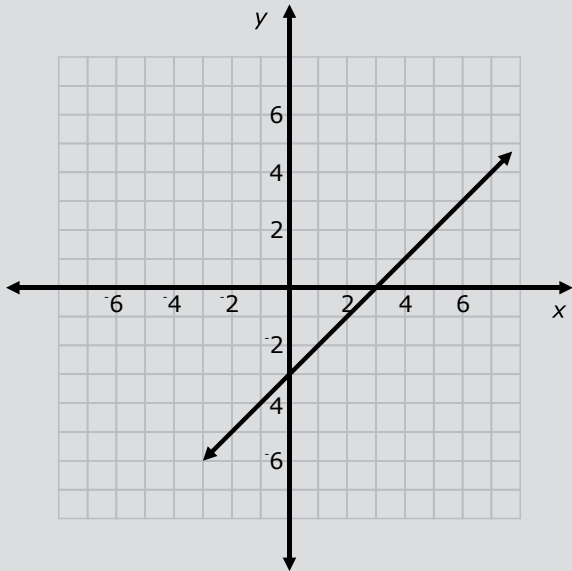


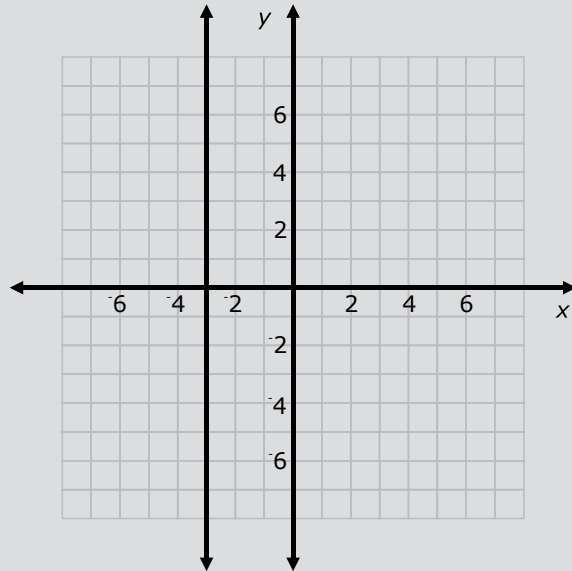
LESSON 23: Graphing and Interpreting Functions Modeling Real World Situations

Warm-Up

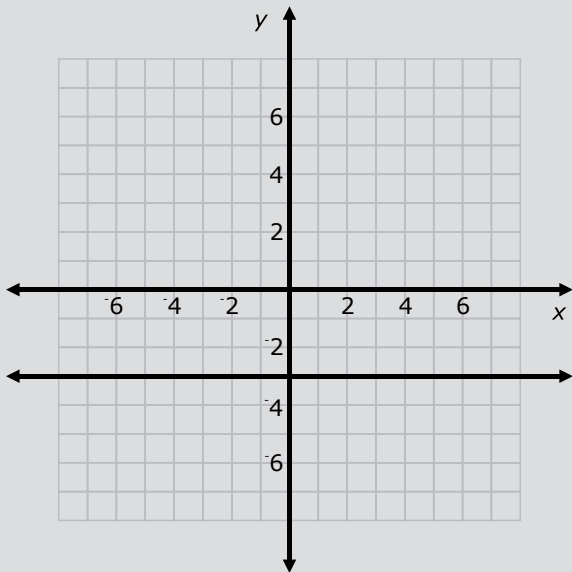
Directions: Determine the slope and the type of slope for each of the functions below.



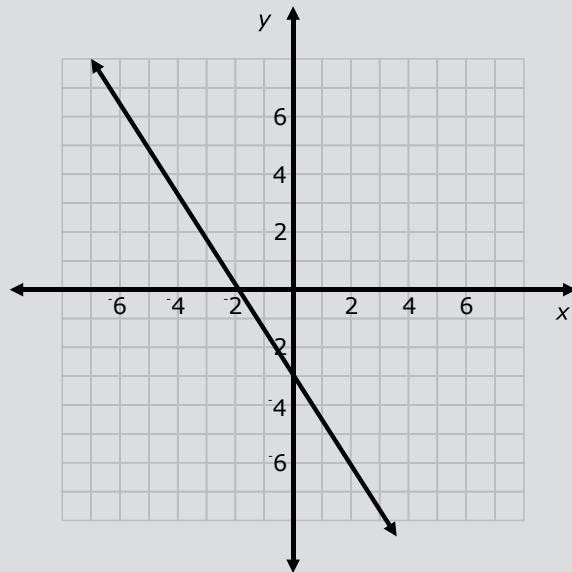
Slope? Type?



Slope? Type?



Slope? Type?

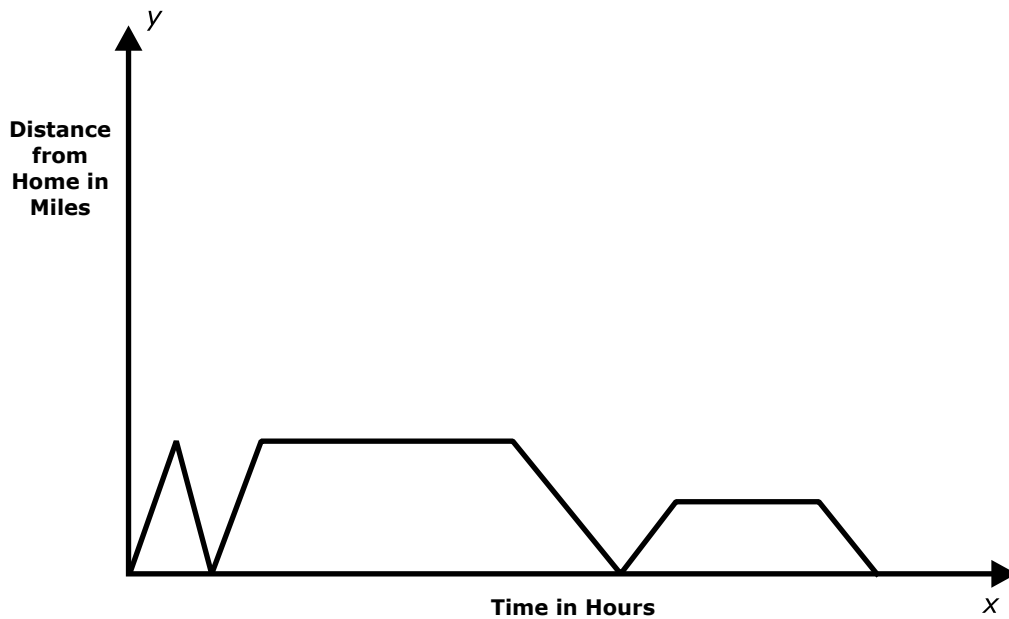


Slope? Type?

LESSON 23: Graphing and Interpreting Functions Modeling Real World Situations

Directions: Complete the following SOLVE problem with your teacher. You will only complete the S step.

Josh has a graph that showed where he spent his day yesterday. The graph shows how far he was from home during his regular school day. He only went to school and then to a movie later in the evening. Using the graph, explain what is happening in each interval. Be sure to justify your answer.



S Underline the question.
 This problem is asking me to find _____
 _____.

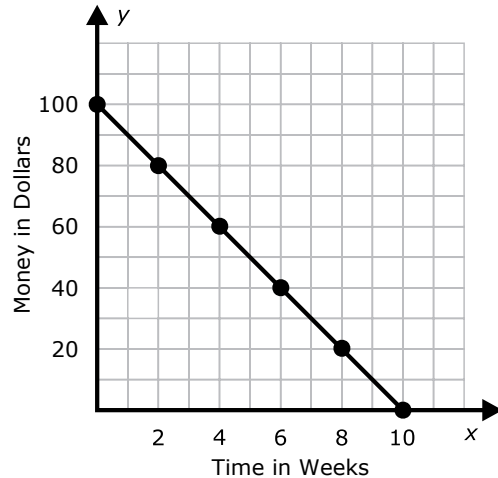
LESSON 23: Graphing and Interpreting Functions Modeling Real World Situations

Directions: Complete this page with your teacher and partner.

John borrowed \$100 from his dad to buy a used mower for his summer lawn mowing business. He paid his dad \$10 per week to pay off the debt. This situation can be represented by the function $y = -10x + 100$.

- The graph of the function is _____.
- Explain how you know that the graph is linear.
- If the x -axis represents the amount of time that passes in weeks, and the y -axis represents the amount of money John owes his dad, describe the relationship with time and money.

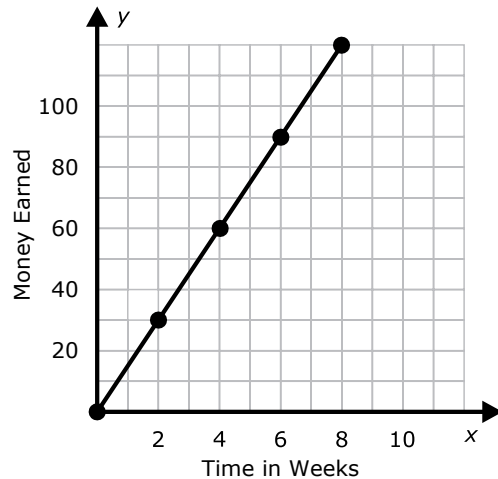
- As the x -values _____ the y -values _____.
This graph is _____ and _____.



Tina earns \$15 each Saturday by walking her aunt's dog. She is trying to earn \$120 to buy a new phone. She walked the dog every Saturday for 8 weeks. This situation can be represented by the function $y = 15x$.

- The graph of the function is _____.
- Explain how you know that the graph is linear.
- If the x -axis represents the number of weeks worked and the y -axis represents the amount of money Tina earns, describe the relationship with time and money.

- As the x -values _____ the y -values _____.
This graph is _____ and _____.



LESSON 23: Graphing and Interpreting Functions Modeling Real World Situations

Directions: Complete this page with your teacher and partner.

Describe the graph of the function between $x = 5$ weeks and $x = 8$ weeks.

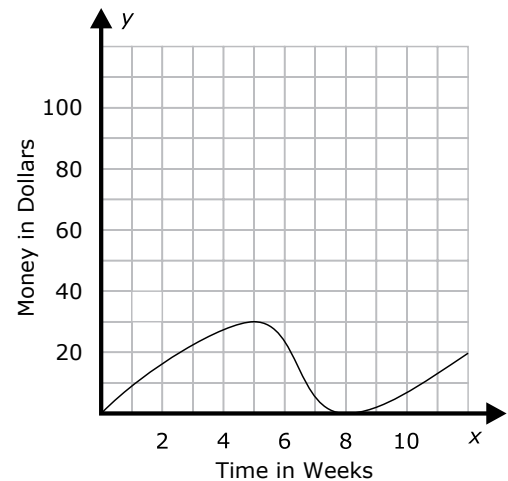
9. The graph of the function is _____.

10. Explain how you know that the graph is non-linear.

Draw a circle at the point of 5 weeks and 8 weeks on the graph.

11. Describe the relationship between $x = 5$ weeks and $x = 8$ weeks in the graph.

12. In the interval between Weeks 5 and 8, as the x -values _____, the y -values _____.



The math class created a graph of the average minutes of homework for a ten day period. Describe the graph of the function between $x = 3$ days and $x = 6$ days

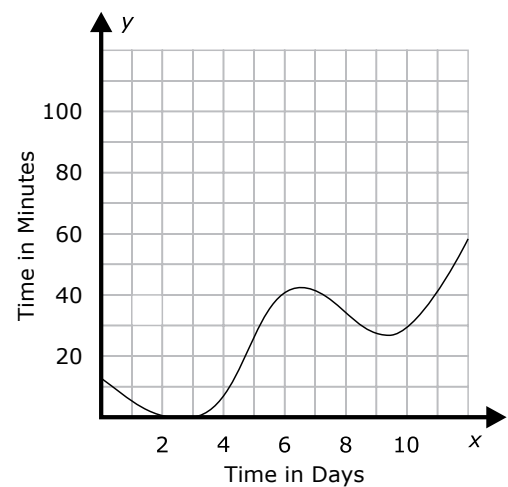
13. The graph of the function is _____.

14. Explain how you know that the graph is non-linear.

Draw a circle at the point of 3 days and 6 days on the graph.

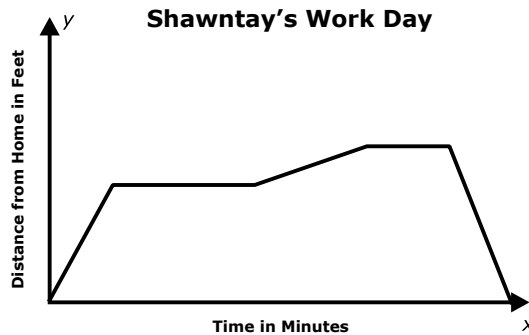
15. Describe the relationship between $x = 3$ days and $x = 6$ days in the graph.

16. In the interval between Days 3 and 6, as the x -values _____, the y -values _____.



LESSON 23: Graphing and Interpreting Functions Modeling Real World Situations

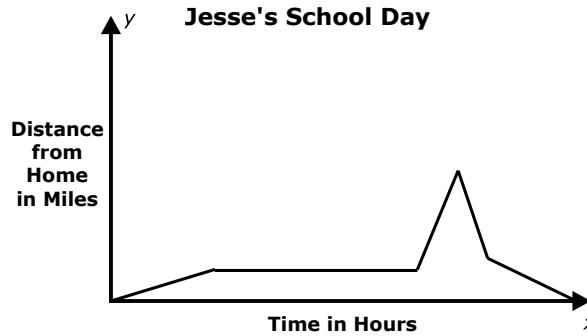
Directions: Complete this page with your teacher and partner.



1. What does the x -axis represent?	
2. What does the y -axis represent?	
3. In terms of the x -axis, what does it mean as we move farther right of the origin?	
4. Using a green colored pencil, circle the interval(s) where the graph is increasing. What does this mean?	
5. Using a red colored pencil, circle the interval(s) where the graph is decreasing. What does this mean?	
6. What portions of the graph are not circled yet?	
7. What is happening to the amount of time passing in these intervals?	
8. What is happening to the distance from home in these intervals?	
9. What does this mean?	
10. Which increasing interval shows Shawntay rushing because she was running late?	
11. How do you know?	

LESSON 23: Graphing and Interpreting Functions Modeling Real World Situations

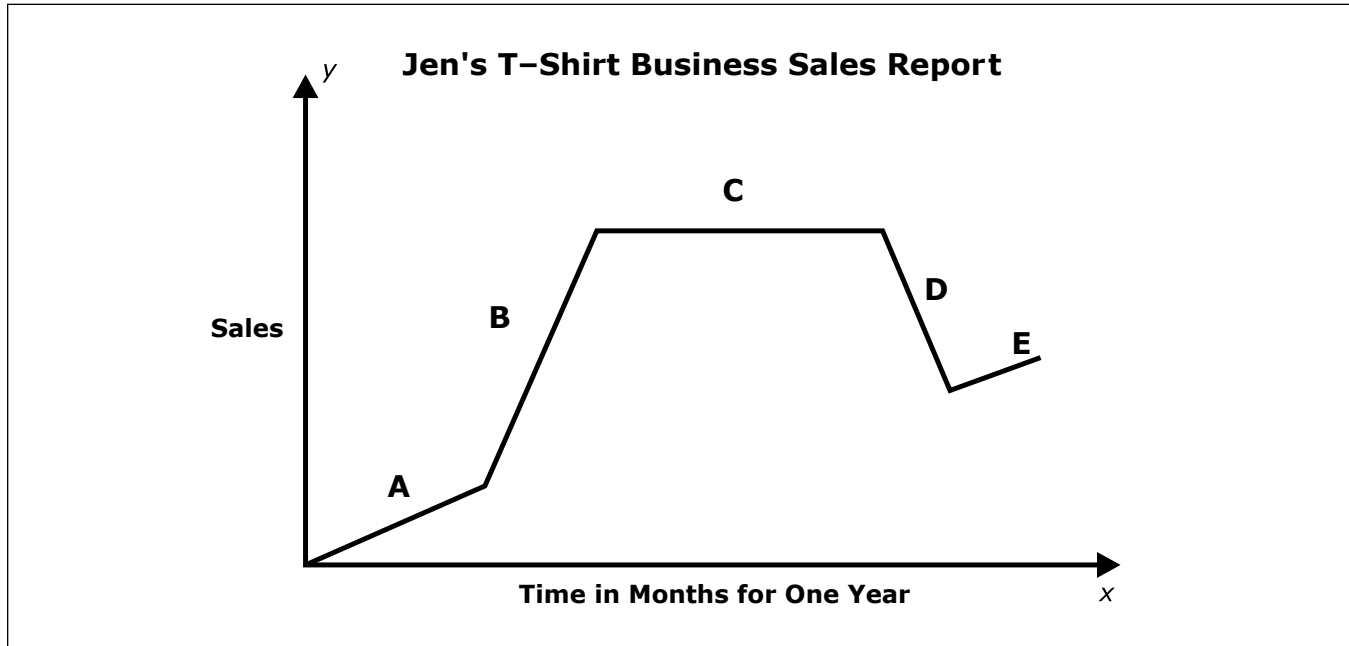
Directions: Complete this page with your partner.



1. What does the x -axis represent?	
2. What does the y -axis represent?	
3. In terms of the x -axis, what does it mean as we move farther right of the origin?	
4. Using a green colored pencil, circle the interval(s) where the graph is increasing. What does this mean?	
5. Using a red colored pencil, circle the interval(s) where the graph is decreasing. What does this mean?	
6. What portions of the graph are not circled yet?	
7. What is happening to the distance from home in these intervals?	
8. What is happening during these intervals?	
9. What may have happened during the second green interval?	
10. Look at the last two red intervals. Describe what may have happened on Jesse's way home.	

LESSON 23: Graphing and Interpreting Functions Modeling Real World Situations

Directions: Complete this page with your teacher and partner.

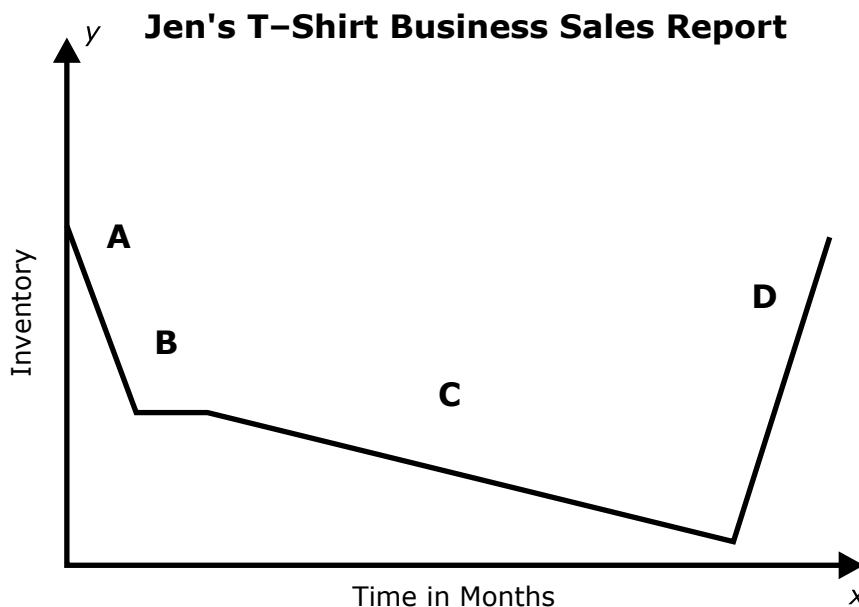


Jen sells t-shirts for her business. The graph above shows the sales trends for her company over a one year period. Using the information from the graph, explain how each part of the graph relates to the story.

Event	Explanation
A. For the first three months, sales steadily increase, starting at 0.	
B. At the beginning of the fourth month, sales increased drastically and continued this way for two months.	
C. The machines hit the maximum amount of t-shirts that they can produce and sales neither increase nor decrease for 5 months.	
D. Jen's business was not able to satisfy the needs of a larger client, so the company experienced a dramatic decline in sales for one month.	
E. The last month, sales began increasing gradually again.	

LESSON 23: Graphing and Interpreting Functions Modeling Real World Situations

Directions: Complete this page with your partner.

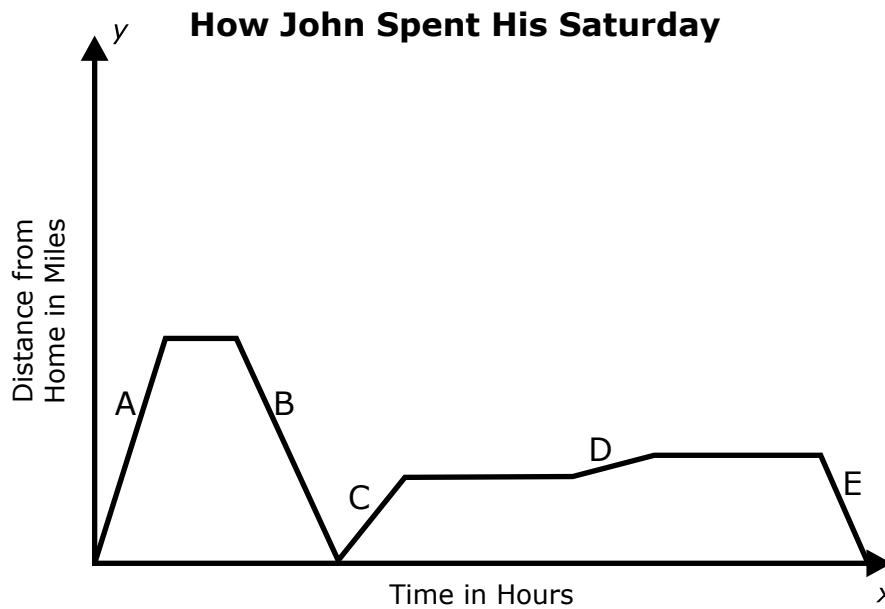


Lenny keeps track of the inventory for Jen’s t-shirt company. The following events occurred over the course of last year.

Event	Explanation
A. Inventory began with a large quantity in stock and dramatically decreased to fill orders for a month.	
B. During February, no orders were placed, so inventory was unchanged.	
C. From May to November, inventory slowly decreased to fill orders.	
D. In November and December, a large number of t-shirts were restocked to bring the inventory back to the original amount of shirts.	

LESSON 23: Graphing and Interpreting Functions Modeling Real World Situations

Directions: Complete this page with your teacher and partner.



Use the information shown on the graph to create a scenario for John's day.

A.

B.

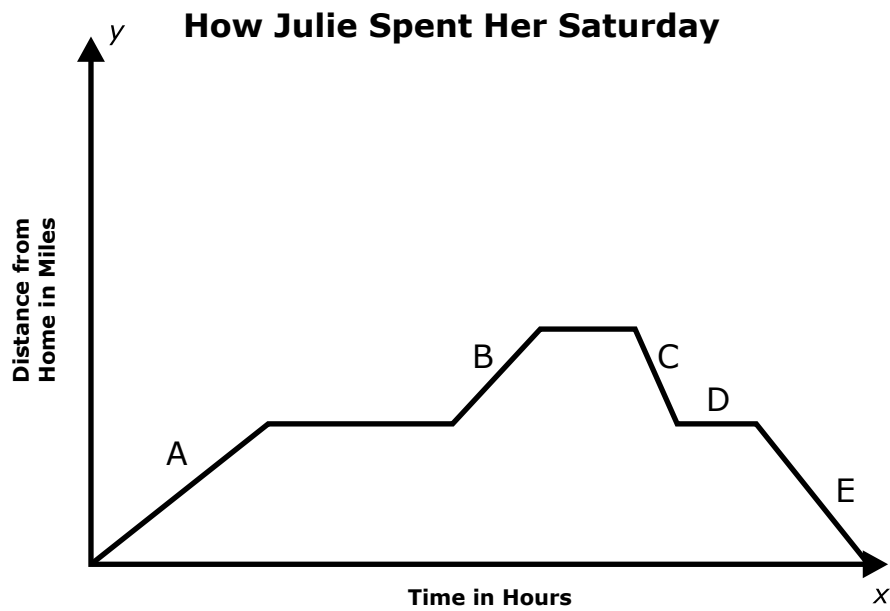
C.

D.

E.

LESSON 23: Graphing and Interpreting Functions Modeling Real World Situations

Directions: Complete this page with your partner.



Use the information shown on the graph to create a scenario for Julie’s day.

A.

B.

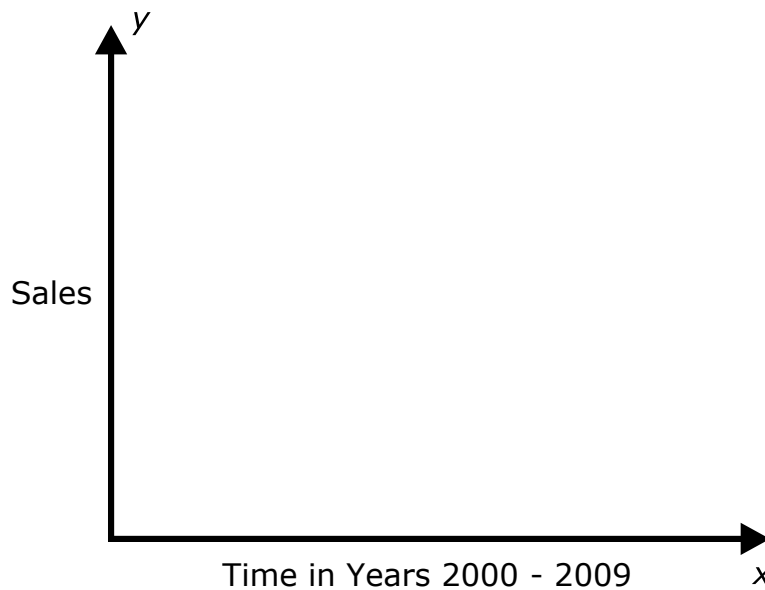
C.

D.

E.

LESSON 23: Graphing and Interpreting Functions Modeling Real World Situations

Directions: Complete this page with your teacher and partner.

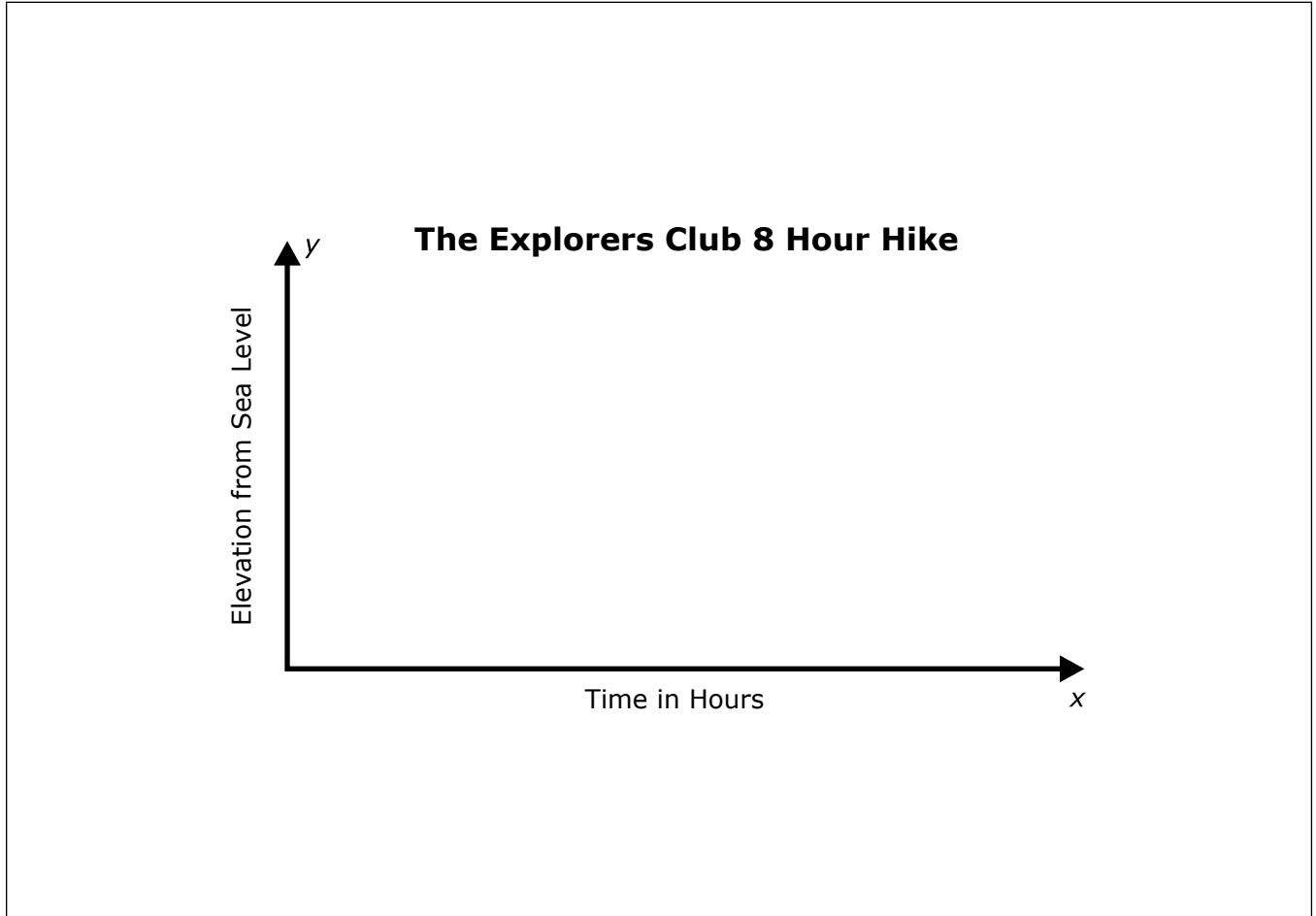
Sales for New Cars from 2000-2009

Use the information given in the scenario below to create a graph of the sales figures for Mr. Howard's company from 2000-2009.

- A.** During the 2000 year, sales declined slowly.
- B.** During 2001 and 2002 there was a sharp increase in sales due to rebates from the auto manufacturers.
- C.** During 2003 and 2004 there was a sharp decrease in sales due to two local factories in the town closing and many people moving away.
- D.** From 2005 through the middle of 2006 sales were flat.
- E.** During the middle of 2006 through the end of 2007 sales began to increase due to the opening of a new company in town.
- F.** From 2008 – 2009 Mr. Howard bought another car dealership which increased his sales and car companies were offering 0% down on all new car purchases.

LESSON 23: Graphing and Interpreting Functions Modeling Real World Situations

Directions: Complete this page with your partner.



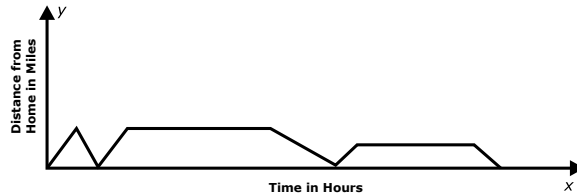
Use the information given in the scenario below to create a graph that models the hike that the Explorers Club took from their camp to the seashore.

- A.** The Explorers left their camp on the hillside at about 8 am and walked down an easy trail for about 2 hours.
- B.** During Hour 3 the trail took a downturn and they hiked down to the shore.
- C.** At the bottom of the large hill, there wasn't a place to stop, so they headed up a steep slope, and when they reached the top, they could look back and see their camp far in the distance.
- D.** Although they were tired, they still had not found a good place to sit and rest, so they ate some trail mix as they hiked down a small incline.
- E.** At about 2 pm, they finally arrived at a spot where they could sit and rest and eat their lunches.
- F.** After eating, they noticed a stream nearby and were able to use the stream to follow the steep hill down to the edge of the seashore.

LESSON 23: Graphing and Interpreting Functions Modeling Real World Situations

Directions: Complete the following SOLVE problem with your teacher.

Josh has a graph that showed where he spent his day yesterday. The graph shows how far he was from home during his regular school day. He only went to school and then to a movie later in the evening. Using the graph, explain what is happening in each interval. Be sure to justify your answer.



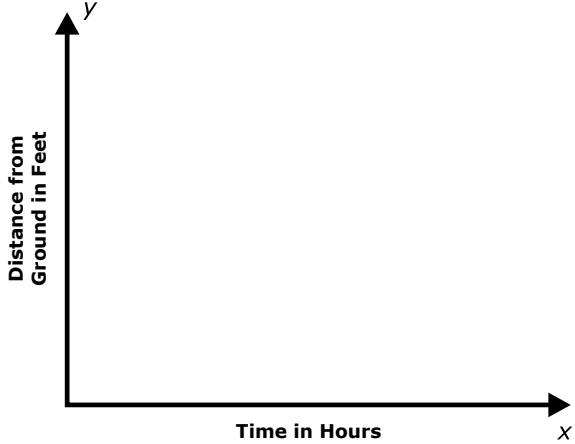
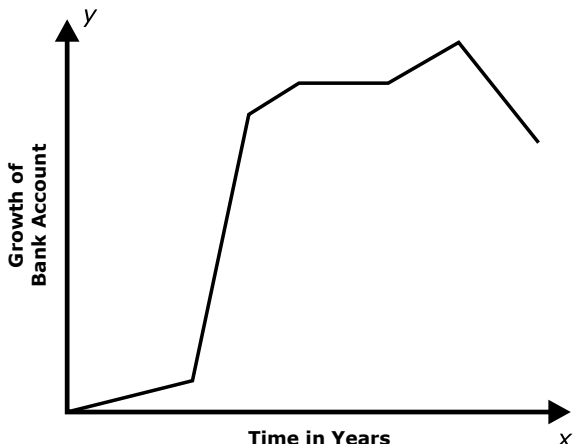
- S** Underline the question.
This problem is asking me to find _____
_____.
- O** Identify the facts.
Eliminate the unnecessary facts.
List the necessary facts.
- L** Write in words what your plan of action will be.

Choose an operation or operations.
- V** Estimate your answer.
Carry out your plan.
- E** Does your answer make sense? (Compare your answer to the question.)

Is your answer reasonable? (Compare your answer to the estimate.)
Is your answer accurate? (Check your work.)
Write your answer in a complete sentence.

LESSON 23: Graphing and Interpreting Functions Modeling Real World Situations

Directions: For Scenario 1, sketch the graph for the steps provided. For Scenario 2, write the steps for the graph provided.

<p>Scenario 1</p> <p>A. A plane takes off by gradually building speed and rising in the air.</p> <p>B. After take-off, the plane ascends at a rapid rate.</p> <p>C. After a large jump in altitude, the plane continues to rise at a very slow rate.</p> <p>D. The plane cruises at the same altitude for a short period.</p> <p>E. The plane begins to descend at a constant, yet steep, rate.</p> <p>F. Finally, the plane gradually descends for the rest of the flight, as it approaches the landing and touches the ground.</p>	
<p>Scenario 2</p>	
<p>A.</p>	
<p>B.</p>	
<p>C.</p>	
<p>D.</p>	
<p>E.</p>	

LESSON 23: Graphing and Interpreting Functions Modeling Real World Situations

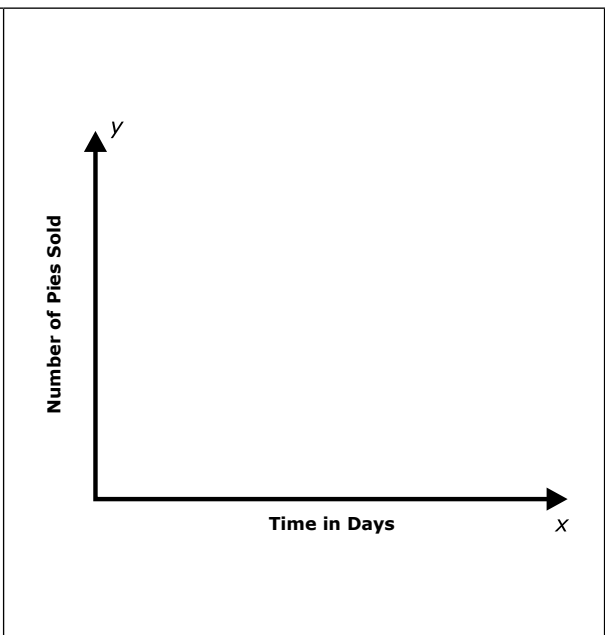
Homework

.....

Name _____ Date _____

Directions: For Questions 1 - 5, sketch the appropriate step on the graph provided. For Questions 6 - 10, write a scenario that relates to the graph provided.

1. At the beginning of the month, sales took off and rapidly grew.
2. After the holiday had passed, sales were still increasing but at a more gradual rate.
3. In the middle of the month, sales were at their highest, with no growth or decline for a short period.
4. Then, towards the end of the month, sales began to fall at a gradual rate.
5. To finish off the month, sales increased again at a fairly rapid pace.



6. _____

7. _____

8. _____

9. _____

10. _____

