

Chapter 2 Test Review

1. Macy works a part-time job after school to earn money for a summer vacation. She is paid a constant rate for each hour she works. The table shows the amounts of money that Macy earned for various amounts of time that she worked.

- A. What are the dependent and independent quantities in this problem situation?

Independent: Time Worked

Dependent: Amount Earned

- B. Determine the unit rate of change for the problem situation.

$$\frac{27 - 22.50}{3 - 2.5} = \frac{4.50}{.5} = 9 \text{ /hour}$$

- C. Complete the table.

See table

- D. Determine the amount of money that Macy earns for working 7.5 hours.

$$9(7.5) = 67.50 \quad \text{Macy earns } \$67.50 \text{ for working } 7.5 \text{ hours.}$$

	Time Worked	Amount Earned
Units	Hours	Dollars
	2.5	22.50
	3	27.00
	3.5	31.50
	4.5	40.50
	5	45.00
	6	54.00
Expression	t	9t

2. Elijah received a \$300 gift card from his grandparents and is using it only to pay for his karate lessons, which cost \$30 per month.

- A. Write a function that describes the dollar amount of money d , on the card after t months.

$$d(t) = -30t + 300$$

- B. Graph the function that you wrote in part (a). Label your axes.

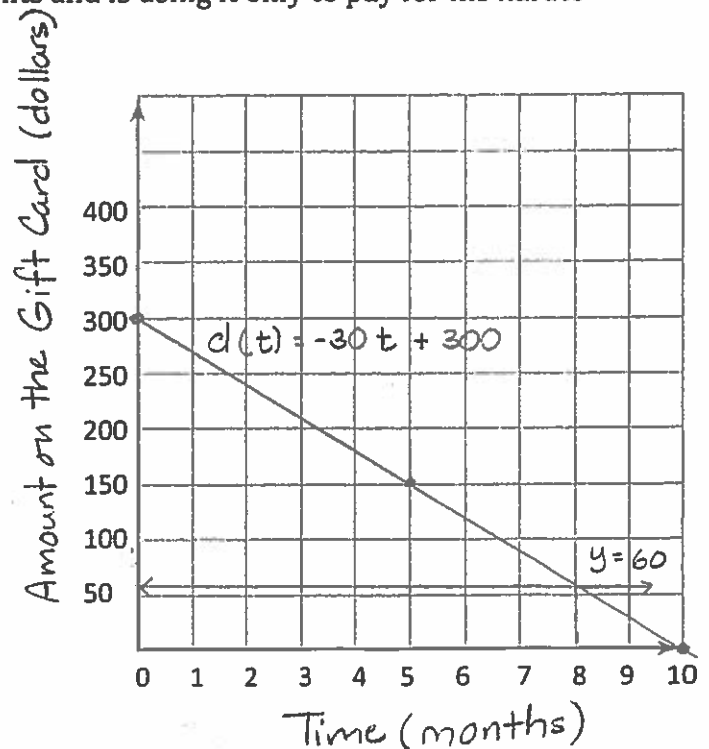
See Graph

- C. Use the graph to estimate when there will be \$60 remaining on the card.

8 months

- D. Use your function to determine exactly when there will be \$60 remaining on the card.

$$\begin{aligned} d(t) &= 60 & 60 &= -30t + 300 \\ -240 &= -30t & -240 &= -30t \\ \frac{-240}{-30} &= \frac{-30t}{-30} & 8 &= t \end{aligned}$$



Solve each equation. Combine like terms.

3. $4m + 2m = 3m - 9$

$$\begin{array}{r} 6m = 3m - 9 \\ -3m \quad -3m \\ \hline 3m = -9 \\ \frac{3m}{3} = \frac{-9}{3} \end{array}$$

$m = -3$

4. $3(x-4) = 2x + x - 9$

$$\begin{array}{r} 3x - 12 = 3x - 9 \\ -3x \quad -3x \\ \hline -12 = -9 \\ -12 \neq -9 \end{array}$$

No solution

5. $\frac{1}{2}(2x+8) = 30$

$$\begin{array}{r} x + 4 = 30 \\ -4 \quad -4 \\ \hline x = 26 \end{array}$$

Evaluate the function $f(x) = -5.89x + 6.357$ for each value. Round to the 100ths place if necessary.

6. $f(2.85) = -5.89(2.85) + 6.357$
 $= -16.7865 + 6.357$
 $= -10.4295 \approx -10.43$

7. $f(-4) = -5.89(-4) + 6.357$
 $= 23.56 + 6.357$
 $= 29.917 \approx 29.92$

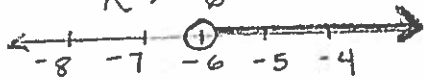
Solve each inequality and graph on a number line.

①

8. $4k + 21 > -3$

$$\begin{array}{r} -21 \quad -21 \\ 4k > -24 \\ \frac{4k}{4} > \frac{-24}{4} \end{array}$$

$k > -6$



②

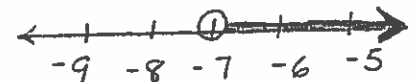
9. $a + 2(a-12) \geq 0$

$$\begin{array}{r} a + 2a - 24 \geq 0 \\ 3a - 24 \geq 0 \\ 3a \geq 24 \\ a \geq 8 \end{array}$$



10. $-5x - 7 < 28$

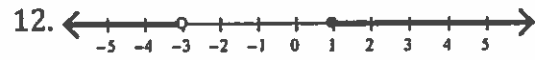
$$\begin{array}{r} -5x < 35 \\ \frac{-5x}{-5} < \frac{35}{-5} \\ x > -7 \end{array}$$



Write an inequality to represent each graph.



$-4 \leq x \leq 2$

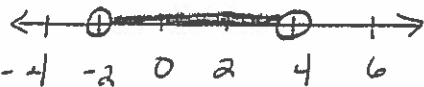


$x < -3$ or $x \geq 1$

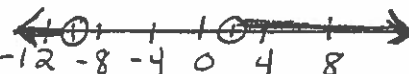
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Solve each compound inequality. Graph your solution.

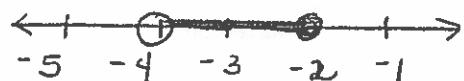
13. $5 < w + 7 < 11$ "AND"
 $\begin{array}{r} -7 \quad -7 \quad -7 \\ -2 < w < 4 \end{array}$



14. $x - 2 < -12$ or $2x + 3 > 7$
 $\begin{array}{r} +2 \quad +2 \quad -3 \quad -3 \\ x < -10 \quad 2x > 4 \\ \frac{2x}{2} > \frac{4}{2} \\ \text{or } x > 2 \end{array}$



15. $7 \leq 3 - 2p < 11$ "AND"
 $\begin{array}{r} -3 \quad -3 \quad -3 \\ 4 \leq -2p < 8 \\ \frac{4}{-2} \geq \frac{-2p}{-2} > \frac{8}{-2} \\ -2 \geq p > -4 \text{ or } -4 < p \leq -2 \end{array}$



16. $\frac{x}{4} - 2 < -1$ or $-3x + 1 < 10$
 $\begin{array}{r} +2 \quad +2 \quad -1 \quad -1 \\ \frac{x}{4} < 1 \quad -3x < 9 \\ \frac{x}{4} < 1 \quad \frac{-3x}{-3} < \frac{9}{-3} \\ x < 4 \text{ or } x > -3 \end{array}$ All real numbers



Define a variable and write an inequality to model the situation.

17. The maximum occupancy of a theater is 300 people.

$$p = \text{number of people} \quad p \leq 300$$

18. Today's temperature if the high is 74 and the low is 53.

$$t = \text{today's temperature} \quad 53 \leq t \leq 74$$

Write an inequality and solve for each of the following.

19. An elevator can safely lift at most 4400 lbs. A concrete block has an average weight of 42 lbs.

What is the maximum number of concrete blocks that the elevator can lift?

$$\frac{42x}{42} \leq \frac{4400}{42}$$

$$x \leq 104.76$$

The maximum number of concrete blocks the elevator can lift is 104.

20. What is the greatest number of 34¢ stamps you can buy for \$5.00?

$$\frac{0.34s}{0.34} \leq \frac{5.00}{0.34}$$

$$s \leq 14.7$$

The greatest number of stamps you can buy for \$5.00 is 14.

21. Keegan works at the ticket booth of a local playhouse. On the opening night of the play, tickets are \$10 each. The playhouse has already sold \$500 worth of tickets during a presale.

The function $f(x) = 10x + 500$ represents the total sales as a function of tickets sold on opening night.

A. How many tickets can Keegan sell and make no more than \$1000?

$$10x + 500 \leq 1000$$

$$10x \leq 500$$

$$x \leq 50$$

B. Draw a line at $y = 1000$.

See the graph.

C. Draw an oval on the graph to represent how many tickets can sell and make no more than \$1000.

See the graph.

D. How many tickets must Keegan sell to make at least \$1400? Write an inequality to describe your answer.

$$10x + 500 \geq 1400$$

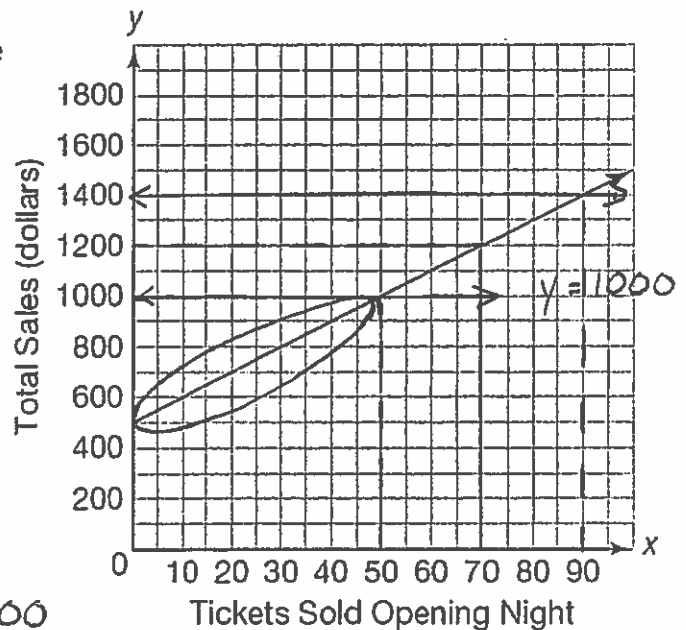
Use the graph

$$10x \geq 900$$

or solve the inequality

$$x \geq 90$$

E. How much money will Keegan make if he sells exactly 70 tickets?



Use the graph or solve the equation.

$$f(70) = 10 \cdot 70 + 500$$

$$= 700 + 500$$

$$= 1200$$

Keegan will make \$1200 if he sells exactly 70 tickets.