Name _____

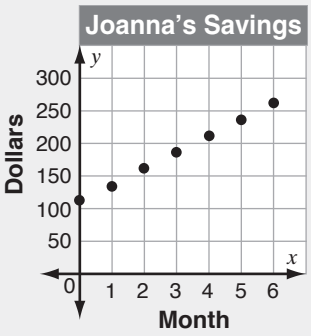
4-5B Features of Functions

Objective To use a graph to describe the domain and range of a function and intervals where the function is increasing or decreasing

Johanna's grandmother gives her $110 to start a savings account. On the 30th of each month for five months, Johanna adds $25 to her grandmother's money. How much money does Johanna have after 5 months?

▶ To determine how much money Johanna has after 6 months, you can use a table to represent Johanna's savings as a function. Then graph the ordered pairs for the input and output to find the output for the fifth month.

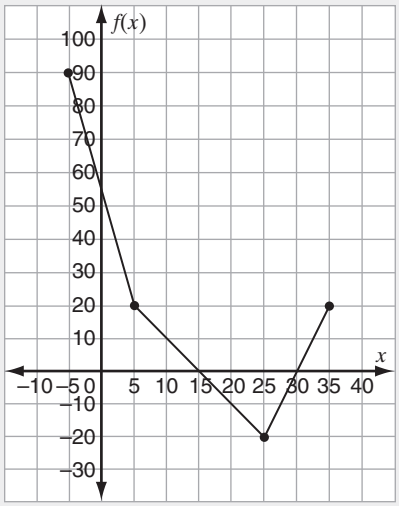
Domain month (x)	0	1	2	3	4	5
Add $25 each month	Initial gift	110 + 25	135 + 25	160 + 25	185 + 25	210 + 25
Range dollars (y)	110	135	160	185	210	235
(Input, Output) (x, y)	(0, 110)	(1, 135)	(1, 160)	(1, 185)	(1, 210)	(1, 235)



So, after 6 months, Johanna has $235 in her savings.

▶ Some *key features of a function* are its domain and range, its intercepts, and the intervals where it is increasing or decreasing.

Describe the domain and range of the function on the graph. Tell where it is increasing or decreasing, and where it is positive or negative.



- The graph shows all x-values from -5 to 35. Domain is $\{x| -5 \le x \le 35\}$.
- The graph shows all y-values from -20 to 90. Range is $\{y| -20 \le y \le 90\}$.
- The function is *decreasing* for x-values between -5 and 25. It is *increasing* for x-values between 25 and 35.
- The function is *positive* for x-values between -5 and 15 and between 30 and 35.
- The function is *negative* for x-values between 15 and 30.

Use a graph to describe the domain and range of the function. Then tell where the function is increasing or decreasing, and where it is positive or negative.

1. Choi has a $332.50 credit on her credit card. She makes a total of $95 in charges each week. The maximum amount she can owe is $15,000.

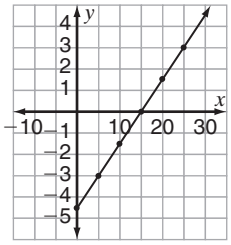
2. Discuss and Write Is it possible for a function to neither increase nor decrease? Give an example to support your reasoning.

Name _____

4-5B Features of Functions

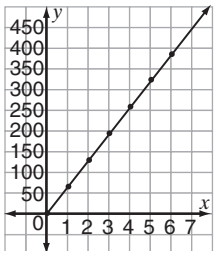
Describe the domain and range of the function shown on the graph. Then tell where the function is increasing or decreasing, and where it is positive or negative.

3.



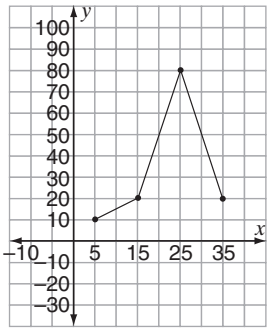
_____

4.



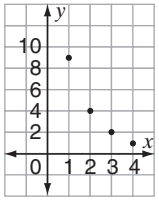
_____

5.



_____

6.



_____

Problem Solving

Solve. Describe the situation with a function.

7. Carol is going bowling. It costs $5.25 to rent shoes. Each game costs $2.75. Carol can spend at most $20. Is 6 a value in the range of the function? Explain why or why not.

_____

8. Jeff has 19 packs of cards for a card game. He buys 3 packs of cards each week for 4 weeks. What are the domain and range of the function.

_____

9. Jack cuts a 7-ft long board into 3 pieces of equal length. Then he cuts one of those pieces into 3 pieces of equal length. He continues cutting until he has pieces that are less than 1 inch long. Describe the domain and range of the function.

_____

10. For her handmade bead bracelets, Ginny spends $3.50 on material and sells each for $0.75. For her ribbon bracelets, she spends $5.75 on materials and sells each for $1.75. Which type of bracelet does she need to sell more of to make a profit?

_____

WHAT'S THE ERROR

11. The relationship between the number of people that buy tickets for a play and the total profit is a function. Bill thinks that that the domain is $\{x \mid x \geq 0\}$. Is he correct? Explain why or why not.

_____