Algebra

ALGEBRA – EQUATIONS 1

1. $3x = -21$

2. $15 = -3x$

3. $2.6x = 0$

4. $-2a = -90$

5. $0.3x = -0.9$

6. $-28 = -2a$

7. $-\frac{1}{3}x = -4$

8. $-3y = \frac{-4}{5}$

9. $-z = -6$

10. $3 = -x$

11. $-y = -4$

12. $-x = \frac{3}{8}$

13. $-b = \frac{1}{2}$

14. $-x + 1 = 5$

ANSWER KEY

1. x = -7
2. x = -5
3. x = 0
4. a = 45
5. x = -3
6. a = 14
7. x = 12
8. y = $\frac{4}{15}$
9. a = 6
10. x = -3
11. y = 4
12. x = $\frac{-3}{8}$
13. b = $-\frac{1}{2}$
14. x = -4

ALGEBRA – EQUATIONS 2

1. $8x + 18 - 3x - 4 = 64$

2. $-4x + x - 8x = 0$

3. $9w - 2w + 10 = 31$

4. $-7 = 7m + 25 + m$

5. $10 = 2p - p + 1$

6. $27 + c + 11c - 15 = 96$

7. $19 - 3x = 4x - 2$

8. $2x - 7 = 4x + 11$

9. $3.5x - 2.4 = 3.9 + 1.4x$

10. $\frac{1}{2}x - \frac{1}{4} = \frac{3}{4}x - \frac{1}{2}$

11. 1 - m = m – 1

12. $\frac{x}{3}$ - 5 = 16

13. 3x + 6 + 9x = -4 - 3x + 7

14. 49 - 10x - 3 = 50 - 2x

15. -5 -4x -3 -2x - 1 = 0

16. 23 - x = 13 - 4x

17. 13 - 2.6x - 5 = 12x + 8

18. x + 2x + 3x = 180

19. x + 2x + 5 + 3x = 180 + x

20. 6x - 7 = 27x + 14

ANSWER KEY

1. $x = 10$
2. $x = 0$
3. $w = 3$
4. $m = -4$
5. $p = 9$
6. $c = 7$
7. $x = 3$
8. $x = -9$
9. $x = 3$
10. $x = 1$
11. $m = 1$
12. $x = 63$
13. $x = -\frac{1}{5}$
14. $x = -\frac{1}{2}$
15. $x = -\frac{3}{2}$
16. $x = -\frac{10}{3}$
17. $x = 0$
18. $x = 30$
19. $x = 35$
20. $x = -1$

ALGEBRA – EQUATIONS 3

1. $2(3x + 4) = 26$

2. $4(6 - x) = 7$

3. $3(x + 4) = 2(x - 6)$

4. $3(5x - 9) = 33$

5. $12 = -6(2x - 8)$

6. $4 = 8 + 2(3x + 1)$

7. $2x - 3 = 4(x - 1)$

8. $6 = 2(5x - 4)$

9. $3(2x - 5) - 6(5x - 3) = 0$

10. $0.5(4m - 30) = 7$

11. $2x - 3(x + 4) = 6 + 7x$

12. $3 - (3x + 5) = -4$

13. $0.6(2x - 1.4) = 1.8$

14. $1 - 2(3 - 4x) = 5x + 6$

15. $1 - (1 - x) = 1$

16. $x - (x - 1) = x$

17. $5 - (6 - 3a) = 7 + 11a$

18. $2(x - 3) - (2x + 6) = 4x$

19. $4\left(\frac{1}{2}x - 3\right) = x - 22$

20. $44 - 16x = 25(3 - x)$

ANSWER KEY

1. $x = 3$
2. $x = \frac{17}{4}$
3. $x = -24$
4. $x = 4$
5. $x = 3$
6. $x = -1$
7. $x = \frac{1}{2}$
8. $x = \frac{7}{5}$
9. $x = \frac{1}{8}$
10. $m = 11$
11. $x = -\frac{9}{4}$
12. $x = \frac{2}{3}$
13. $x = 2.2$
14. $x = 3\frac{2}{3}$
15. $x = 1$
16. $x = 1$
17. $a = -1$
18. $x = -3$
19. $x = -10$
20. $x = \frac{31}{9}$

ALGEBRA – EQUATIONS 4

1. When 18 is subtracted from 6 times a certain number the result is 96. What is the number?

2. The perimeter of a rectangle is 37 cm. The length is 1 cm less than twice the width. Find the length and width.

3. The width of a rectangular-shaped garden is 5 m less than twice the length. The perimeter is 14 m. Find the length and width.

4. If you add two-fifths of a number to the number itself, you get 56. What is the number?

5. If you add one-third of a number to the number itself, you get 48. What is the number?

6. A 180 m rope is cut into three pieces. The second piece is twice as long as the first. The third piece is three times as long as the second. How long is each piece?

7. The second angle of a triangle is three times as large as the first. The third angle is 10° more than the first. Find the measure of each angle.

8. Briana and Steve prune trees. Steve pruned three-quarters as many trees as Briana. Together they pruned 140 trees. How many did each prune?

ANSWER KEY

1. 19
2. width = 6 ½ cm, length = 12cm
3. length = 4m, width = 3m
4. 40
5. 36
6. 20m, 40m, 120m
7. 34°, 102°, 44°
8. Briana = 80 trees, Steve = 60 trees

ALGEBRA – POLYNOMIALS 1

1. For the polynomial $17x^2 – x$:

   a. identify the terms _____

   b. identify the coefficients of each term _____

   c. name the polynomial _____

2. Evaluate the following:

   a. $2b^2 - 5b + 3$ for b = -1 _____

   b. 2L + 2W for L = 7 and W = 9 _____

3. Add or subtract as indicated and simplify.

   a. $10x^2 + 3x - 9 + 2x - 10x^2 + 2$ _____

   b. $(a^3 + 7a + 3) + (5a^3 - 9)$ _____

   c. $5y^2 - (y^2 + y - 1)$ _____

   d. $(12n^3 - 3n) - (6n + 2)$ _____

4. Multiply and simplify.

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

   b. $(3a^2b^3)(-4a^2b)$ _____

   c. $(2x - 1)(x + 3)$ _____

5. Divide and simplify. (4 marks)

   a. $(-18a^2b^2 + 9ab^2 - 27b^2) \div 9b^2$ _____

   b. $\frac{-4x^3y^2}{-8x^2y^2}$ _____

6. Factor the following.

a. $4m - 2m^2$ _____

b. $x^5 - x^4 + x^3$ _____

c. $18a^2b^3 + 6a^2b^2 - 12a^2b$ _____

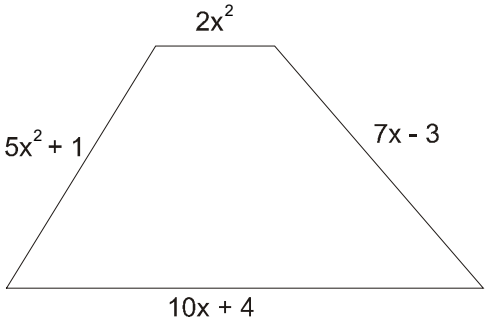
7. Solve the formula for the variable indicated.

a. $A = \frac{1}{2} bh$ for b _____

b. $C = \frac{5}{9}(F - 32)$ for F _____

c. $y = mx + b$ for m _____

8. Find the perimeter of the figure below.



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ANSWER KEY

1. a. $17x^2$, $-x$ b. 17, -1 c. binomial

2. a. 10 b. 32

3. a. $5x - 7$ b. $6a^3 + 7a - 6$
   c. $4y^2 - y + 1$ d. $12n^3 - 9n - 2$

4. a. $-2x^3 + 6x^2 - 10x$ b. $-12a^4b^4$ c. $2x^2 + 5x - 3$

5. a. $-2a^2 + a - 3$ b. $\frac{x}{2}$ or $\frac{1}{2}x$

6. a. $2m(2 - m)$ b. $x^3(x^2 - x + 1)$ c. $6a^2b(3b^2 + b - 2)$

7. a. $b = \frac{2a}{h}$ b. $F = \frac{9}{5}c + 32$ c. $m = \frac{y - b}{x}$

8. $7x^2 + 17x + 2$

Source: Government of BC used with permission.

ALGEBRA – POLYNOMIALS 2

1. For the polynomial $x^2 + 7x - 3$:

   a. identify the terms _____

   b. identify the coefficients of each term _____

   c. name the polynomial _____

2. Evaluate the following:

   a. ½ bh for b = 3 and h = 10 _____

   b. $x^3 + 2x - 1$ for x = -2 _____

3. Add or subtract as indicated and simplify.

   a. $(3x^2 + x - 1) + (x^2 - 3x + 7)$ _____

   b. $15ab^2 - 8ab + ab - 3ab^2$ _____

   c. $(5w^2 - 2w) - (10w^2 + 3w)$ _____

   d. $(7x + 3y - z) - (7x + 3y + z)$ _____

4. Multiply and simplify.

   a. $(-c^2d)(-2cd^2)$ _____

   b. $3y(5y^2 + y - 7)$ _____

   c. $(x - 5)(3x + 2)$ _____

5. Divide and simplify.

   a. $(12x^2y - 16xy + 4y) \div 4y$ _____

   b. $\frac{30cd^2}{-5cd}$ _____

6. Factor the following.

a. $6x^2 - 3x^2y$ _____

b. $5ab - 10ac - 15a$ _____

c. $14a^2b^2 - 7ab^2 + 21a^2b^3$ _____

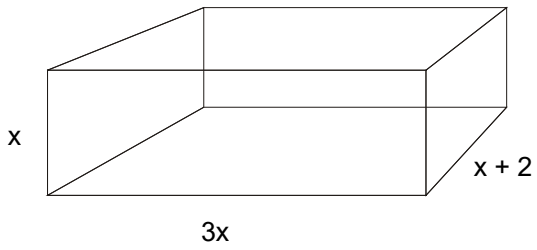
7. Solve the formula for the variable indicated.

a. $P = 2L + 2W$ for W _____

b. $I = Prt$ for t _____

c. $A = \frac{a + b + c}{3}$ for a _____

8. Find the volume of the figure below.



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ANSWER KEY

1. a. x^2, 7x, -3 b. 1, 7 c. trinomial

2. a. 15 b. -13

3. a. $4x^2 - 2x + 6$ b. $12ab^2 - 7ab$ c. $-5w^2 - 5w$ d. -2z

4. a. $2c^3d^3$ b. $15y^3 + 3y^2 - 21y$ c. $3x^2 - 13x - 10$

5. a. $3x^2 - 4x + 1$ b. -6d

6. a. $3x^2(2 - y)$ b. $5a(b - 2c - 3)$ c. $7ab^2(2a - 1 + 3ab)$

7. a. $W = \frac{P - 2L}{2}$ or $W = \frac{1}{2}P - L$ b. $t = \frac{I}{Pr}$ c. a = 3A - b - c

8. $3x^3 + 6x^2$