

ALGEBRA 1
Second Semester Study Guide

NAME _____
PERIOD _____

1) Find the prime factorization of 91.

2) Find the GCF of $-35a^2$ and $56ab$.

3) Factor completely $44x^2y^2 + 12x^2y - 16xy^2$.

4) Solve $25x^2 - 100x = 0$.

5) Solve $y^2 = 14y - 48$.

6) Factor completely $5d^2 + 6d - 8$.

7) Factor completely $y^2 + 13y + 30$

8) Factor completely $b^2 + b - 20$.

9) Factor completely $5x^2 - 9x + 4$.

10) Factor completely, if possible. If polynomial cannot be factored, choose *prime*. $90x^2y - 100xy^2$.

11) Factor $x^2 - 6x - 27$

12) Simplify $\frac{20x^2y}{35xy^2}$.

13) State the excluded values of $\frac{a^2 + 3a - 28}{a^2 - 3a - 4}$.

14) Simplify $\frac{6x^2 - 10x + 4}{2x^2 - 6x + 4}$.

15) Simplify $\frac{x^4}{7x^2 - 7y^2} \cdot \frac{x + y}{x^5 + x^4}$.

16) Simplify $\frac{8m^2n}{p^2} \div \frac{m^3n^2}{6p^5}$.

17) Factor $x^2 - 7x + 12$

18) Simplify $\frac{5x}{x + 1} + \frac{2x}{x + 1}$.

19) Simplify $\frac{x-5}{9} - \frac{x-6}{9}$.

20) Simplify $5\sqrt{7} - 2\sqrt{7}$

21) If $x = 3$ and $3x + y = 7$, what is the value of y ?

22) Solve the system
$$\begin{aligned} n &= 4m - 14 \\ 2m + 3n &= 0 \end{aligned}$$

23) Solve the system
$$\begin{aligned} x + 7y &= 12 \\ x + 6y &= 9 \end{aligned}$$

24) To eliminate the variable y in the system of equations,
Multiply the second equations by what number?

$$\begin{aligned} 8x + 6y &= 24 \\ 4x - 3y &= 12 \end{aligned}$$

25) Find the two numbers whose sum is 36 and whose difference is 24.

26) If $x = 3y + 6$ and $2x - 5y = 10$, what is the value of y ?

27) Simplify $(x^5)^3$

28) Solve the system for y

$$\begin{aligned} 6x + 8y &= -24 \text{ and} \\ 4x - 10y &= 156. \end{aligned}$$

29) Express 6.32×10^{-5} in standard notation

30) Simplify $\sqrt{160}$

31) Simplify $(4d^4)(-3d^3)$.

32) Simplify $(-3xy^3)^2(4x^4y^2)^3$.

33) Simplify $\frac{5n^{-4}y}{10n^{-3}y^{-5}}$. Assume the denominator is not equal to zero.

34) Find the degree of the polynomial $5x^3y^2 - 4x^2y^2 + 9x^4y^2$.

35) Arrange the terms of $5x^4y^3 + 12x^2y^2 - 3x^3y + 6$ so that the powers of x are in ascending order.

36) Find $(4c^2 - 9c + 5) + (3c^2 - 9c - 16)$.

37) Find $(x + 3)(x + 7)$.

38) Find $(5y + 3z)(5y - 3z)$

39) Solve $x(2x + 4) - 4 = 2 + x(2x + 1)$

40) Find $(4x + 3)(2x^2 - 5x - 9)$.

41) Write $x + \frac{x+4}{x+7}$ as a rational expression.

42) Simplify $\sqrt{200}$

43) Simplify $\sqrt{50x^{10}y^5}$

44) Determine whether the following side measures form a right triangle.

14, 48, 50

45) Find the distance between the pair of points whose coordinates are given

(7, 3), (-4, 11)

46) Simplify $\frac{8}{3 - \sqrt{2}}$

47) Simplify $2\sqrt{50} - 3\sqrt{32}$

48) Solve $\sqrt{3x - 3} - 6 = -3$

49) If c is the measure of the hypotenuse of a right triangle, find the missing value. If necessary, round to the nearest hundredth.
 $a = 8$, $b = 15$, $c = ?$

50) If c is the measure of the hypotenuse of a right triangle, find the missing value. If necessary, round to the nearest hundredth.
 $c = 14$, $a = 9$, $b = ?$

Algebra I 2nd Semester Study Guide Answers

1. $7 \bullet 13$
2. $7a$
3. $4xy(11xy + 3x - 4y)$
4. $x = 0, 4$
5. $y = 8, 6$
6. $(5d - 4)(d + 2)$
7. $(y + 10)(y + 3)$
8. $(b + 5)(b - 4)$
9. $(5x - 4)(x - 1)$
10. $10xy(9x - 10y)$
11. $(x - 9)(x + 3)$
12. $\frac{4x}{7y}$
13. excluded values 4, -1
14. $\frac{3x - 2}{x - 2}$
15. $\frac{1}{7(x - y)(x + 1)}$
16. $\frac{48p^3}{mn}$
17. $(x - 4)(x - 3)$
18. $\frac{7x}{x + 1}$
19. $\frac{1}{9}$
20. $3\sqrt{7}$
21. $y = -2$
22. $(3, -2)$
23. $(-9, 3)$
24. 2
25. 30, 6
26. $y = -2$
27. x^{15}
28. $y = \frac{-258}{23}$
29. .0000632
30. $4\sqrt{10}$
31. $-12d^7$
32. $576x^{14}y^{12}$

33. $\frac{y^6}{2n}$
34. 6
35. $6+12x^2y^2-3x^3y+5x^4y^3$
36. $7c^2-18c-11$
37. $x^2+10x+21$
38. $25y^2-9z^2$
39. $\mathbf{x} = 2$
40. $8x^3-14x^2-51x-27$
41. $\frac{x^2+8x+4}{x+7}$
42. $10\sqrt{2}$
43. $5x^5y^2\sqrt{2y}$
44. yes
45. $\sqrt{185} \approx 13.6$
46. $\frac{24+8\sqrt{2}}{7}$
47. $-2\sqrt{2}$
48. $\mathbf{x} = 4$
49. 17
50. $\sqrt{115} \approx 10.72$