

Unit 3 Review

1. Label the parts of this graph with

- Increasing
- Decreasing
- Stop
- Constant

2. Create a graph of the following story. Make sure to label your graph.

"Claudia is walking to Pamela's house. She is super excited at first so she walks really fast. Then she gets to the stop light and has to wait for the light to walk across. Claudia walks across at a constant speed. BUT, a bicycle, ridden by Rafael almost runs into Claudia so she sudden stops. When the bicycle passes, she walks quickly, then at a constant pace until she slowed down at Pamela's door."

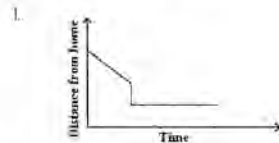
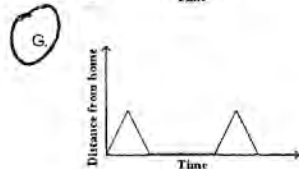
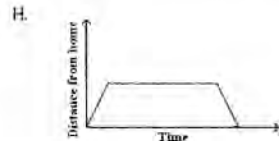
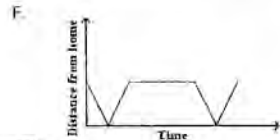


3. Name the 5 things a proper graph needs:

- title
- axes labeled "x" or "y"
- arrows on axes
- axes name + unit
- scale

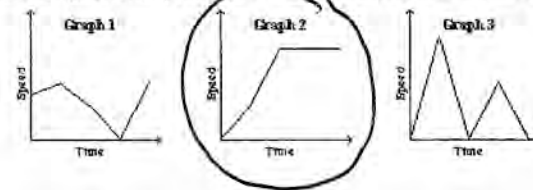
4. Match the situation to the graph:

Gloria drives her daughter to school in the morning and then comes back home. She stays home until she has to go to pick up her daughter from school, and then they both return home again. Which graph best shows the situation?



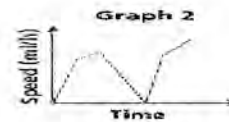
5. Match the graph to the situation:

Tell which graph corresponds to the situation described below. Explain the reasons for your choice.



William does his warm-up stretches, begins walking, and then speeds up to his routine jogging pace, which he continues as he disappears around the corner.

6. Write a story about this graph



7. Make a table of the data:

Below are prices for tickets

- one ticket = \$15
- two tickets = \$30
- three tickets = \$45
- four tickets = \$60
- five tickets = \$75

x # of tickets	y price
1	\$15
2	\$30
3	\$45
4	\$60
5	\$75

8. Make a table of the data:

Here is information about a plane's altitude (height in the air) over time:

- altitude was zero at time zero
- altitude grew to 10,000 after 10 mins
- altitude grew to 20,000 after 20 mins
- altitude maxed at 30,000 after 30 mins
- altitude stayed at 30,000 after 60 mins
- altitude declined to 20,000 after 70 mins
- altitude decreases to 10,000 after 80 mins
- the plane lands after 90 mins

x time	y altitude
10	10,000
20	20,000
30	30,000
60	30,000
70	20,000
80	10,000
90	0

9. Write 3 sentences about what information this table shows.

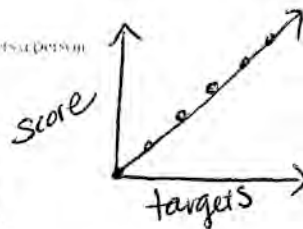
The table shows the relationship between the number of targets a person hits in a game of laser tag and that person's score.

Targets hit	0	1	2	3	4	5	6
Score	0	8	16	24	32	40	48

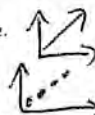
10. Graph the table.

The table shows the relationship between the number of targets a person hits in a game of laser tag and that person's score.

Targets hit	0	1	2	3	4	5	6
Score	0	8	16	24	32	40	48



11. Draw what a continuous graph would look like.



12. Draw what a discrete graph would look like.



13. Determine if the following situation is discrete or continuous.

- The number of suitcases lost by an airline in a year. *discrete*
- The height of corn plants recorded for three months. *continuous*
- The altitude of an airplane over time. *continuous*
- The cost of concert tickets. *discrete*
- Speed of a ride at an amusement park at various times. *continuous*
- The number of ears of corn produced in years. *discrete*
- The number of green M&M's in each bag. *discrete*
- The time it takes for a car battery to die. *continuous*
- The height of a child as they grow up. *continuous*

14. Domain is the set of x values.

15. Range is the set of y values.

16. A function is a special type of relation where each input has one output.

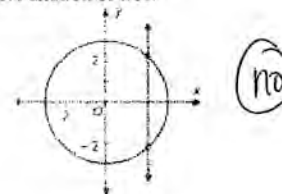
17. Function or not?

Number of Horses	Pounds of Carrots
1	1.5
2	3
3	4.5
4	6

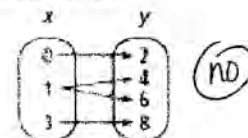
yes

18. The name of the line test we use to check for functions. *vertical line test*

19. Function or not?



20. Function or not?



21. Function or not?



22. Function or not?

x	y
2	4
5	5
8	6
2	7

no

23. Function or not?

$(6,7)$, $(6,9)$, $(8,5)$

no

24. AT&T charges for text messages sent as shown in the table below.

Text Messages	
Number	Cost
1	\$0.17
2	\$0.34
3	\$0.51
4	\$0.68

Based on the information in the table, which of the following is a valid statement about the text messages charges from AT&T?

- ☒ A. the data is discrete with a range $0.17 \leq x \leq 0.68$
- B. the data is continuous with a range of $0.17 \leq x \leq 0.68$
- C. the data is discrete with a range $1 \leq x \leq 4$
- D. the data is continuous with a range $1 \leq x \leq 4$

25. FAU offers tickets to their basketball games as shown in the table below.

FAU Basketball Ticket Plans				
Number of Tickets	40	20	10	1
Cost per Ticket	\$17.50	\$19.25	\$22.00	\$28.50

What is the domain of the set of data from the table?

- ☒ F. {40, 20, 10, 1}
- G. {17.50, 19.25, 22.00, 28.50}
- H. {57.50, 39.25, 32.00, 29.50}
- I. {13.50, 0.75, -12.00, -27.50}

26. Coach Clark is planning a car wash to raise money for his middle school basketball team. The graph below shows the amount of money that the team could earn based on the number of cars washed.



What is the range of the set of data shown in the graph?

- F. {1, 3, 5, 7}
- G. {1, 2, 3, 4, 5}
- H. {10, 20, 30, 40, 50, 60}
- ☒ I. {10, 20, 30, 40, 50}

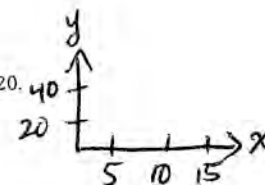
27. Based on the information in the table for Coach Clark's fund raiser, which of the following is a valid statement about the amount of money raised by washing 5 cars?



- ☒ A. the data is discrete with a range $0 \leq c \leq 50$
- B. the data is continuous with a range of $0 \leq c \leq 50$
- C. the data is discrete with a range $0 \leq c \leq 5$
- D. the data is continuous with a range of $0 \leq c \leq 5$

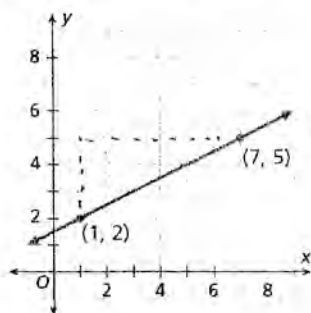
28. Make a graph with the x-axis scale of 5 and the y-axis scale of 20.

29. Slope = $m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = \frac{\uparrow \downarrow}{\rightarrow}$



30.

Find the slope of the line.



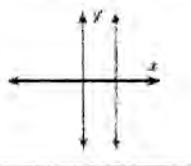
$$m = \frac{\text{rise}}{\text{run}} = \frac{3}{6} = \left(\frac{1}{2}\right)$$

31. What slope does this graph have?



$$m = \frac{\text{rise}}{\text{run}} = \frac{0}{\#} = (0)$$

32. What slope does this graph have?

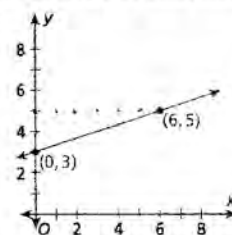


$$m = \frac{\text{rise}}{\text{run}} = \frac{\#}{0} = \text{undefined}$$

34.

Find the slope of each line.

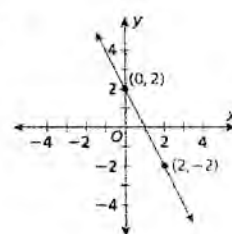
1.



$$m = \frac{\text{rise}}{\text{run}} = \frac{2}{6} = \left(\frac{1}{3}\right)$$

35. Find the slope of the line

2.



$$m = \frac{\text{rise}}{\text{run}} = -\frac{4}{2} = (-2)$$

36. Find the slope and EXPLAIN WHAT THE SLOPE MEANS.

Cost of Fruit	
Pounds	Cost (\$)
0 x_1	0 y_1
5 x_2	15 y_2
10	30
15	45

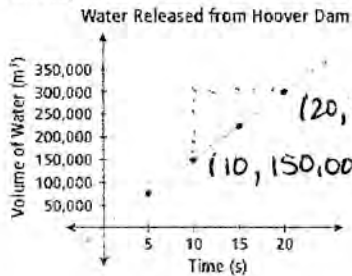
$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{15 - 0}{5 - 0} = \frac{15}{5} = 3$$

$$\frac{y}{x} = \frac{\text{cost \$}}{\text{pound}} = 3$$

The slope means fruit costs \$3 a pound.

$$\frac{150,000}{10} = \frac{15,000}{1}$$

37. Find the slope and EXPLAIN WHAT THE SLOPE MEANS.

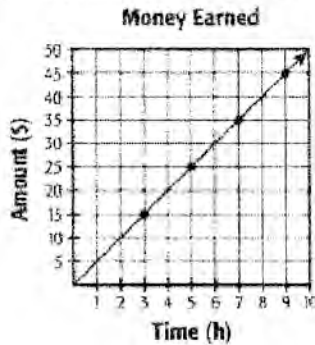


$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{300,000 - 150,000}{20 - 10}$$

$$\text{slope} = \frac{y}{x} = \frac{\text{volume of H}_2\text{O}}{\text{time}} = \frac{15,000}{1}$$

the slope means 15,000 m³ of H₂O is released each second.

38. Find the slope and EXPLAIN WHAT THE SLOPE MEANS.



$$m = \frac{\text{rise}}{\text{run}} = \frac{10}{2} = \$5$$

$$\frac{y}{x} = \frac{\text{amt \$}}{\text{time}} = \frac{\$5}{1} = \text{five dollars per hour.}$$

39. The table shows how much water was in a swimming pool as it was being filled. Use the data to find the slope of the line. FIND THE SLOPE AND EXPLAIN WHAT THE SLOPE MEANS.

Time (min)	Amount of Water (gal)
10 x_1	40 y_1
13 x_2	52 y_2
16	64
19	76

$$m = \frac{52 - 40}{13 - 10}$$

$$m = \frac{12}{3}$$

$$m = 4$$

40. Write the equation for slope-intercept form.

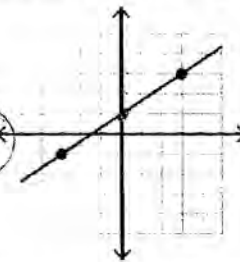
$$y = mx + b$$

y - intercept
slope

41. What does "b" represent in slope - intercept form?

42. What does "m" represent in slope - intercept form?

43. Write the equation for this graph:



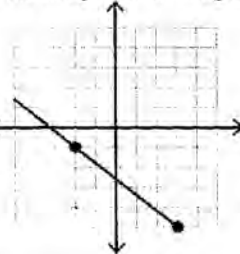
$$y = mx + b$$

$$b = 1$$

$$m = \frac{\text{rise}}{\text{run}} = \frac{2}{3}$$

$$y = \frac{2}{3}x + 1$$

44. Write an equation for this graph:



$$b = -2.5$$

$$m = -\frac{4}{5}$$

$$y = -\frac{4}{5}x - 2.5$$

45. Moesha has a job walking dogs. She gets paid a flat fee of \$25 per family and \$10 per hour for the time she spends walking the dog. Write an equation for how much Moesha can make walking dogs.

$$y = mx + b$$

$$y = 10x + 25$$

46. How much will Moesha get paid for walking dogs for 2.5 hours? \$50

47. Steeve has a pet alligator. An alligator hatchling is 8 inches long. Alligators grow 12 inches per year. Write an equation for how much Alligators grow a year.

$$y = 12x + 8$$

48. One day, Stephy notices that her car's odometer has exactly 1000 miles on it. She knows she drives 14 miles every day to and from North Miami Middle School. The number of miles on Stephy's car is represented by the equation $m = 14d + 1000$. What is the slope? What does the slope mean?

$$\text{slope} = 14$$

slope means she drives 14 miles each day.

$m = 6$. slope means he runs 6 miles a day.

49. Andy likes to keep track of how much he runs each week. It is Tuesday, and Andy has already ran 12 miles. Andy runs at a pace of 6 miles a day. The equation $m = 6d + 12$ represents how much Andy has ran this week so far. What is the slope of the equation? What does the slope mean?

50. Aventura Mall is having a gigantic sale! Michelove wants to go shopping with Ureka! The mall is at (2,5) and Michelove's home is at (3,6). What route must the ladies take to get to the mall the fastest? $m = \frac{6-5}{3-2} = \frac{1}{1} = 1$

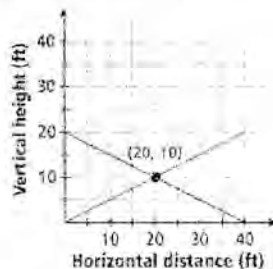
51. Austin, Peter, Lorus, and Ryan want to go to a concert this weekend. They are hanging out at Austin's house at (2, 6) before going over to the concert in the Stadium at (0,2). What is their direct route from Austin's home to the stadium?

52. Write the equation of a line passing through (-2,4) and (6,6)

53. A video store charges \$8 to join, and \$1.25 for each DVD that is rented. The linear equation $y = 1.25x + 8$ represents the amount of money y spent after renting x DVDs. What does the y -intercept of the equation represent?

54. The linear equation $2.5x + y = 25$ represents the number of dollars y on a gift card after x medium coffees have been purchased. What does the x -intercept represent?

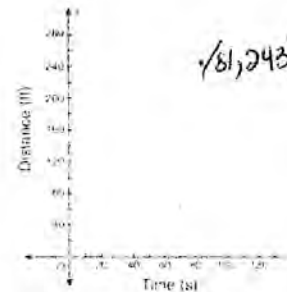
55. An escalator has a height given by $h = \frac{1}{2}d$, where d is the horizontal distance as the escalator rises and h is the vertical height in feet from the ground. The escalator coming down from the floor above has a height given by $h = 20 - \frac{1}{2}d$ over that same distance. At what vertical height do the escalators cross?



escalators cross @ vertical distance 10 feet.

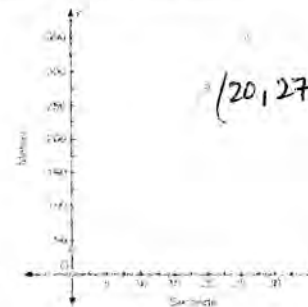
56. Wanda started walking along a path 27 seconds before Dave.

Wanda walked at a constant rate of 3 feet per second. Dave walked along the same path at a constant rate of 4.5 feet per second. How long after Dave starts walking will he catch up with Wanda?



(x, y)
(time seconds, distance ft)
(81, 243)
After 81 seconds,
Dave catches up to
Wanda

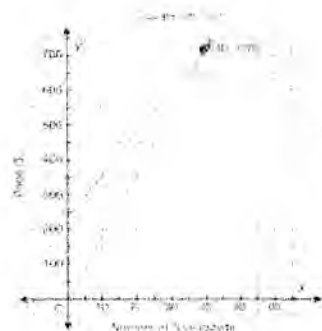
57. Two skaters are racing toward the finish line of a race. The first skater has a 40 meter lead and is traveling at a rate of 12 meters per second. The second skater is traveling at a rate of 14 meters per second. How long will it take for the second skater to pass the first skater?



(20, 275)
The second skater
passes the first
after 20 seconds.

58. A softball team bought a box of sweatshirts for \$240.

Each sweatshirt cost \$12 to print and will sell for \$18.
Graph a system of equations to find the number of sweatshirts the softball team needs to sell in order to break even.



The team must sell 25 sweatshirts to break even.

59. Band members bought a large number of t-shirts for \$100. Each t-shirt cost \$8 to print and will sell for \$12. Find the number of t-shirts the band members need to print and sell in order to break even.

n = number of shirts and y = cost and revenue in dollars

x

y

x = # of shirts
 y = cost & revenue

n	$c = 8n + 100$	c	(n, c)
10			
15			
20			
25	$8(25) + 100$	300	(25, 300)

n	$c = 12n$	c	(n, c)
10			
15			
20			
25	$12(25)$	(300)	(25, 300)

They need to print and sell 25 shirts

60. An escalator has a height given by $h = \frac{1}{2}d$, where d is the horizontal distance as the escalator rises and h is the vertical height in feet from the ground. The escalator coming down from the floor above has a height given by $h = 20 - \frac{1}{2}d$ over that same distance. At what vertical height do the escalators cross?

d = horizontal distance as escalator rises and h = vertical height in feet from the ground.

x = horizontal distance

d	$h = \frac{1}{2}d$	h	(d, h)
10			
20			
30			
40	$\frac{1}{2}(40)$	20	(40, 20)

d	$h = 20 - \frac{1}{2}d$	h	(d, h)
10			
20			
30			
40	$20 - \frac{1}{2}(40)$	20	(40, 20)

The escalators cross at 20 feet vertical height.