

1. Simplify:

a. $-3^2 + 2(5 - 4^2 \div 8)$

b. $\frac{3 + |4 - 3| + 2^2}{6 - 3}$

c. $-5(y + 1) + 2(3 - 5y)$

d. $5x^4 - 3x^3 + x^2 + 5 - (2x^3 - 7x + 1)$

e. $(3x^5)^2 (2x^2)^3$

f. $\frac{4^0 (y^{-2})^4}{x^{-5}}$

g. $\frac{(2x^2y)^3}{-2^2x^4y^5}$

h. $\frac{2^{-1}x^{-2}y^2}{3y^{-3}x^4}$

2. Solve the equations:

a. $4(x - 5) = -(4 - 2x)$

b. $5y - 7(3 - 2y) = 36$

c. $\frac{2(8-a)}{3} = 4 - 4a$

d. $\frac{5}{2}x - \frac{3}{4} = x$

e. $x(2x - 3) = 2$

f. $2x^2 + 6x = 0$

g. $3x^3 - 21x^2 + 30x = 0$

h. $|x - 8| - 18 = -1$

i. $\frac{2}{9} + \frac{1}{2}x = x - \frac{1}{2}x + \frac{2}{9}$

j. $10(x - 3) = 5 + 10x$

3. Solve the inequalities, graph the solution set on a number line and write the answer in interval notation:

a. $-6x + 2 \leq -3(x + 4)$

b. $\frac{x}{3} - 1 < 0$ and $-3x < -15$

c. $6x + 1 > 5x + 4$ or $x < 5$

d. $4 < 2x - 2$ and $4x \leq 28$

e. $3x - 5 \leq 8$ and $2x < -4$

4. Solve

a. $A = p + prt$ for t

b. $V = \frac{1}{3}\pi r^2 h$ for h

5. Find domain and range of relation; Determine whether the relation is a function.

$$\{(0, -2), (1, 1), (-1, -5), (2, 4)\}$$

6. Given the function: $f(x) = 4x^2 - 6x + 3$

a. Find $f(-2)$ b. Find $f(4)$

7. Given the equation $3x - 2y = 12$

a. Find the slope

b. Find the x -, y -intercepts.

c. Sketch the graph

8. Graph the linear functions:

a. $y = 2x$

b. $y = -\frac{1}{2}x + 3$

c. $2x - 3y = 6$

d. $y = -2.5$

9. Graph the nonlinear function:

$f(x) = |x + 5|$ then write the domain and range in interval notation.

10. Find the slope of the line that passes through:

a. $(5, -8)$ and $(-7, 10)$

b. $(1, 2)$ and $(-2, 8)$

11. Find the equation of the line containing the points $(1, 2)$ and $(-2, 8)$. Write the equation in standard form.

12. Find an equation of the line containing the point $(8, 2)$ and perpendicular to the line $y = \frac{2}{5}x + 4$, write your answer in function notation.

13. Find an equation of the line that passes through the point $(4, 2)$ and parallel to the line $x + 3y = 6$

14. Graph each inequality:

a. $5x + 4y \leq 20$

b. $2x - y > 3$

15. Graph the solution of system of linear inequalities:

$$\begin{cases} x + 2y \leq 4 \\ y > x + 2 \end{cases}$$

16. Multiply and simplify:

a. $(3x - 5)(2x + 3)$

b. $(x^2 - 9b)(x^2 + 9b)$

c. $-x^2(-2x^2 + x - 3)$

d. $(4x - 2)^2$

e. $(x + 3)(2x^2 + x + 1)$

17. Divide:

a. $\frac{12x^3 + 20x^2 - 4x}{4x}$

b. $(x^2 + 4x - 10) \div (x - 2)$

c. $\frac{6x^6y^2 + 3x^3y}{3x^3y}$

d. $(3x^2 + 14x + 8) \div (x + 4)$

18. Solve each system of linear equations

a. $\begin{cases} x + y = 2 \\ 2x + 3y = 7 \end{cases}$

b. $\begin{cases} 4x - 3y = 24 \\ 4x + 5y = -8 \end{cases}$

c. $\begin{cases} 2x - 3y = 5 \\ 6x + y = 1 \end{cases}$

19. Factor each polynomial completely:

a. $9x^3 + 39x^2 + 12x$

b. $2x^2 + 5x - 12$

c. $4y^2 - 49$

d. $8x^3 + 27$

e. $2xy + 8x - 3y - 12$

f. $2x^2 - 16xy + 32y^2$

g. $8x^3 - 125$

h. $x^3 + 2x^2 - 9x - 18$

20. Scientific notation problems

a. Write 4.8×10^{-5} in the standard notation.

b. Write 32,710,000 in scientific notation

c. Using scientific notation to evaluate $(7 \times 10^{-5})(9 \times 10^7)$ and write the answer in scientific notation.

21. Two men started from the same place at the same time. One travels due North at a rate of 65 mph, and the other travels due South at a rate of 55 mph. In how many hours will they be 420 miles apart?

22. The longer leg of a right triangle is 10 cm more than the shorter leg and the hypotenuse is 10 cm less than twice the shorter leg. Find the length of the 3 sides of the triangle.

23. A chemist has one solution which is 30% acid and another solution which is 60% acid. How many pounds of each solution must be

used to produce 60 pounds of solution
which is 50% acid?

24. The length of a rectangle is five feet less than the width. If the perimeter is 80 feet, find the length and width.
25. The lengths of the sides of a triangle are represented by three consecutive even integers. If the perimeter of the triangle is 132 feet, find the lengths of its sides.
26. An office worker paid \$16.40 for 50 stamps. If some were \$0.37 stamps, and the rest were \$0.23 stamps. How many of each kind were purchased?
27. The perimeter of a rectangle is 36 feet. The length is twice the width. Find the dimensions of the rectangle.
28. Basketball tickets at a high school sell for \$5 for general admission and \$2 for students. \$900 was made in ticket sales for one game and a total of 270 tickets were sold. How many of each type of ticket was sold?
29. Solve each equation:
- $3(2x + 4) - 20 = 3 + 5x$
 - $\frac{6x-8}{5} = 2x$
 - $\frac{7}{5}x + \frac{3}{5} = -x$
 - $|2x - 1| = |7 - x|$
 - $x^3 - 8x^2 + 12x = 0$
 - $x(x + 2) = 8$
30. Solve
- $V = \frac{1}{3}Ah$ for h
 - Solve $P = 2w + 2h$ for w

31. Find the domain and range of the relation.
Is it a function? $\{(0,1), (1,2), (2,4)\}$
32. Find x- and y- intercepts of the line $3x + 2y = 6$. Then graph.
33. Graph each of the follow:
- $y = -2x + 3$
 - $y = \frac{1}{3}x$
 - $3x + 2 = 7$
 - $f(x) = \sqrt{x} - 2$
34. Find the slope and equation of the line through (2, 3) and (4, 7). Write the equation in slope-intercept form.
35. Find the equation of the line through (0, 3) and parallel to the line $x + 5y = 20$, write the equation in standard form.
36. Simplify:
- $\frac{3x^8y^0}{6x^5y^3}$
 - $\frac{(3a^4b)^2}{a^8b^3}$
 - $\frac{2^{-3}x^{-4}y^2y^6}{x^5y^{-3}}$
38. Find the slope for each of the following lines:
- $3x + 2y = 17$
 - $2x = 4$
 - $y = -\frac{3}{4}x + 2$
39. Dennis and Nancy Wood are celebrating their 30th wedding anniversary by having a

reception at Tiffany Oaks reception hall.

They have budgeted \$3000 for their

reception. If the reception hall charges a \$50 cleanup fee plus \$34 per person, find the greatest number of people that they may invite and still stay within their budget.

40. Translate phrase into algebraic

expression and simplify if possible:

Three times the sum of a number and eight subtracted from eight times the number minus 6.

41. Find domain of $f(x) = \frac{3x+2}{x-5}$

42. Problems from textbook:

Chapter 2: Page 134- 135: # 21, 23 and 25

Page 144: # 25 and 30

Chapter 4: Page 293 # 21 and 29

Chapter 6: Page 429 # 35

43. **Math vocabulary:**

Absolute value; Associative, distributive, commutative properties; domain/range; evaluate; function; GCF; inequality; linear equations; order of operations; ordered pairs; perimeter; polynomial; quadratic equation/function; simplify; slope; slope-intercept form; solve; standard form; system of equations; x/y-intercepts.

GOOD LUCK !