Algebra 1 Unit 2 Review Name: Key Block: __

Write the reason for each step in solving the equation.

1.

Equation	Steps
$2(4x + 30) = 76$	Original Equation
$8x + 60 = 76$	distributive prop
$8x = 16$	SPE
$x = 2$	DPE

2.

Equation	Steps
$7x - 9 = 54$	Original Equation
$7x = 63$	APE
$x = 9$	DPE

Solve for x.

3. $-5x - 10 = 20$

$x = -6$

4. $\frac{1}{3}x + 9 = 21$

$x = 36$

5. $\frac{1}{2}(x - 7) = 5$

$x = 17$

6. $\frac{x + 1}{3} = -10$

$x = 31$

Rewrite each equation in terms of the indicated (letter).

7. (h) $V = \pi r^2 h$

$h = \frac{V}{\pi r^2}$

8. (c) $A = \frac{a + b + c}{3}$

$c = 3A - a - b$

9. (w) $P = 2L + 2W$

$w = \frac{P - 2L}{2}$

10. (h) $V = \frac{1}{3}Bh$

$h = \frac{3V}{B}$

Solve for x.

11. $\frac{4}{3}(6x+9) < 4$

$x < -1$

12. $-2\left(\frac{1}{4}x+2\right) \geq 5$

$x \leq -18$

13. $-2 < x-3 < 5$

$1 < x < 8$

14. $-10 < 3x+2 \leq 8$

$-4 < x \leq 2$

15. $x-5 \geq -2 \; OR \; x-5 \leq -6$

$x \geq 3 \quad x \leq -1$

16. $4x-1 < 15 \; OR \; 8x \geq 48$

$x < 4 \quad x \geq 6$

Write an equation and solve.

17. A rectangle is 12m longer than it is wide. Its perimeter is 68m. Find its length and width.

$w = 16$
$L = 28$

18. Find three consecutive integers such that the sum of twice the smallest and 3 times the largest is **127.**

$x = 20$

19. Find two consecutive even integers such that the sum of the larger and twice the smaller is 62.

$x = 20$

20. There are three quizzes in Unit 1 before the test. A student received grades of 75 and 81 on the first two quizzes. What grade must the student earn on the last exam to get an average of no less than 80 before the test?

$x \geq 84$

21. Alex has twice as much money as Jennifer. Jennifer has $6 less than Shannon. Together they have $54 dollars. How much money does each girl have?

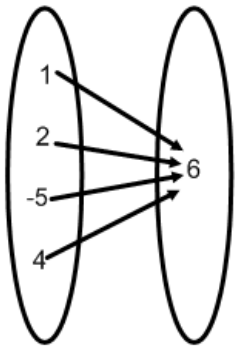
$x = 18$

22. Gary makes $12 per hour raking leaves plus a flat fee of $10 for the bags that will hold the leaves. How many hours does he have to have saved over $200.

$x > 15.8$ hours

Determine if the following is a function or relation.

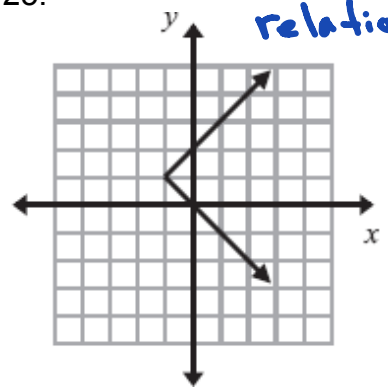
23. function



24. {(4,9), (-8,7), (-4,2), (8,5)}

function

25. relation



Evaluate the following expressions given the functions below.

$g(x) = -3x + 1$ $f(x) = x^2 + 7$ $h(x) = \frac{12}{x}$ $j(x) = 2x + 9$

26. $g(10)$

-29

27. $f(-3)$

16

28. $h(-2)$

-6

29. $Find\ x\ if\ g(x) = 16$

x=-5

30. $h(2) + g(1)$

4

31. $3 \cdot j(x)$

6x+27

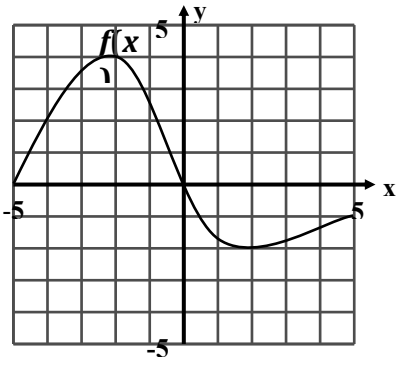
32. $f(j(x))$

$(2x+9)^2+7$

$4x^2+36x+88$

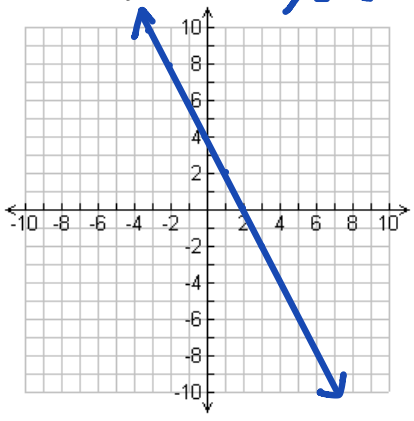
33. f(2) = -2

34. f(-5)=0

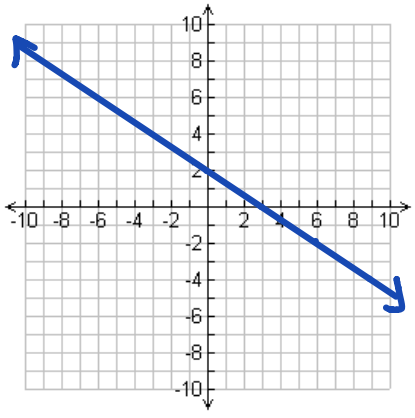


Write each equation in slope intercept form. Then graph the line.

35. $2x + y = 4$ y=-2x+4



36. $2x + 3y = 6$ $y = -\frac{2}{3}x + 2$



Find the slope.

37. $(5,0), and (8,4)$

$m = \frac{4}{3}$

38. $(1,-6), and (9,-6)$

$m = 0$ horizontal line

Write an equation given two points

39. $(-1,2), (3,4)$

$y = \frac{1}{2}x + \frac{5}{2}$

40. $(3,9), (0,3)$

$y = 2x + 3$

Write an equation given a point and the slope

41. $through: (7,0), slope = 3$

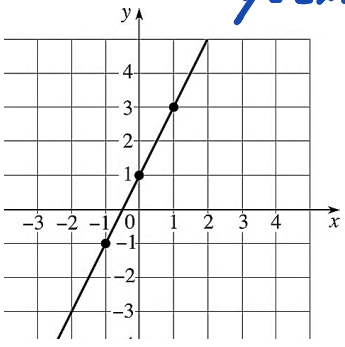
$y = 3x - 21$

42. $through: (-4,12), slope = -\frac{1}{3}$

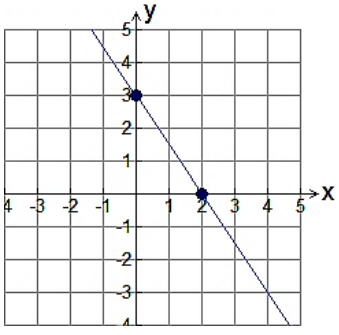
$y = -\frac{1}{3}x + \frac{32}{3}$

Write an equation given a graph

43. $y = 2x + 1$

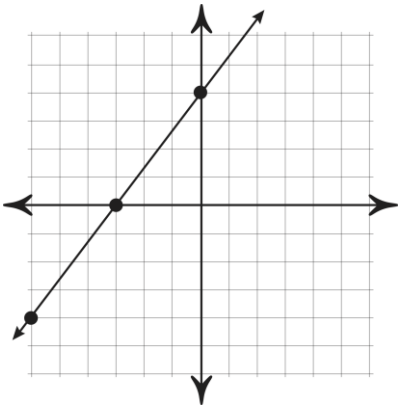


44. $y = -\frac{3}{2}x + 3$



Determine the following key features based on the situtation and the graph.

45.



Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$

x-intercept: $(-3,0)$ y- intercept: $(0,4)$

Interval of increase/decrease: $(-\infty, \infty)$

End behavior: $x \to -\infty$, $y \to -\infty$

$x \to \infty$, $y \to \infty$