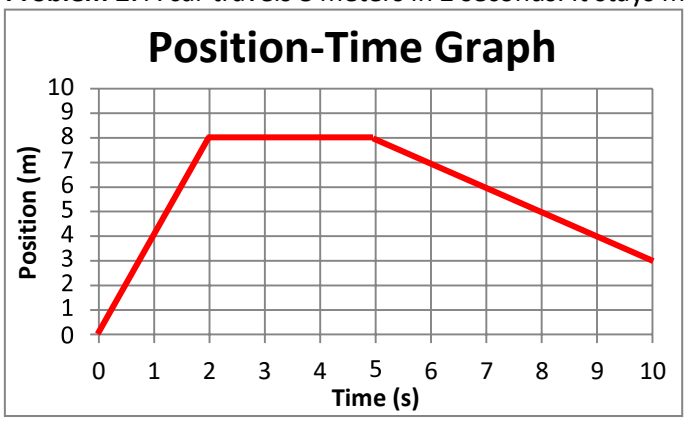
b. What is the velocity of the car from times 3-8 seconds?

0 m/s

c. During which time is the car moving faster, 0-3s or 8-10s? How could you know this without calculating the velocity?

From 0-3 seconds- the slope is steeper

Problem 2: A car travels 8 meters in 2 seconds. It stays motionless for 3 seconds. It then goes -5 meters in 5 seconds.



a. What is the velocity of the car for the first 2 seconds?

8 m/2 s = 4 m/s

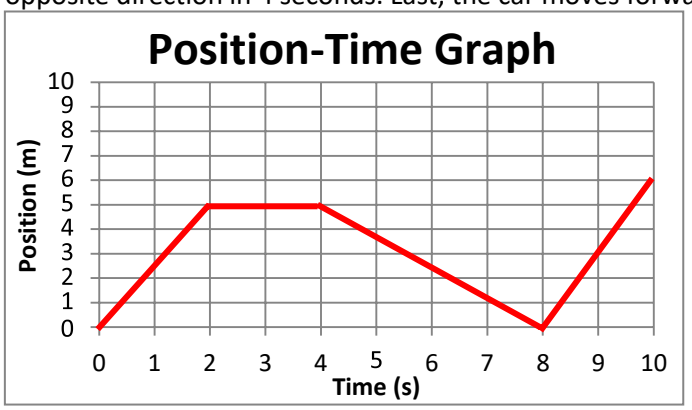
b. What is the velocity of the car from times 2-5 seconds?

0 m/s

c. What is the velocity of the car from times 5-10s?

-5 m/5 s = -1 m/s

Problem 3: A car travels 5 meters in 2 seconds. The car then stays motionless for 2 seconds. It then moves 5 meters in the opposite direction in 4 seconds. Last, the car moves forward at 3m/s for 2 seconds.



a. What is the velocity of the car for the first 2 seconds?

5 m/2 s = 2.5 m/s

b. What is the velocity of the car from times 4-8 seconds?

-5 m/4 s = -1.25 m/s

c. How far did the car move from 8-10s?

3 m/s * 2 s = 6 m