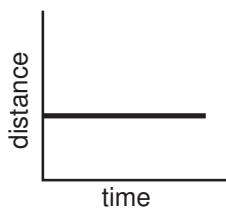


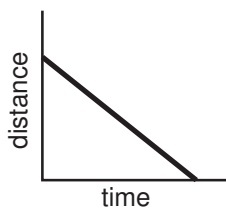
Each of the graphs on this page represents distance from an object as a function of time.

- On the following graphs, distance, as labeled on the y -axis, refers to distance from an amusement park. Which graph best matches the following sentence?

Hugo walked at a steady pace toward the amusement park.



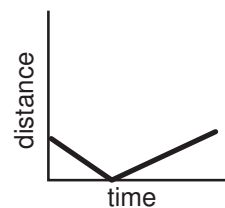
(a)



(b)



(c)

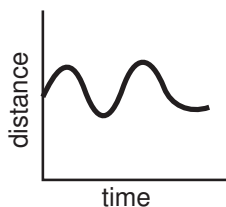


(d)

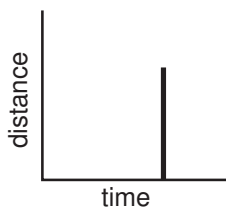
- Describe a situation involving distance and time that could match each of the graphs that you did not choose as the answer to problem 1.

- In this problem, distance on the y -axis stands for Mary's distance from the roller-coaster entrance. Which graph best matches the following sentence?

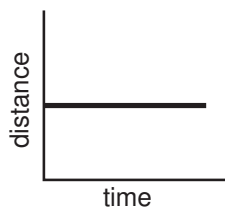
While she was standing still, Mary looked at the roller-coaster track in the distance.



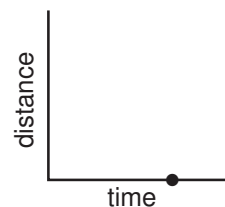
(a)



(b)



(c)



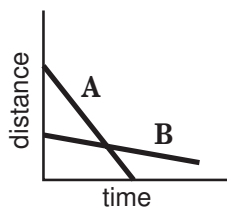
(d)

- Draw a graph that could correspond to each of the following situations. For graph (a), let the y -axis represent distance from the tunnel of love. For graph (b), let the y -axis represent distance from the entrance to the Ferris wheel.

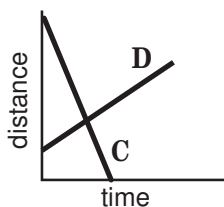
a) Chris walked quickly toward the tunnel of love and then slowly walked away from it.

b) We stood for a while, and then the line in which we were waiting began to slowly move toward the Ferris wheel.

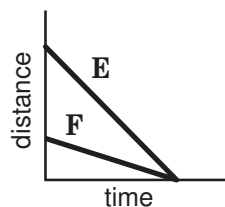
5. Each of the following graphs depicts the relationship between distance from a ride and time elapsed for two people. Each person walks at a steady rate directly toward or away from the ride or stands still. For each graph, describe the relationships and make observations and comparisons.



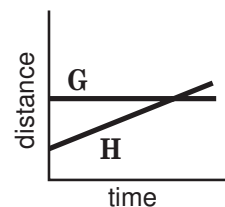
(a)



(b)



(c)



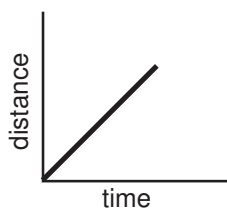
(d)

In addition to your observations, answer the following questions for each example:

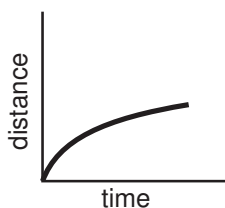
Which person is walking faster?

What is the significance of the x -intercept? The y -intercept?

6. The graphs below show motion away from the park for three different mothers. Jane moves at a steady pace, Angela speeds up as she walks away, and Kathy slows down as she moves away. Which graph matches which woman's motion? Explain your reasoning.



(a)



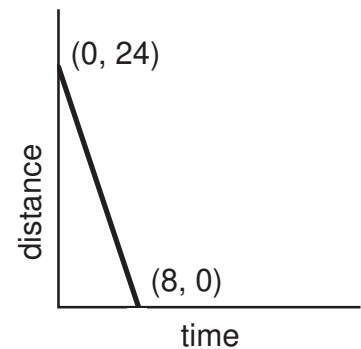
(b)



(c)

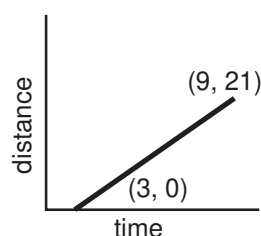
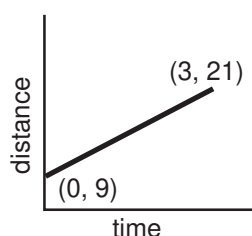
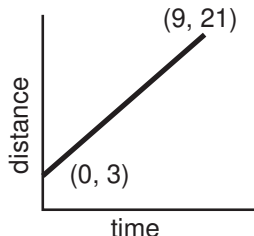
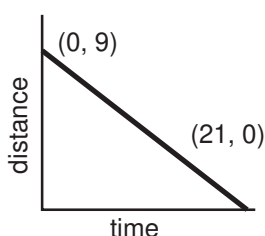
1. Consider the graph below, in which time in seconds is graphed along the x -axis and distance in feet is graphed along the y -axis. The graph shows Alisa's distance from the pinball machine area as a function of time. Which sentence is a good match for the graph?

- a) Alisa stood 8 feet from the pinball machine area and moved toward it, reaching it after 24 seconds.
- b) Alisa stood 24 feet from the pinball machine area and moved toward it at a rate of 4 feet per second.
- c) Alisa stood 24 feet from the pinball machine area and moved toward it, reaching it after 8 seconds.
- d) Alisa stood 8 feet from the pinball machine area and moved away from it, stopping when she was 24 feet away.



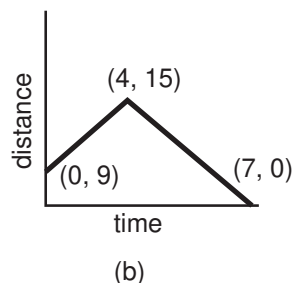
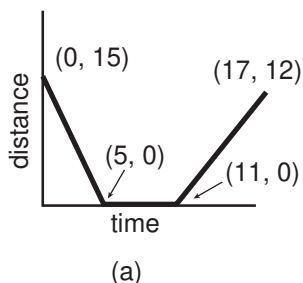
2. a) How many feet did Alisa move in all? _____
- b) How long did she take to walk this distance? _____
- c) The straight line indicates a steady pace. How many feet did Alisa walk in each second? _____
- d) How far was Alisa from the area after 1 second? _____
- e) How far was Alisa from the area after 2 seconds? _____
- f) How far was Alisa from the area after 5 seconds? _____
3. For each answer not chosen in question 1, sketch a graph that could correspond to that description. Write the description next to your graph.

4. Hugo was standing 9 feet from the hot-dog stand. He walked away, and after 3 seconds he was 21 feet away. Which of the following graphs corresponds to this situation?

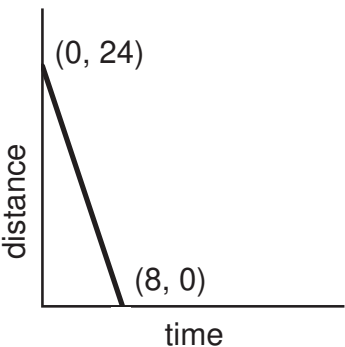


5. Write a description, similar to the one given in problem 1, that could correspond to each of the graphs not chosen in question 4. Determine the walking rate in each situation.

6. In the following two graphs, distance in meters from the main exit is graphed as a function of time in seconds for one individual. Describe the motion using the coordinates shown as endpoints of the line segments. Determine the rate at which the person walks for each segment. Assume that the person is moving directly toward or away from the exit that or he or she is standing still.



1. Consider again the graph at the right, where time in seconds is graphed along the x -axis and distance in feet is graphed along the y -axis. The graph shows Alisa's distance from a pinball machine area as a function of time. Which table describes the graph? Explain your decision.



Time	Distance	Time	Distance	Time	Distance
0	24	0	24	0	24
2	16	2	18	2	18
4	8	4	12	4	11
6	0	6	6	6	3
8	0	8	0	8	0
(a)		(b)		(c)	

2. Consider the following table.

Time	Distance from Water Ride
0	42
1	36
2	30
3	24
4	18
5	12
6	6
7	0

Choose the sentence that best describes the table.

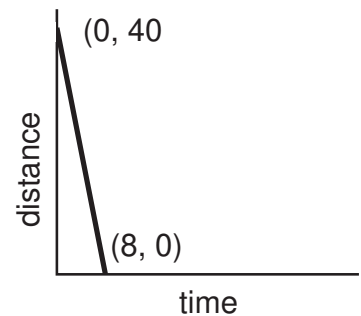
- a) Kirk walked away from the water ride at a rate of 6 feet per second.
- b) Kirk was 42 feet away from the water ride and walked toward it at a rate of 7 feet per second.
- c) Kirk was 42 feet away from the water ride and walked toward it at a rate of 6 feet per second.
- d) Kirk walked away from the water ride at a rate of 7 feet per second.

3. For each answer that did not describe the table in question 2, make a table that could correspond to it. Give entries for each second from 0 to 6.

4. Make tables that correspond to the graphs given on sheet 2, question 4.

5. Make tables that correspond to the graphs on sheet 2, question 6.

1. Consider the graph at the right, where time in seconds is graphed along the x -axis and distance in feet is graphed along the y -axis. The graph shows a girl's distance from a spaceship ride as a function of time. A table of values that could accompany the graph is also given. Use the table to help you decide which equation matches the graph.



Time	Distance
0	40
2	30
4	20
6	10
8	0

- a) $y = 40x - 8$ b) $y = 40 - 8x$ c) $y = 5x + 40$ d) $y = 40 - 5x$

Explain why you made your choice.

How is the initial distance indicated on the graph? In the table? In the equation?

2. Consider again the sentences created on sheet 3, question 2, and the tables created in question 3.

Each of the following is an equation that describes one and only one of the sentences. Here, x corresponds to time in seconds and y to distance in feet. Write the appropriate sentence under each equation. Indicate the table that goes with each equation. Does each pair of values in the tables satisfy the equation?

a) $y = 42 - 6x$

b) $y = 42 - 7x$

c) $y = 6x$

d) $y = 7x$

3. Zarah is standing 4 feet from a concession stand. She walks away at a steady pace. After 8 seconds, she is 24 feet away. Choose the linear equation that indicates her distance, y , from the stand as a function of time elapsed in seconds, x , since Zarah began walking. Explain your reasoning.

a) $y = 4 + 6x$ b) $y = 4 + 2.5x$ c) $y = 24 + 4x$ d) $y = 8 + 6x$

For each answer not chosen, give a scenario that describes the equation.

4. Josh is 30 feet from the bumper cars. He walks toward them at the rate of 3 feet per second. Choose the linear equation that describes the distance from the bumper cars as a function of time elapsed, x , in seconds. Explain your reasoning.

a) $y = 30x + 3$ b) $y = 30 + 3x$ c) $y = 3 - 30x$ d) $y = 30 - 3x$

For each answer not chosen, describe a situation that corresponds to the equation.

5. Notice that the equation can always be written in the following form: Distance after x seconds equals initial distance $\pm$ rate of motion times x . When is the sign positive, and when is it negative? Explain why. What indicates rate of motion in the graph? In the table?

6. Determine the equations for the graphs given in problem 4 on sheet 2. Be sure that the table entries that you gave on sheet 3, question 4, satisfy the appropriate equations.

7. Challenge: Find the equations for the graphs given in question 6 on sheet 2. These graphs consist of more than one line segment, so give the interval for each equation. (For example, a possible answer might be $2x + 1$ for $0 \leq x \leq 3$. Be sure that the table entries that you gave on sheet 3, question 5, satisfy the equations for the given intervals.