

Basic Algebra Practice Problems Part 1

1. What is the difference between -2^4 and $(-2)^4$?

2. How can you tell if your solution to an equation is correct?

3. Perform the indicated operation.

a) $(-9) + (-12)$

b) $-5 + 14$

c) $\frac{1}{3} + \left(-\frac{1}{6}\right)$

d) $7 - (-2)$

e) $-1.8 - (-7)$

4. Evaluate each expression.

a) 2^5

b) $\left(-\frac{1}{4}\right)^3$

c) $\frac{10 - (-7)^2}{-5 - (-2)}$

d) $3 + 2 \cdot |4 - (7^2 - 6^2)|$

e) $5 + (-2)^3 - 4^2$

5. Translate each verbal expression into an algebraic expression.

a) The sum of $2x$ and $3y$

b) The difference of m and p

6. Evaluate each expression using $a = -2$ and $b = 3$.

a) $3a - 2b$

b) $a^2 + 2b - a$

7. Simplify the following expressions.

a) $6\left(\frac{m}{3}\right)$

b) $7 + 2(k - 3) - k + 6$

8. Solve each equation.

a) $-\frac{1}{2}(x-10) = \frac{3}{4}x$

b) $6 - 5(1 - 2x) + 3 = -3(1 - 2x) - 1$

9. If the sum of three consecutive odd integers is 237, then what are the integers?

10. The length of a rectangular lot is 50 feet more than the width. If the perimeter is 500 feet, then what are the length and width?

11. Lawanda and Betty both drive the same distance to the shore. By driving 15 miles per hour faster than Betty, Lawanda can get there in 3 hours while Betty takes 4 hours. How fast does each of them drive?

12. Solve the inequality. State the solution set using interval notation and graph it.
 $4 - 2(x - 3) < 0$

13. Solve the absolute value equality.

$$\left| \frac{x}{2} - 5 \right| = 1$$

14. Complete the given ordered pairs so that each ordered pair satisfies the given equation.

$$x + 2y = 1 \quad (0, \quad), (-2, \quad), (2, \quad)$$

15. Graph the line.

$$y = -3x + 4$$

16. Determine the slope of the line passing through the points.
(0, 4) and (5, 0)

17. What is the slope and y-intercept of the line? Graph it.

$$4x - 2y - 8 = 0$$

18. Find the equation of the line passing through $(-4, 7)$ with slope of -2 .

19. The charge C for renting an air hammer from Taylor and Son Equipment Rental is a linear function of the number n days in the rental period. The charge is \$113 for two days and \$209 for five days.

Write C as a linear function of n . What would the charge be in four days?

20. Subtract. $(4 - 3m - m^2) - (m^2 - 6m + 5)$

21. Simplify. $(12x^3)^2$

22. Multiply. $(x - 5)(x^2 - 2x + 10)$

23. Multiply. $(4y - 3)(5y + 2)$

24. Multiply. $(3b^2 - 1)(3b^2 + 1)$

25. Divide. $x - 2 \overline{)x^2 + 2x - 8}$

26. Simplify. $\left(\frac{-6x^2y^5}{-3z^6}\right)^3$

27. Simplify. $\left(\frac{a^{-2}}{5b}\right)^{-3}$

28. Multiply. $(3.0 \times 10^8)(2.0 \times 10^{-12})$

29. Graph the inequality. $2x - 3y > 6$

30. Let $f(x) = 4x - 3$ and $g(x) = x^2 - 2x$. Find $\left(\frac{f}{g}\right)(4)$

31. Find the domain. $\frac{x+3}{\sqrt{x-5}}$

Basic Algebra Practice Problems Part 1 Short Answers

1. $-2^4 = -16$; $(-2)^4 = +16$
2. Substitute the solution into the original equation and see if makes sense.
3. a) -21 b) 9 c) $\frac{1}{6}$ d) 9 e) 5.2
4. a) 32 b) $-\frac{1}{64}$ c) 13 d) 21 e) -19
5. a) $2x + 3y$ b) $m - p$
6. a) -12 b) 12
7. a) $2m$ b) $k + 7$
8. a) $x = 4$ b) $x = -2$
- 9) $77, 79, 81$
- 10) $L = 150\text{ft}$ $W = 100\text{ft}$
- 11) Betty 45mph Lawanda 60mph
- 12) $(5, \infty)$
- 13) $x = 12$ $x = 8$
- 14) $\left(0, \frac{1}{2}\right), \left(-2, \frac{3}{2}\right), \left(2, -\frac{1}{2}\right)$
- 15) Start at the y-intercept $(0, 4)$, go down 3, and to the right 1 for the second point. Draw a line that contains these two points and put arrows on it.
- 16) $-\frac{4}{5}$
- 17) $m = 2$ y-intercept $(0, -4)$ Start at the y-intercept $(0, -4)$, go up 2, and to the right 1 for the second point. Draw the line that contains both points.
- 18) $y = -2x - 1$
- 19) $C = 32N + 49$ $\$177$
- 20) $-2m^2 + 3m - 1$
- 21) $12^2 x^6 = 144x^6$
- 22) $x^3 - 7x^2 + 20x - 50$
- 23) $20y^2 - 7y - 6$
- 24) $(3b^2 - 1)(3b^2 + 1) = 9b^4 - 1$
- 25) $x + 4$
- 26) $\frac{6^3 x^6 y^{15}}{3^3 z^{18}} = \frac{8x^6 y^{15}}{z^{18}}$
- 27) $5^3 a^6 b^3 = 125a^6 b^3$
- 28) 6×10^{-4}
- 29) $y < \frac{2}{3}x - 2$ Graph the dashed line and shade on the bottom.
- 30) $\frac{13}{8}$
- 31) $\{x \mid x > 5\}$