Graphing Equations of Lines Problems

In question 1- 20, fill in the blanks with the appropriate words or answer true or false.

1. To calculate the rate of change in respect of y to x you need a change in ____ and a change in a ____
2. The x-axis is the ____.That means that it does not depend on anything.
3. The y-axis is the ____. It depends on the independent variable.
4. In terms of change over time, the y-value is the ____ axis and the time is the ____ axis.

Answer true or false for #5-#9:

5. The rate of change of the input value to the output value is the same as the slope.
6. The slope of a straight line graph is constant.
7. Calculation of the slope requires only subtraction and then division.
8. For any straight line the rate of change is constant.
9. Non-straight line graphs do not have constant slopes.
10. What two pieces of information are needed to write an equation of a straight line? _____ and _____.
11. A line that slants downward from left to right has a ____ slope.
12. A vertical line has _____ slope.
13. The formula y = mx + b is called _____.
14. The y-intercept is ____.
15 The x-intercept is ____.
16. Generally, the dependable variable is usually called ____, and the dependent variable is also called ____.
17. A line that slants upward from left to right has a ____ slope.
18. With a slope and a co-ordinate point we can write an equation of a straight line. True or false?

19. A horizontal line has a slope of ____.

20. The slope may also be defined as the rise divided by the run. True or false?

21. The line segment AB has a slope of $\frac{3}{4}$. If the co-ordinate of point A is (2, 5), the co-ordinates of point B could be which of the following:

a) (6, 8) b) (5, 9) c) (-2, 2) d. (6, 2)

22. The graph of the equation 2x + 6y = 4 passes through point (k, 2). What is the value of k?

23. Point (-3, h) lies on the line whose equation is x -2y = -2. What is the value of h?

24. Which statement best describes the graph of x =4?

a) It passes through the point (0, 4)

b) It has a slope of 4.

c) It is parallel to the y-axis.

d) It is parallel to the x-axis.

25. What is the y-intercept of the graph of the line whose equation is $y = -\frac{2}{5}x + 4$?

26. If point (-1, 0) is on the line whose equation is y = 2x + b, what is the value of b?

27. If the value of the input variable y increases as the value of the independent variable x increases, the graph of this relationship could be

a) Horizontal line b) Vertical line c) One with a negative slope d)One with a positive slope.

28. The line 3x -2y = 12. Which of the following is correct?

a). A slope of $\frac{3}{2}$ and a y-intercept of -6.

b) A slope of $-\frac{3}{2}$ and a y-intercept of 6.

3) A slope of 3 and a y-intercept of -2

d) A slope of -3 and a y-intercept of -6

29. Write an equation of the line that has a slope of 3 and a y-intercept of -2

30. What is the x-intercept of the line 2x -3y =12?

31. The data in the table shows the cost (in $) of renting a bicycle in a resort by time (time rented in hours), including deposit.

Hours (time rented)	Cost ($)
2	15
5	30
8	45

a) What would be the equation of a line that fits the data?

b) What is the amount of the deposit?

32. The equation of line A is 5x + 6y = 3, and the equation of line B is 5x -6y =3. Which of the statement below about the two lines is true?

a) Lines A and B have the same y-intercept.

b) Lines A and B have the same slope.

c) Lines A and B have the same x-intercept.

33. Write the equation of each line containing,

a. $A_1(3,2)$ and $A_2(3, -4)$

b. $B_1(2, 1)$ and $B_2(-2, -3)$

c. $C_1(-3, 5)$ and $C_2(-2, 3)$

d. $D_1(-1, -2)$ and $D_2(3, -2)$

34. Write the equation of each line that has the specified slope and contains the given points.

a) Point (2,-3), m= 3 b) Point (0, -3), m = -1

c) Point (3, 5), m= $-\frac{3}{7}$ d) Point (5, 1), m = $-\frac{4}{5}$

35. Graph the lines that passes through point

a. (-2, -3) and has a slope $\frac{5}{4}$

b. (2,0) and has a slope -1

c.

36. Calculate the slope and y-intercept of each of the equations below.

a. $2x - 3y = 6$ b) $x - 3y = 3$

c) $4x - 5y = 5$ d) $4x + y = 2$

37.Find the slope of each line

a. Contains points (-2, 3) and (4, 2)

b. Contains points (2, 5) and (-2, 5)

38. Using the equation $y = -\frac{3}{4}x + 2$, find y when x =3

39. Graph $2x + 3y = 6$ by using the x- and y- intercepts.

40. Intra Manufacturing Inc makes wood-burning heaters for rural and remote population. The production cost and quantities produced are linearly related. It costs $1500 to make 20 heaters and $2100 to make 30 heaters.
    a) If C is the cost of making x heaters, write an equation for this relations.
    b) Use the equation to calculate the cost of making 35 wood-burning heaters.

41. In 2000, the total gross sales of Ridgeview Electronic were $350000. The sales were $400000 in 2001 and $450,000 in 2002. Let s represent the total sales in x years.
    a. List the three co-ordinate points.
    b. Plot a graph relating s and x.

42. The Nanest Company produces solar panels. The analysis of the relations between the production cost ($c) of the company and its production quantities(Q), is described using the following linear equation:

    $C = 1500 + 300Q$

    a) Identify both the slope of the equation and its c-intercept.
    b) In a particular week, the production quantities were 500 solar panels, what was the production cost?
    c) If production cost was $45000, how many quantities were produced?
    d) What is the unit cost of producing 200 quantities?

43. For each of the following linear equations, list three solutions as ordered pairs in the form (x, y).

    a) $y = x + 2$ b) $y = 2x$ c) $y = 3x - 1$

44. a) Find four ordered pairs (a, b) for the formula, b = a + 3, for a =0, 1, 2 and 5.

b) Draw the graph using the five ordered pairs in (a).

c) Draw a line through the points.

45. The cost (in dollars) of producing a college newspaper is given by using the Formula, C = 2n + 400, where n is the number of copies printed and C the total cost.

a. What is the slope of the formula?

b. Draw a graph for the formula. (Hint: use n= 100, 200, 300, and 500)

c. Use the graph to estimate the cost of producing thousand copies.

46. a) Draw the graph of a straight line passing through the points (0, 0) and (3, 6).

b) Find the slope of the line.

c) Write an equation for the line.

47. A certain car is expected to depreciate in value according to the equation, $y = -2000x + 40000$, where y is the value of the car (in $) and x the age of the car (in years)

a) Find the slope of the line and interpret its meaning.

b) Find the y-intercept and explain what it means.

48. Write the equation of the line that:

a) passes through the point (3, 4) and has slope -3

b) passes through the point (-1, -4) and has slope of $\frac{1}{2}$.

49. What is the slope of the graph of the linear equation $5y - 10x - 15 = 0$?

50. The table below shows the enrolment of a daycare centre from 2002 through 2006.

Year(x)	Enrolment (y)
2002	14
2003	20
2004	22
2005	28
2006	37

a) Draw a graph for the above relations

b) Between 2002 and 2006, enrolment increased by what percent?

c) Which year had the lowest increase in enrolment?

d) Which year had the highest increase in enrolment?

51. A straight line was created using the following data.

x	0	1	2	3
y	-6	-3	0	3

What are the x-and y-intercept for this line?

52. A and b are linearly related. The values of a and its corresponding values are given in the table below:

a	0	1	2
b	2	4	6

Write a formula for this relation.

53. Given the equation y = x – 2.

a) What is the slope of this equation?

b) Does the graph of this equation rise or fall from left to right?

c) What is the y-intercept?

d) What is the x-intercept?

e) Now graph the equation.

54. Imagine the graph of the following equation:

4x -5y +20 = 0

What is the slope of the line?

55. The equation C= 0.05t + 10, represents the relations between the total cost (in $) *C*, charged by an internet service provider, and time (in hours),*t*, used.

a) What is the slope of the equation?

b) Explain the meaning of the slope within the context of the equation.

c) What is the y-intercept? What does it mean?

56. Student painters charge $5.00 per square metre plus an additional fee of $25.00 to paint a living room.

a) Graph showing the relations between the fee charged and the area painted.

b) Use your graph to estimate the charge for a living-room which is 25 m^2.

57. Kid's Party Place charges $20 for a party room plus $12 for each person attending. The chart below shows the total cost for 10, 15, and 20 people attending a party.

Number in Attendance	Total Cost
10	$140
15	$200
20	$260

a) Graph the above information.

b) Calculate the slope for the line.

c) Write an equation for the line

58. The data below represents the percent growth in the net profit of a company from year 2000 to 2004.

Year	Percent (%) Growth
2000	20.00
2001	21.50
2002	23.00
2003	24.50
2004	25.00

a) Plot a graph showing the company's net profit growth.

b) Calculate the slope of the line.

Answers to Practice Problems Graphing Equations of Lines

1. y and x 2. Independent variable 3. Dependent variable 4. y and x
5. True 6. True 7. Division 8. True 9. True 10. The slope and any ordered pair 11. Negative 12. No slope 13. Equation of a straight line 14. Where the line crosses the y-intercept 15. Where the line crosses the x-axis 16. y-axis; x-axis 17. positive 18. True 19. Zero slope 20. True
21. (-2, 2) 22. k= -4 23. h= -1/2 24. c 25. (0, 4) 26. b= 2 27. d 28. a
29. y =3x -2 30. (6, 0)
31. a) C=5t + 5b. $5.00 32. c 33. a) y= -5x/6 +3 b) y = x – 1 c) y= -2x -1 d) y=-2 34. a) y= 3x -9 b) y=-x -3 c) y= 3/7 + 44 d) y = 4/5x +5 35. a) Plot the point (0,2). Plot 5 units vertically. From the new point move 4 units horizontally to the right for the second co-ordinate point. Draw a line through the points. b) Plot the point (-2, 0). Plot -1 to the left vertically and 1 to the right horizontally. Draw a line through them.

36. a) 2/3 is the slope and (0, -2) is the y-intercept b) The slope is 1/3 and the y- intercept is(0, -1) c. Slope is 4/5 and y-intercept is (0, -1) d. The slope is -4 and y-intercept is (0, 2)

37. a) m= -1/6 b) m= 0 38. y = -9/4 + 2. 39. x-intercept (3, 0); y=intercept (0, 2). Draw a line through them. 40. a) C= 60x + 300 b)24,000 41. a) (2000, 35000), (2001, 40000), (2002, 450,000). b) Plot the co-ordinate points and draw a line through them.42. a) The slope is 300 and the c-intercept is 1500. b) 151,500.c) 145. d)307.50. 43. a) (0,2), (1, 3), (2, 4). b) (0, 0), (1, 2), (2, 4).
c) (0,-1), (1, 2), (2, 5). 44. a) The ordered pairs are (0,3), (1, 4), (2,5), (5,8).
45. a) 2 c) 2400. 46. b) 2. c) y =2x. 47. a) -2000 and it means that car decreases in value at the at of $2000/year. b) The y-intercept is 40,000 and it means the value of that car is $40,000 at the beginning. 48. a) y =-3x + 13. b) y = 1/2x – ½.
49. m=2. 50 a) Plot the co-ordinate points given in the table. b)1.6% c. 2004. d) 2006. 51. x-intercept (2,0); y-intercept (0,6).
52. y= 2x + 2. 53. a) 1 b) It rises. c) (0,-2). d) (2, 0) e) Plot the points(0, -2) and (2, 0) and draw a line through them. 54. 4/5. 55. The slope is 0.05.
b) it means the internet provider charges 0.05 per hour. c) The C-intercept is 10, and it means that the internet provider charges a fixed amount of $10.

56. a) Hint: use the equation C=5x +25 to get at least two ordered pairs and plot them on the graph. b) $150. 57 a) The co-ordinate points are (0, 140), (15, 200), (20, 260). Plot these points and draw a line through them. b) 12. c) y=12x + 20.

58) a) Plot the given co-ordinate points. b) 0.50.