

SATPREP

Assignment : *Linear equation*

Easy

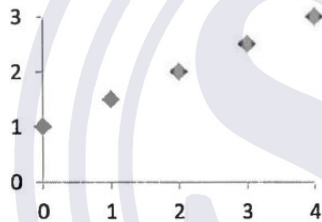
| | | | | |
|-----|----|---|----|----|
| x | -1 | 1 | 2 | 3 |
| y | 5 | 1 | -1 | -3 |

1. Which of the following equations satisfies the relationship between x and y in the table above?

- a) $y = x + 6$
- b) $y = 2x - 3$
- c) $y = 2x + 3$
- d) $y = -2x + 3$

2. What is the y -intercept of the linear equation $7y - x = -14$?

- a) -4
- b) -2
- c) 0
- d) 2



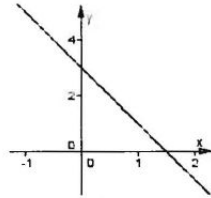
3. Which of the lines described by the following equations best fits those points above?

- a) $y = 0.5x - 1$
- b) $y = 0.5x + 1$
- c) $y = -0.5x - 1$
- d) $y = -0.5x + 1$

| | | | | |
|--------|----|---|---|---|
| x | 0 | 1 | 2 | 3 |
| $f(x)$ | -1 | 1 | 3 | 5 |

4. The table above gives values of the linear function f for several values of x . Which of the following defines $f(x)$?

- a) $f(x) = x - 1$
- b) $f(x) = x + 1$
- c) $f(x) = 2x - 1$
- d) $f(x) = 2x + 1$



5. What is the equation of line shown in the figure above?

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

| | | | |
|--------|----|-----|-----|
| x | -1 | 3 | j |
| $f(x)$ | 1 | j | k |

6. In the table above, if $f(x) = 3x + 4$, what is the value of k ?

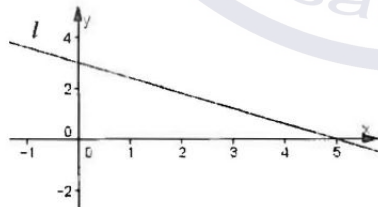
- a) 19
- b) 25
- c) 37
- d) 43

7. Line l has an undefined slope and contains the point $(1, -3)$. Which of the following points is also on line l ?

- a) $(0, 3)$
- b) $(-1, -3)$
- c) $(0, -3)$
- d) $(1, -2)$

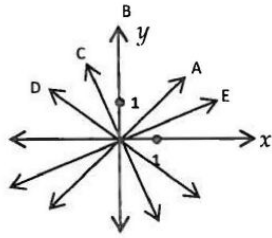
8. What is the slope of a line that passes through the points $(1, -1)$ and $(-1, 5)$?

- a) -3
- b) -2
- c) 0
- d) 2



9. In the figure above, what is the slope of line l ?

- a) $\frac{1}{4}$
- b) $\frac{1}{2}$
- c) $\frac{2}{5}$
- d) $-\frac{3}{5}$

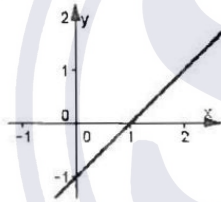


10. In the xy -coordinate system above, which of the following lines has a slope closest to 1?

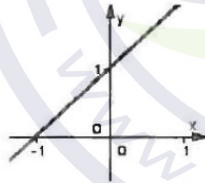
- a) A
- b) B
- c) C
- d) D

11. Which of the following is the graph of a linear function with a negative slope and a negative y -intercept?

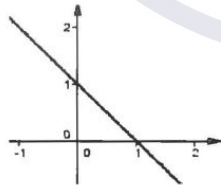
a)



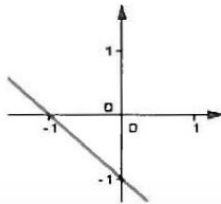
b)

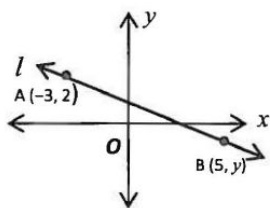


c)

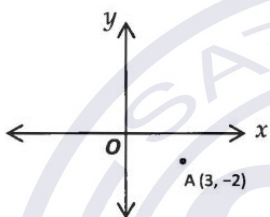


d)

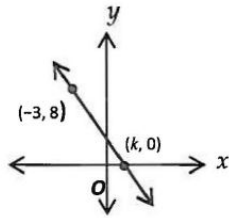




12. In the figure above, the slope of line l is $-\frac{1}{2}$. What is the value of y ?
- $\frac{1}{2}$
 - 1
 - $-\frac{1}{2}$
 - 2



13. In the figure above, a line is to be drawn through point A so that it has a slope of 1. Through which of the following points must the line pass?
- (-5, 1)
 - (-4, 1)
 - (1, 4)
 - (1, -4)
14. If $3x + 1 = a$, then $6x + 5$?
- $a + 3$
 - $a - 3$
 - $2a$
 - $2a + 3$

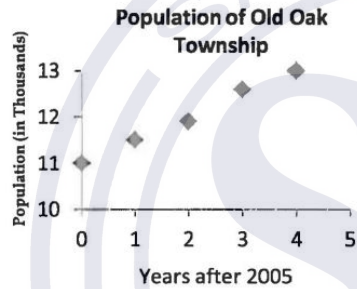


15. In the figure above, the slope of the line through points $(-3, 8)$ and $(k, 0)$ is -2 . What is the value of k ?
- 4
 - 3
 - 2
 - 1

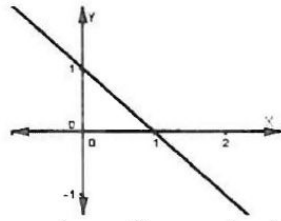
Medium

16. If a linear function passes through the points $(1, s)$, $(3, t)$ and $(5, 10)$, what is the value of $2t - s$?
- 2
 - 8
 - 10
 - 12
17. Which two lines are perpendicular to each other?
- $y = x - 1; x = 1$
 - $y = x + 1; x = 1$
 - $y = -1; x = 1$
 - $x = -1; x = 1$
18. What is the y -intercept of the line that passes through the points $(1, 1)$ and $(5, 13)$?
- -2
 - -1
 - 1
 - 2
19. Which of the following could be the coordinates of point R in a coordinate plane, if points $P(1, 1)$, $Q(-1, 5)$, and $R(x, y)$ lie on the same line?
- $(0, 2)$
 - $(2, -1)$
 - $(0, -2)$
 - $(2, 2)$

20. In the xy -plane, the line with equation $y = 3x - 9$ crosses the x -axis at the point with coordinates (a, b) . What is the value of a ?
- a) 3
 - b) -2
 - c) -1
 - d) 2
21. In the xy -plane, the line $x - 2y = k$ passes through point $(4, -1)$. What is the value of k ?
- a) 6
 - b) 4
 - c) 2
 - d) -2

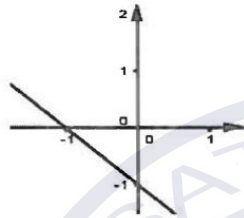


22. The graph above shows the population of Old Oak Township since 2005. If y represents the population, in thousands, and x represents the number of years after 2005, which of the following equations best describes the data shown?
- a) $y = x + 11$
 - b) $y = 2x + 11$
 - c) $y = 2x - 11$
 - d) $y = \frac{1}{2}x + 11$
23. Point Q lies on the line with equation $y + 4 = 2(x - 1)$. If the x -coordinate of Q is 3, what is the y -coordinate of Q?
- a) 2
 - b) 1
 - c) 0
 - d) -1

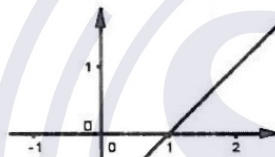


24. The figure above shows the graph of the line $y = mx + b$, where m and b are constants. Which of the following best represents the graph of the line $y = 2mx + b$?

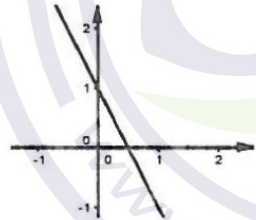
a)



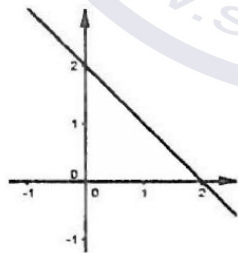
b)



c)



d)



25. What is the product of the slopes of all four sides of a rectangle if all four sides' slopes are not equal to zero?



- a) -2
- b) -1
- c) 0
- d) 1

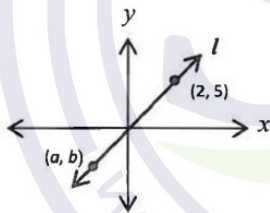
26. Which of the following is an equation of the line that is perpendicular to the y -axis and passes through the

point $(1, -1)$?

- a) $y = 1$
- b) $y = -1$
- c) $y = x$
- d) $y = -x$

27. The equation of line l is $x - 2y = 3$. Which of the following is an equation of the line that is perpendicular to line l ?

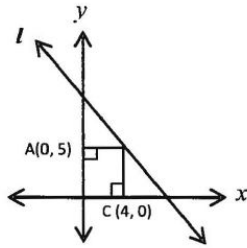
- a) $y = x + 2$
- b) $y = -x + 2$
- c) $y = 2x - 1$
- d) $y = -2x + 1$



28. In the figure above, line l passes through the origin.

What is the value of $\frac{b}{a}$?

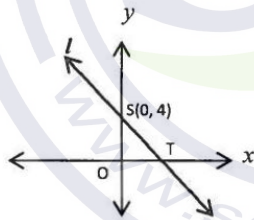
- a) 1
- b) 1.5
- c) 2
- d) 2.5



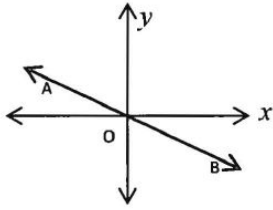
29. In the figure above, if line l has a slope of -2 , what is the x -intercept of l ?
- 6
 - 6.5
 - 7
 - 13

Hard

30. In the xy -coordinate plane, lines m and n are perpendicular. If line m contains the points $(0, 0)$ and $(3, 1)$, and line n contains the points $(2, 3)$ and $(1, a)$, what is the value of a ?
- -6
 - -3
 - 6
 - 3

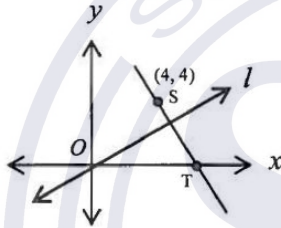


31. If the slope of line l is -1 as shown above, what is the area of $\triangle SOT$?
- 2
 - 4
 - 6
 - 8



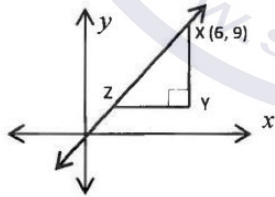
32. The coordinates of point A in the figure above are (a, b) , where $|a| > |2b|$. Which of the following could be the slope of AB?

- a) -1
- b) $-\frac{1}{2}$
- c) $-\frac{1}{3}$
- d) $\frac{2}{3}$



33. Line l intersects ST between S and T and also passes through the origin. Which of the following could be line l 's slope?

- a) -2
- b) -1
- c) $\frac{1}{2}$
- d) $\frac{3}{2}$

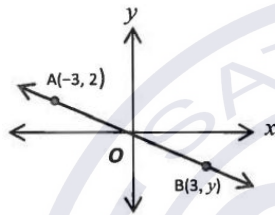


34. In the figure above, if two legs of $\triangle XYZ$ are parallel to the x and y axes respectively, what is the ratio of the longer leg to the shorter leg of $\triangle XYZ$?

- a) 1
- b) $\frac{4}{3}$
- c) $\frac{3}{2}$
- d) 2

35. In the xy -plane, line l passes through the origin and is perpendicular to the line $2x - y = b$, where b is a constant. If the two lines intersect at the point $(2a, a + 1)$, what is the value of b ?

- a) -1
- b) $-\frac{5}{2}$
- c) 0
- d) $\frac{1}{2}$



36. In the figure above, line AB passes through the origin. If the x -coordinate of point B is 3, what is the y -coordinate of B?

- a) -5
- b) -4
- c) -3
- d) -2

