

Name _____ Date _____

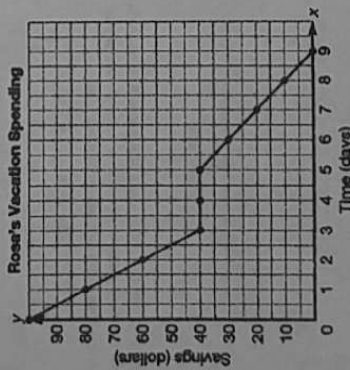
I Graph in Pieces
Linear Piecewise Functions

Problem Set

Complete each table. Then, sketch a graph that represents the problem situation.

- Rosa saved \$100 to spend on vacation. For the first 3 days of her vacation she spent \$20 each day. Then for the next 2 days, she spent nothing. After those 5 days, she spent \$10 each day until her savings were depleted.

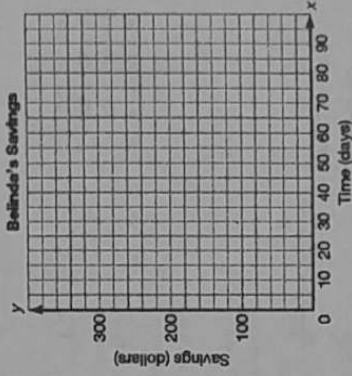
Time (days)	Savings (dollars)
0	100
1	80
2	60
3	40
4	40
5	40
6	30
7	20
8	10
9	0



16

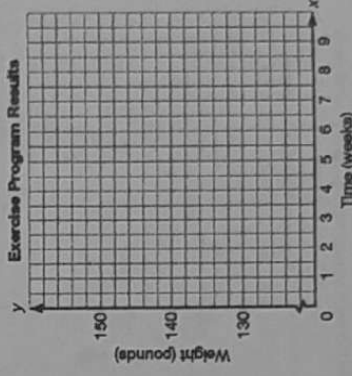
16

Time (days)	Savings (dollars)
0	
5	
10	
15	
20	
25	
30	
35	
40	
45	
50	
55	
60	



- Shanee starts a new exercise program to lose weight. Before starting the program her weight is 146 pounds. She loses 2 pounds each of the first 4 weeks of her new program. Then, for the next 2 weeks she loses 1 pound per week. After those 2 weeks she adds swimming to her program and again loses 2 pounds per week for the next 2 weeks until she reaches her goal.

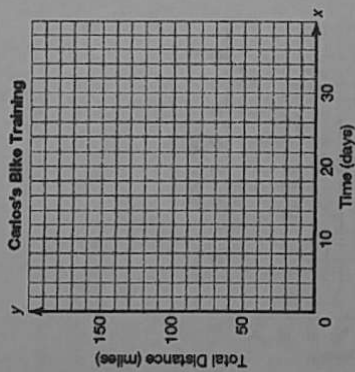
Time (weeks)	Weight (pounds)
0	
1	
2	
3	
4	
5	
6	
7	
8	



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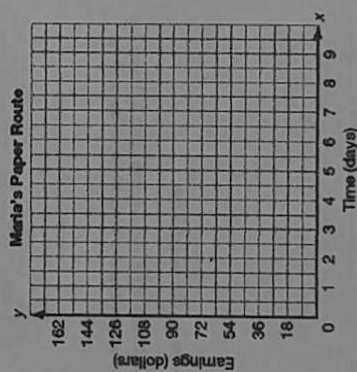
4. Carlos is training for a bike race in 30 days. For the first 5 days of his training he bikes 3 miles each day. For the next 10 days he bikes 5 miles each day. For the next 10 days of his training he bikes 8 miles each day. For the last 5 days of his training he bikes 10 miles a day.

Time (days)	Total Distance (miles)
0	
5	
10	
15	
20	
25	
30	



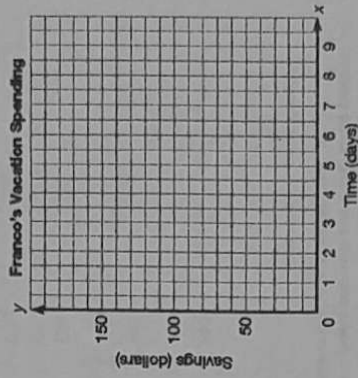
5. Maria earns money delivering newspapers each morning. For the first 3 days she earns \$18 each day. For the next 2 days, she takes on an additional route to cover a coworker who is out sick and earns \$36 each day. For the next 2 days she returns to her original route and earns \$18 each day.

Time (days)	Earnings (dollars)
0	
1	
2	
3	
4	
5	
6	
7	



6. Franco saved \$200 to spend at an amusement park while on vacation. For the first 2 days of his vacation he spent \$36 each day. Then for the next 2 days, he spent nothing. After those 4 days, he stayed 3 more days and spent \$40 each day.

Time (days)	Savings (dollars)
0	
1	
2	
3	
4	
5	
6	
7	



Write a piecewise function to represent the data shown in each table.

7. From 0 to 3:
The y-intercept is 60.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{55 - 60}{1 - 0} = \frac{-5}{1} = -5$$

From 3 to 6:
The slope is 0.

$$y = 45$$

From 6 to 9:
A point is (6, 46).

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{41 - 43}{8 - 6} = \frac{-2}{2} = -1$$

$$y - y_1 = m(x - x_1)$$

$$y - 45 = -1(x - 6)$$

$$y - 45 = -x + 6$$

$$y = -x + 51$$

$$f(x) = \begin{cases} -5x + 60, & 0 \leq x \leq 3 \\ 45, & 3 < x \leq 6 \\ -2x + 57, & 6 < x \leq 9 \end{cases}$$

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8.

x	$f(x)$
0	0
2	3
4	6
6	9
8	12
10	12
12	12
14	18
16	24
18	30

16

16

9.

x	$f(x)$
0	80
1	75
2	70
3	65
4	64
5	63
6	62
7	61
8	60
9	58

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10.

x	$f(x)$
0	4
3	6
6	8
9	12
12	16
15	20
18	22
21	24
24	26
27	28



11.

x	$f(x)$
0	100
2	80
4	60
6	60
8	60
10	60
12	54
14	48
16	42
18	36

12.

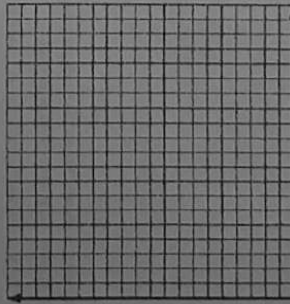
x	$f(x)$
0	74
1	70
2	66
3	62
4	64
5	66
6	68
7	60
8	52
9	44

LESSON 16.2 Skills Practice

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6. An electronics store rewards customers with in-store reward vouchers. The value of the reward vouchers are based on the total value of merchandise purchased. The rewards are calculated as follows:

- 4% for purchases more than \$0 and up to and including \$50,
- 8% for purchases more than \$50 and up to and including \$100,
- 14% for purchases more than \$100 and up to and including \$150,
- 16% for purchases more than \$150 and up to and including \$200, and
- 18% for purchases more than \$200.



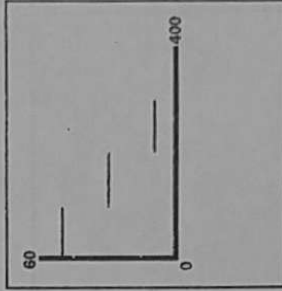
LESSON 16.2 Skills Practice

Write a function to represent each problem situation. Then use your graphing calculator to graph the function.

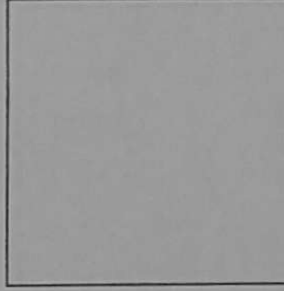
7. To encourage quality and minimize defects, a manufacturer pays his employees a bonus based on the value of defective merchandise produced. The fewer defective merchandise produced, the greater the employee's bonus. The bonuses are calculated as follows:

- \$50 for more than \$0 and up to and including \$100 of defective merchandise,
- \$30 for more than \$100 and up to and including \$200 of defective merchandise,
- \$10 for more than \$200 and up to and including \$300 of defective merchandise, and
- \$0 for more than \$300 of defective merchandise.

$$f(x) = \begin{cases} 50, & 0 < x \leq 100 \\ 30, & 100 < x \leq 200 \\ 10, & 200 < x \leq 300 \\ 0, & 300 < x \end{cases}$$



8. A jewelry store offers reward coupons to its customers. A \$2 reward coupon is awarded for each \$20 spent. Write a function that represents the value of reward coupons awarded for up to \$100 spent.



LESSON 16.2 Skills Practice

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- 9. A kids bounce house charges \$8 for the first hour and \$2 for each additional hour of playtime. Write a function that represents the charges for up to 5 hours of playtime.



LESSON 16.2 Skills Practice

- 11. An ice rink charges hockey teams for ice time to practice. The ice rink charges \$10 for the first hour and \$12 for each additional hour. Write a function that represents the charges for up to 5 hours.

- 12. Ava is participating in a walk for charity. Her sponsors agree to donate \$2.50 plus \$2.50 for each whole mile that she walks. Write a function that represents the donation amount for up to 5 miles.

- 10. A fundraising company bases the profit returned to organizations on the total value of products sold. The profit returned is calculated as follows:
 - \$100 for sales more than \$0 and up to and including \$250,
 - \$225 for sales more than \$250 and up to and including \$500,
 - \$350 for sales more than \$500 and up to and including \$750, and
 - \$475 for sales more than \$750 and up to and including \$1000.