

Basic Algebra Practice Problems

Part 2

1. Solve $A = \frac{1}{2}h(a+b)$ for h .

2. The area of a rectangle is 35 square yards. The length is 7 yards. Find the width.

3. Solve the absolute value inequality, graph the solution and show the interval notation for the answer.

$$2|3-2x|-4 \geq 10$$

4. Solve the absolute value inequality, graph the solution and show the interval notation for the answer.

$$|7x| < 21$$

5. Factor. $x^3 - 81x$

6. Factor. $16m^5p^4 + 36m^3p - 28m^2p^3$

7. Factor. $ab + 2bw - 4aw - 8w^2$

8. Factor. $w^2 + 9w + 18$

9. Factor. $64x^4 - 49$

10. Factor. $m^3 - 64$

11. Factor. $8y^3 + 27$

12. Factor. $x^3 + 14x^2 + 49x$

13. Solve. $m^2 + 2m - 35 = 0$

14. Solve. $x^2 = 169$

15. Reduce to lowest terms. $\frac{-8u^7v^{19}}{2u^9v^{12}}$

16. Reduce to lowest terms. $\frac{-2x-8}{x^2+2x-8}$

17. Perform the indicated operation. $\frac{5x^3}{3y} \cdot \frac{12y}{25xy}$

18. Perform the indicated operation. $\frac{w^2-1}{(w-1)^2} \div \frac{3w+3}{2w-2}$

19. Perform the indicated operation. $\frac{x-2y}{\frac{4}{\frac{1}{8}}}$

20. Perform the indicated operation. $\frac{3-x}{2} - \frac{x-7}{2}$

21. Perform the indicated operation. $\frac{1}{a^4b} - \frac{3}{ab^2}$

22. Perform the indicated operation. $\frac{2}{x^2-25} + \frac{1}{x^2-4x-5}$

23. Simplify the complex fraction. $\frac{\frac{2}{x} + \frac{1}{x-2}}{\frac{1}{x-2} - \frac{3}{x}}$

24. Solve the equation. $\frac{x}{x-1} - \frac{3}{x} = \frac{1}{2}$

25. Solve the equation. $\frac{3}{x-3} = \frac{5}{x+4}$

26. Solve the equation. $\frac{1}{x^2-1} + \frac{2}{1-x} = \frac{3}{x+1}$

27. Solve the proportion. $\frac{-3}{2-x} = \frac{?}{2x-4}$

28. For a certain time period the ratio of the dollar value of exports to the dollar value of imports for the United States was 2 to 3. If the value of exports during that time period was 48 billion dollars, then what was the value of imports?

29. Leon drove 270 miles to the lodge in the same time as Pat drove 330 miles to the lodge. If Pat drove 10 miles per hour faster than Leon, then how fast did each of them drive?

30. Edgar can blow the leaves off the sidewalks around the capital building in 2 hours using a gasoline-powered blower. Ellen can do the same job in 8 hours using a broom. How long would it take them working together?

31. One night the manager of the Sea Breeze Motel rented 5 singles and 12 doubles for a total of \$390. The next night he rented 9 singles and 10 doubles for a total of \$412. What is the rental charge for each type of room?

32. Solve by graphing. $y = 3x - 4$
 $y = -2x + 1$

33. Solve by using the substitution method. $x - y = 3$
 $3x - 2y = 3$

34. Solve by the addition method. $5x - 3y = -20$
 $3x + 2y = 7$

35. Graph the system of inequalities. $y < 4$
 $3x + 2y < 6$

36. Simplify the radical. $\sqrt[3]{32x^5}$

37. Simplify. $\sqrt[3]{\frac{b^2}{x}}$

38. Simplify. $\left(\frac{27}{125}\right)^{-\frac{1}{3}}$
39. Simplify. $(2\sqrt{6})(3\sqrt{2} + 4\sqrt{3})$
40. Simplify. $\frac{\sqrt{12}}{\sqrt{5} - \sqrt{3}}$
41. Solve the equation. $(x - 2)^3 = -27$
42. Solve. $\sqrt{2x^2 - 6x - 16} = x$
43. Find the difference. $(3 - 4i) - (7 - i)$
44. Find the product. $(2 - i)(5 - 4i)$
45. Find the quotient. $\frac{5 - 6i}{2 + 3i}$
46. Solve. $x^2 + 20 = 0$
47. Solve by completing the square. $x^2 - 3x - 10 = 0$
48. Solve. $x^{-\frac{3}{4}} = 27$
49. Use the quadratic formula to solve the equation. $3x^2 - 8x + 2 = 0$
50. Write a formula that expresses the relationship. B varies directly as the square of n and inversely as the square root of v.

Basic Algebra Practice Problems Part 2 Short Answers

1. $h = \frac{2A}{a+b}$
2. The width is 5 yards.
3. Answer shows interval notation only. $(\infty, -2] \cup [5, \infty)$
4. Answer shows interval notation only. $(-3, 3)$
5. $x(x+9)(x-9)$
6. $4m^2p(4m^3p^3 + 9m - 7p^2)$
7. $(a+2w)(b-4w)$
8. $(w+3)(w+6)$
9. $(8x^2+7)(8x^2-7)$
10. $(m-4)(m^2+4m+16)$
11. $(2y+3)(4y^2-6y+9)$
12. $x(x+7)^2$
13. $\{-7, 5\}$
14. $\{-13, 13\}$
15. $\frac{-4v^7}{u^2}$
16. $\frac{-2}{x-2}$
17. $\frac{4x^2}{5y}$
18. $\frac{2}{3}$
19. $2x-4y$
20. $-x+5$
21. $\frac{b-3a^3}{a^4b^2}$
22. $\frac{3x+7}{(x+1)(x+5)(x-5)}$
23. $\frac{3x-4}{-2x+6}$
24. $\{2, 3\}$
25. $\frac{27}{2}$

26. $\frac{2}{5}$
27. 6
28. \$72 billion
29. Leon 45 mph, Pat 55 mph
30. 1 hour 36 minutes
31. Singles \$18, doubles \$25
32. (1, -1)
33. (-3, -6)
34. (-1, 5)
35. Graph the system of inequalities and shade the lower left portion of the graph. (Where (0,0) is true for both inequalities.)
36. $2x^3\sqrt{4x^2}$
37. $\frac{\sqrt[3]{b^2x^2}}{x}$
38. $\frac{5}{3}$
39. $12\sqrt{3} + 24\sqrt{2}$
40. $3 + \sqrt{15}$
41. -1
42. {8}
43. $-4 - 3i$
44. $6 - 13i$
45. $\frac{-8 - 27i}{13}$
46. $\pm 2i\sqrt{5}$
47. {-2, 5}
48. $\frac{1}{81}$
49. $\frac{4 \pm \sqrt{10}}{3}$
50. $B = \frac{kn^2}{\sqrt{v}}$