

MAT 0020 BASIC ALGEBRA 2

PRACTICE FINAL

Simplify each expression.

1. $18 \div 2 \cdot 3 - 2 \cdot 5$

2. $9 \div 3 + 4^2 \cdot 2 - 10$

3. $(4 - 9)^2 \cdot 3 \div (-5)$

4. $24 - 2(3 - 9)^2 - 3^2$

5. $|9 - 16| - |-8|$

6. $-|-17| + |-16| + |24|$

7. $5x - 6 - 3(5x - 4)$

8. $3 - 4(3x - 5) + 8(x - 2)$

Evaluate the expressions for the given values of x and y.

9. $2x^2 - xy + 5$; $x = -4$ and $y = 3$

10. $x^2 - 2xy + 3y^2$; $x = -2$ and $y = -1$

Solve each equation.

11. $\frac{1}{3}y - 2 = \frac{3}{4}y + 1$

12. $\frac{3}{7}x - 2 = 1 + 3x$

Solve each equation.

13. $8 - 2(a + 1) = 9 + a$

14. $7(2x + 3) - 6x = 1 - 7x$

Solve each equation for the specified variable.

15. Solve for p : $6p - 5q = 3$

16. Solve for y : $3x + 4y = 7$

Solve each inequality.

17. $4x + 6 \leq 3(3x - 5)$

18. $24 - 5x > -3x + 18$

Write an algebraic equation. Use x to represent the unknown number.

19. Four times the sum of a number and eight is fifteen less than twice the number.

20. The difference of five times a number and three is seven less than the number.

Solve each problem.

21. The perimeter of a rectangle is 28 feet. Find the length of the rectangle if the length is 4 feet less than two times the width.

22. The number of women attending a conference was three less than twice the number of men. If 51 people attended the workshop, how many were women?

Find the proportion that solves each problem.

23. Kevin can ride his bicycle 8 miles in 25 minutes. At this pace, how long will it take him to ride 20 miles?
24. If the average height of children weighing 75 lbs is 58 inches, what is the average height of children weighing 60 lbs?

Simplify each expression.

25. $(-2r^{-3}s^{-2}t)(5st^{-6})$
26. $(x^3y^5z^0)(x^{-4}y^2)$
27. $(a^{-7}b^2c^0)^3$
28. $(x^3y^{-2}z)^{-5}$
29. $\frac{x^2y^6z^3}{x^{11}yz^4}$
30. $\frac{x^6y^{-5}}{x^{-2}y^3}$

Write the number in scientific notation.

31. 0.0000415

Write the number in standard form.

32. 6.102×10^6

Add the polynomials.

33. $(2x^2 - 3x - 5) + (-8x^2 + 5x - 2)$

Subtract the polynomials.

34. $(x^2 + 2x - 5) - (6x^2 - 4x - 1)$

Multiply the polynomials.

35. $6x^3(3x^2 - 5)$

36. $-4x^2y(5x^3y^2 - 2x^2y + 3x)$

37. $(3x - 2)(4x + 1)$

38. $(4x - 5y)^2$

39. $(2x - 7)(2x + 7)$

Factor each expression completely.

40. $5x^2y^3 - 15x^3y + 10xy^2$

41. $16x^4y^2 - 8x^3y^2 + 4x^2y^2$

42. $25x^2 - 16y^2$

43. $64a^4 - 9b^2$

44. $9y - 3x + 3y^2 - xy$

45. $ax - a + bx - b$

46. $4x^2 - 11x + 6$

47. $5x^2 - 13x - 6$

Simplify each expression.

$$48. \frac{2x^2 - 7x - 4}{x^2 - 16}$$

$$49. \frac{x^2 - 4x + 3}{x^2 - 1}$$

Solve each equation.

$$50. 3y^2 - 4y - 15 = 0$$

$$51. 4a^2 - 9a + 5 = 0$$

$$52. x^2 + 7x - 60 = 0$$

$$53. x^2 - 2x - 48 = 0$$

Simplify each expression. Assume the variable represents a non-negative number.

$$54. \sqrt{60a^6}$$

$$55. \sqrt{144x^7y^4}$$

Simplify each expression.

$$56. \sqrt{3} (2\sqrt{3} - \sqrt{21})$$

$$57. \sqrt{48} + \sqrt{27}$$

Find the x-intercept for the given line.

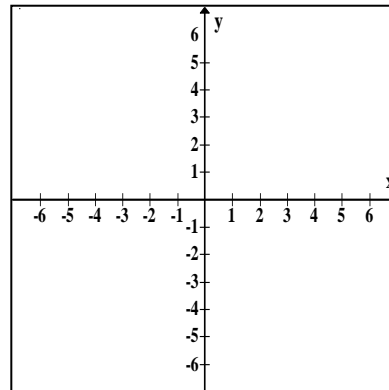
$$58. 2x + 5y = 15$$

Find the y-intercept for the given line.

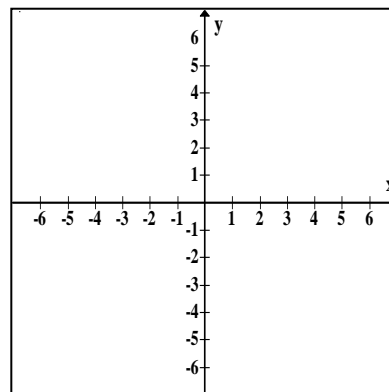
$$59. x + 3y = 2$$

Graph each linear equation.

$$60. y = -4x - 5$$



$$61. 2x + y = 4$$



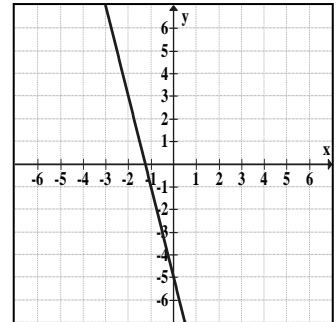
MAT 0020 PRACTICE FINAL

ANSWER KEY

1. 17
2. 25
3. -15
4. -57
5. -1
6. 23
7. $-10x + 6$
8. $-4x + 7$
9. 49
10. 3
11. $y = -\frac{36}{5}$
12. $x = -\frac{7}{6}$
13. $a = -1$
14. $x = -\frac{4}{3}$
15. $p = \frac{5q+3}{6}$
16. $y = \frac{7-3x}{4}$
17. $x \geq \frac{21}{5}$
18. $x < 3$
19. $4(x+8) = 2x - 15$
20. $5x - 3 = x - 7$
21. 8 ft
22. 33 women
23. $\frac{8}{25} = \frac{20}{x}$
24. $\frac{75}{58} = \frac{60}{x}$
25. $-\frac{10}{r^3st^5}$

26. $\frac{y^7}{x}$
27. $\frac{b^6}{a^{21}}$
28. $\frac{y^{10}}{x^{15}z^5}$
29. $\frac{y^5}{x^9z}$
30. $\frac{x^8}{y^8}$
31. 4.15×10^{-5}
32. 6,102,000
33. $-6x^2 + 2x - 7$
34. $-5x^2 + 6x - 4$
35. $18x^5 - 30x^3$
36. $-20x^5y^3 + 8x^4y^2 - 12x^3y$
37. $12x^2 - 5x - 2$
38. $16x^2 - 40xy + 25y^2$
39. $4x^2 - 49$
40. $5xy(xy^2 - 3x^2 + 2y)$
41. $4x^2y^2(4x^2 - 2x + 1)$
42. $(5x - 4y)(5x + 4y)$
43. $(8a^2 + 3b)(8a^2 - 3b)$
44. $(3 + y)(3y - x)$
45. $(x - 1)(a + b)$
46. $(x - 2)(4x - 3)$
47. $(x - 3)(5x + 2)$
48. $\frac{2x+1}{x+4}$
49. $\frac{x-3}{x+1}$
50. $y = -\frac{5}{3}, y = 3$

51. $a = \frac{5}{4}, a = 1$
52. $x = -12, x = 5$
53. $x = -6, x = 8$
54. $2a^3\sqrt{15}$
55. $12x^3y^2\sqrt{x}$
56. $6 - 3\sqrt{7}$
57. $7\sqrt{3}$
58. $\left(\frac{15}{2}, 0\right)$
59. $\left(0, \frac{2}{3}\right)$
- 60.



61.

