

NOTE: In addition to the problems below, please study the handout Exercise Set 5.2 and review earlier sections.

1. Simplify: $5^7 \cdot 5^2$
2. Simplify: $(-6ab^5c^3)(-3a^2c^5)$
3. Simplify: $-4x^2yz^3 \cdot 7wxyz^2$
4. Simplify: $y^{16} \div y^9$
5. Simplify: $\frac{3^{10}}{3^6}$
6. Simplify: $\frac{14w^2x^4y^6z^0}{21w^8x^4y^3z^5}$
7. Simplify: $(11^4)^6$
8. Simplify: $(-4xy^4)^3$
9. Simplify: $(-2a^2b^5)^4$
10. Simplify: $(5v^5w^3)(-2v^2w^5)^3$
11. Simplify: 4^0
12. Simplify: $5x^0$
13. Simplify: $(5x)^0$
14. Identify each polynomial below as a monomial, a binomial, or a trinomial and indicate its degree.
 - a. $10 + 3z^4 - 9z^3$
 - b. $19m^{15}$
 - c. $x + 2x^5 - 4$
 - d. $100 - 5y$
 - e. -8
15. Evaluate $2u^3v - 5uv + 3u - v + 10$ when $u = 2$ and $v = -5$.
16. Simplify: $(11x^3 + 4x^2 - 5y^3 - 3y) + (2x^3 - 4x^2 + y)$
17. Simplify: $(7y^2 - 2x + y) - (4y^2 - 3y + 2x)$

18. Simplify: $3xy^3(5x^3 - 7xy^2 + xy - 2y)$

19. Divide: $\frac{12xy^6 + 24x^5y^9}{4xy^3}$

20. Divide: $\frac{20r^3s^2t - 4rs^2t}{12r^2st^3}$

21. Divide: $(12x^2 - 7x - 13) \div (3x + 2)$

22. Divide: $(x^3 - 11x + 6) \div (x - 3)$

23. Divide: $(3x^3 + 4x^2 + 8) \div (x + 2)$

24. Simplify: $(w - 5)(w - 7)$

25. Simplify: $(8y + 1)(2y - 7)$

26. Simplify: $(2y + 3)^2$

27. Simplify: $(w - 4)^2$

28. Simplify: $(6r - 7s)^2$

29. Simplify: $(3x - 4)(3x + 4)$

30. Simplify: $(w + 6v)(w - 6v)$

31. Simplify: $(5x - 3)(2y + 9)$

32. Simplify: $(4a^3 - 3)(a^3 - 5a + 1)$

33. Solve the system of equations by graphing. If there is no solution or more than one solution, state this.

$$\begin{aligned} 6x - 3y &= 12 \\ y &= 2x - 4 \end{aligned}$$

34. Solve the system of equations by graphing. If there is no solution or more than one solution, state this. (A brief note: Any time I ask you to solve a system of equations, if there is no solution or more than one solution, you must tell me this, even if I don't)

$$\begin{aligned} x - y &= 6 \\ 2x - 2y &= -6 \end{aligned}$$

35. Solve the system of equations by graphing.

$$\begin{aligned} 2x + y &= 10 \\ 3x + 2y &= 18 \end{aligned}$$

36. Solve the system of equations by using the substitution method.
 $x = 3y + 5$
 $4x - 12y = 20$
37. Solve the system of equations by using the elimination method.
 $2x - 10y = 1$
 $3x - 15y = 4$
38. Solve the system of equations. (You may use whichever method you like if I don't tell you one to use. Hint: The graphing method is usually *not* a good choice unless I specifically ask you for it.)
 $4y - x = 27$
 $2x + 7y = 21$
39. Solve the system of equations.
 $4x + y = -2$
 $3y - 2x = -13$
40. Solve the system of equations.
 $4x + 5y = 3$
 $6x - 3y = 15$
41. Solve the system of equations.
 $5x - 4y = 2$
 $11x + 2y = 8$
42. Evaluate: $x^2 - y^2 - z^2$ if $x = -5$, $y = 6$, and $z = -4$
43. A car travels at a rate 94 km/h slower than the rate of a train. In the same time that the car travels 329 km, the train travels 987 km. Find the speed of the car and the speed of the train.
44. The sum of two numbers is 21. Half the larger number plus twice the smaller number is 12. What are the numbers?
45. Ling had a total of \$1482 in her checking account and her savings account. Her savings account paid 4% in simple interest and her checking account paid 2.5% in simple interest. If she earned \$51.42 in interest for the year, how was her money divided between the two accounts?
46. Ben has a total of 49 bills, consisting of \$5 bills and \$10 bills. If the total value of the bills is \$350, how many of each does he have?
47. Alan needs 250 ml of a solution that is 45% alcohol. If he has a solution that is 50% alcohol and purified water (which is 0% alcohol), how much of each should he mix together?
48. Jose wants 8 pounds of a dried fruit mixture that he can sell for \$3.75 per pound. If he has dried peaches that cost \$4.50 per pound and dried apples that cost \$3.25 per pound, how much of each should he use?

49. LaKeshia wants 400 ml of a solution that is 11% HCl. If she has only 8% HCl and 16% HCl, how much of each should she mix together?
50. Darcy has 23 fewer quarters than dimes. Altogether the coins are worth \$17.35. How many of each does she have?
51. Two angles are complementary. One angle is 24° less than twice the other. Find the angles. (Hint: complementary angles have a sum of 90° .)
52. A person's paycheck P varies directly as the number of hours worked H . For 15 hr of work, the pay is \$78.75. Find the pay for 35 hr of work.
53. Simplify $6y - 4(y+3) + (y-4)$
54. Simplify $10xy^5 - (7xy^5)$

ANSWERS:

1. 5^9
2. $18a^3b^5c^8$
3. $-28wx^3y^2z^5$
4. y^7
5. 3^4
6. $\frac{2y^3}{3w^6z^5}$
7. 11^{24}
8. $-64x^3y^{12}$
9. $16a^8b^{20}$
10. $-40v^{11}w^{18}$
11. 1
12. 5
13. 1
14.
 - a. trinomial, 4
 - b. monomial, 15
 - c. trinomial, 5
 - d. binomial, 1
 - e. monomial, 0
15. -9
16. $13x^3 - 5y^3 - 2y$
17. $3y^2 - 4x + 4y$
18. $15x^4y^3 - 21x^2y^5 + 3x^2y^4 - 6xy^4$
19. $3y^3 + 6x^4y^6$

ANSWERS:

20. $\frac{5rs}{3t^2} - \frac{s}{3rt^2}$

21. $4x - 5 + \frac{-3}{3x+2}$, or $4x - 5 - \frac{3}{3x+2}$

22. $x^2 + 3x - 2$

23. $3x^2 - 2x + 4$

24. $w^2 - 12w + 35$

25. $16y^2 - 54y - 7$

26. $4y^2 + 12y + 9$

27. $w^2 - 8w + 16$

28. $36r^2 - 84rs + 49s^2$

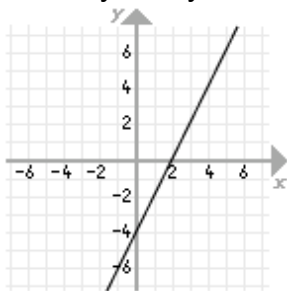
29. $9x^2 - 16$

30. $w^2 - 36v^2$

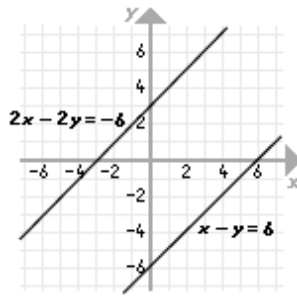
31. $10xy + 45x - 6y - 27$

32. $4a^6 - 20a^4 + a^3 + 15a - 3f$

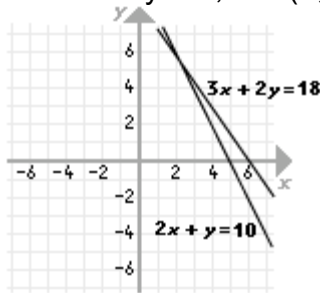
33. Infinitely Many Solutions (Same Line - All points on the line are solutions.)



34. No Solution (Parallel Lines - They share no common points.)



35. $x = 2$ and $y = 6$, or $(2, 6)$



36. Infinitely Many Solutions (Same Line - All points on the line are solutions.)
37. No Solution (Parallel Lines - They share no common points.)
38. $x = -7$ and $y = 5$, or $(-7, 5)$
39. $x = \frac{1}{2}$ and $y = -4$, or $(\frac{1}{2}, -4)$
40. $x = 2$ and $y = -1$, or $(2, -1)$
41. $x = \frac{2}{3}$ and $y = \frac{1}{3}$, or $(\frac{2}{3}, \frac{1}{3})$
42. -27
43. The speed of the car is 47 km/h and the speed of the train is 141 km/h.
44. The numbers are 1 and 20.
45. Ling began the year with \$524 in her checking account and \$958 in her savings account.
46. Ben has 28 \$5 bills and 21 \$10 bills.
47. Alan should mix 225 ml of the 50% alcohol and 25 ml of the purified water.
48. Jose should mix 3.2 pounds of dried peaches and 4.8 pounds of dried apples.
49. LaKeshia should mix 250 ml of 8% HCl and 150 ml of 16% HCl.

50. Darcy has 43 quarters and 66 dimes.

51. The angles are 38° and 52° .

52. The pay is \$183.75 for 35 hr of work.

53. $3y - 16$

54. $17xy^5$