

VARIABLES AND EXPRESSIONS

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|-----------------------------------|----------|----------------------------------|---------|
| a. 4 more than a number | $n + 4$ | b. five less than a number | $x - 5$ |
| c. three less than twice a number | $2y - 3$ | d. the product of 5 and a number | $5a$ |

WRITE AN ALGEBRAIC EXPRESSION FOR EACH VERBAL EXPRESSION

1. seven more than a number

$$\underline{n + 7}$$

2. two less than eight times a number

$$\underline{8n - 2}$$

3. the product of four and a number

$$\underline{4n}$$

4. the quotient of number squared and three

$$\underline{\frac{n^2}{3}}$$

ORDER OF OPERATIONS

Simplify using the order of operations.

5. $2 + 7 \times 5$

$$\begin{array}{r} 2 + 35 \\ 37 \end{array}$$

6. $(6 + 25 - 7) \div 6$

$$\begin{array}{r} (31 - 7) \div 6 \\ 24 \div 6 \\ 4 \end{array}$$

7. $(8 + 5) \times \frac{35}{5} + 6$

$$\begin{array}{r} 13 \cdot 7 + 6 \\ 91 + 6 \\ 97 \end{array}$$

8. $(2 + 6 \times 2 + 2 - 4) \times 2$

$$\begin{array}{r} (2 + 12 + 2 - 4) \cdot 2 \\ 12 + 2 \\ 24 \end{array}$$

EVALUATE THE FOLLOWING EXPRESSIONS

if $a = -2$, $x = -3$, $y = 4$, $c = 8$ (show some work – be careful!)

9. $3a^2 + xy$ 0

$$\begin{aligned} &3(-2)^2 + -3(4) \\ &3 \cdot 4 + -12 \\ &12 + -12 \end{aligned}$$

10. $y - 2c$ -12

$$\begin{aligned} &4 - 2(8) \\ &4 - 16 \end{aligned}$$

11. $3x - 5a$ 1

$$\begin{aligned} &3(-3) - 5(-2) \\ &-9 - -10 \end{aligned}$$

12. $3y^2$ 48

$$\begin{aligned} &3(4)^2 = \\ &3 \cdot 16 = 48 \end{aligned}$$

13. $2x(y + c)$ -72

$$\begin{aligned} &2(-3)(4 + 8) \\ &-6(12) \end{aligned}$$

PROPORTIONS

Use cross products to solve each proportion.

14. $\frac{4}{7} = \frac{5}{x}$ $\frac{4x}{4} = \frac{35}{4}$

$$x = \frac{35}{4} = 8\frac{3}{4}$$

15. $\frac{12.3}{h} = \frac{75}{100}$

$$\frac{75h}{75} = \frac{1230}{75}$$

$$h = \frac{1230}{75}$$

16. There are 20 grams of protein in 3 ounces of fish. How many grams of protein are in 10

ounces of fish?

$$\frac{20g}{3oz} = \frac{x}{10oz}$$

$$\begin{aligned} &3x = 200 \\ &3x = \frac{200}{3} = 66\frac{2}{3} \text{ grams} \end{aligned}$$

GRAPHING POINTS

Graph the following coordinates

on the graph and label them properly.

17. A(-3, 0)

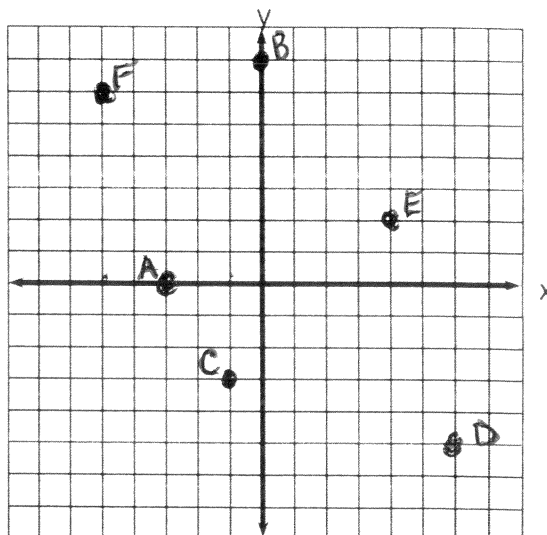
20. D(6, -5)

18. B(0, 7)

21. E(4, 2)

19. C(-1, -3)

22. F(-5, 6)



DISTRIBUTIVE PROPERTY.

Simplify.

$$23. \quad 5(x-4) \\ 5x-20$$

$$24. \quad -2(x+3) \\ -2x-6$$

$$25. \quad -7(k-3) + 11k \\ -7k+21+11k \\ 4k+21$$

$$26. \quad 19a - (a+6) + 8 \\ 19a - a - 6 + 8 \\ 18a + 2$$

EQUATIONS

Solve each equation.

$$27. \quad x - 13 = -18 \\ +13 \quad +13 \\ x = -5$$

$$28. \quad -12 = \frac{x}{4} \cdot 4 \\ -48 = x$$

$$29. \quad \frac{-119}{7} = \frac{7n}{7} \\ -17 = n$$

$$30. \quad 6(2b+5) = 15 + 7b \\ 12b+30 = 15 + 7b \\ -7b \quad -7b \\ 5b+30 = 15 \\ -30 \quad -30 \\ 5b = -15 \\ \frac{5b}{5} = \frac{-15}{5} \\ b = -3$$

EXPONENTS

Simplify.

$$31. \quad -4n^2 \cdot -3n^4 \\ 12n^6$$

$$32. \quad -2x^3 \cdot 2xy \\ -4x^4y$$

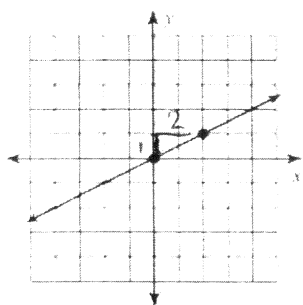
$$33. \quad \frac{48x^5}{3x^2} \quad 16x^3$$

$$34. \quad (3ab^2)^4 \\ 81a^4b^8$$

SLOPE

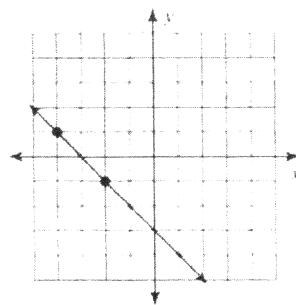
Find the slope of each line. $y = mx + b$

35.



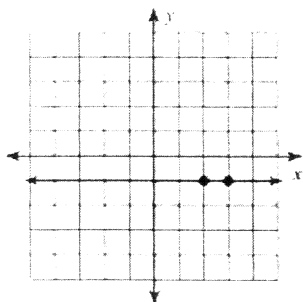
$$m = \frac{1}{2}$$

$$m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$



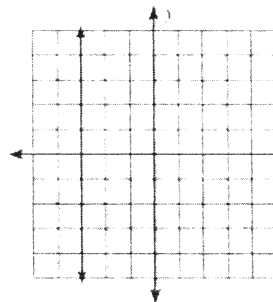
$$m = -1$$

37.



$$m = 0$$

38.



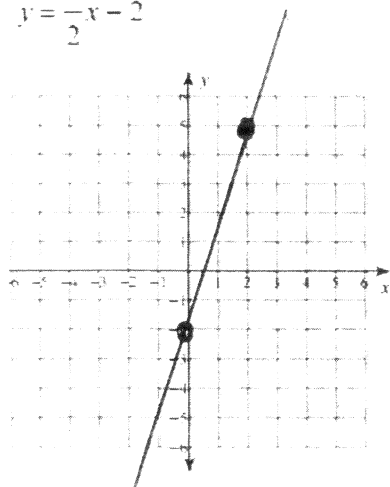
$$m = \text{undefined}$$

GRAPHING LINES

Sketch the graph of each line. Make a table of values for each.

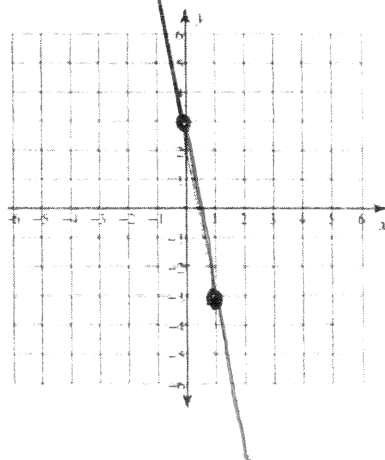
39.

$$y = \frac{7}{2}x - 2$$



40.

$$y = -6x + 3$$



INEQUALITIES

Write an inequality for each graph.

41.



$$x \leq 5$$

42.

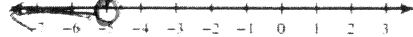


$$x > -1$$

Solve and graph each inequality.

43.

$$b - 7 < -12$$



$$b < -5$$

44.

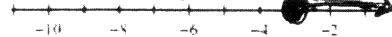
$$-9x \geq -90$$



$$x \leq 10$$

45.

$$a - 6 \leq 15 + 8a$$



$$-7a - 6 \leq 15$$

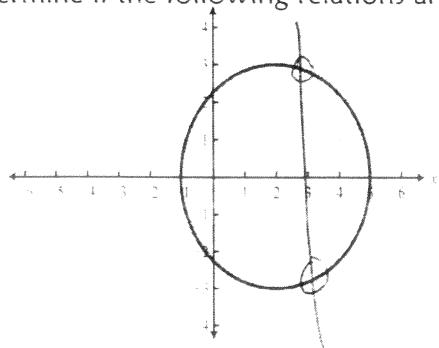
$$+6 \quad +6$$

$$\frac{-7a \leq 21}{-7} \quad a \geq -3$$

FUNCTIONS

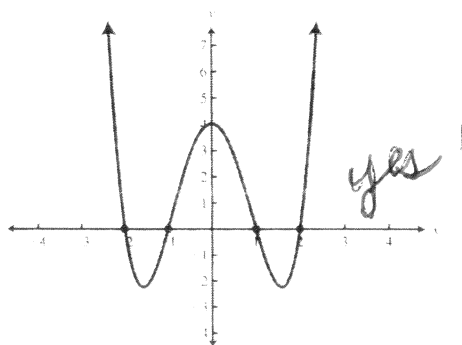
Determine if the following relations are functions. Write yes or no.

46.



no

47.



yes!

48.

x	y
-2	4
-1	4
3	4
6	4

yes

49.

x	y
-2	4
-2	5
0	10
3	14

no

50.

a) Make a table for the function $f(x) = \frac{1}{2}x - 3$ given the domain of the function is $\{-2, 0, 4, 6\}$

x	-2	0	4	6
f(x)	-4	-3	-1	0

$\frac{1}{2}(-2) - 3$ $\frac{1}{2}(0) - 3$ $\frac{1}{2}(4) - 3$ $\frac{1}{2}(6) - 3$

b) Identify the range of the function $\{-4, -3, -1, 0\}$

c) Graph the function.

