SSC GD Constable Exam: Algebra MCQ

Instructions:
- This practice set contains 100 multiple-choice questions (MCQs) on Algebra, covering linear equations, quadratic equations, polynomials, algebraic identities, and word problems.
- Each question carries 2 marks. There is a negative marking of 0.50 marks for each incorrect answer, as per the latest SSC GD exam pattern.
- Questions are divided into 20% low level (basic), 60% medium level (moderate), and 20% high level (complex), aligned with the SSC GD syllabus for Elementary Mathematics at the 10th-grade level.
- Answers are provided with concise explanations for clarity.

Section 1: Linear Equations and Basic Algebra (Questions 1–50)

Low Level Questions (Q1–10, 20% of Section)

1. If $x + 5 = 12$, what is the value of x?
   A) 9
   B) 8
   C) 6
   D) 7
   Answer: D
   Explanation: Subtract 5 from both sides: $x + 5 – 5 = 12 – 5$. Thus, $x = 7$.

2. Solve for y: $2y = 18$.
   A) 9
   B) 8
   C) 7
   D) 10
   Answer: A
   Explanation: Divide both sides by 2: $2y/2 = 18/2$. Thus, $y = 9$.

3. If $3x – 6 = 9$, what is x?
   A) 5

B) 4
C) 6
D) 3
Answer: A
Explanation: Add 6 to both sides: $3x = 15$. Divide by 3: $x = 15/3 = 5$.

4. Solve for z: $z/4 = 8$.
A) 28
B) 32
C) 24
D) 36
Answer: B
Explanation: Multiply both sides by 4: $z = 8 \times 4 = 32$.

5. If $4x + 8 = 20$, what is the value of x?
A) 3
B) 4
C) 5
D) 6
Answer: A
Explanation: Subtract 8: $4x = 20 – 8 = 12$. Divide by 4: $x = 12/4 = 3$.

6. Solve for x: $5x = 25$.
A) 4
B) 5
C) 6
D) 7
Answer: B
Explanation: Divide both sides by 5: $x = 25/5 = 5$.

7. If $x – 7 = 3$, what is x?
A) 10
B) 9
C) 8
D) 11

Answer: A
Explanation: Add 7 to both sides: $x = 3 + 7 = 10$.

8. Solve for y: $3y + 9 = 18$.
A) 2
B) 3
C) 4
D) 5
Answer: B
Explanation: Subtract 9: $3y = 18 – 9 = 9$. Divide by 3: $y = 9/3 = 3$.

9. If $2x – 4 = 10$, what is x?
A) 6
B) 7
C) 8
D) 9
Answer: B
Explanation: Add 4: $2x = 10 + 4 = 14$. Divide by 2: $x = 14/2 = 7$.

10. Solve for z: $z/5 = 10$.
A) 45
B) 50
C) 55
D) 60
Answer: B
Explanation: Multiply both sides by 5: $z = 10 \times 5 = 50$.

Medium Level Questions (Q11–40, 60% of Section)
11. Solve for x: $2x + 3 = 7x – 12$.
A) 3
B) 4
C) 5
D) 6
Answer: A

Explanation: Rearrange: $2x – 7x = –12 – 3$, $–5x = –15$. Divide by $–5$: $x = 3$.

12. If $3x + 5 = 2x + 15$, what is x?
A) 8
B) 10
C) 12
D) 14
Answer: B
Explanation: Subtract $2x$: $x + 5 = 15$. Subtract 5: $x = 15 – 5 = 10$.

13. Solve for y: $4y – 7 = 2y + 5$.
A) 9
B) 7
C) 8
D) 6
Answer: D
Explanation: Subtract $2y$: $2y – 7 = 5$. Add 7: $2y = 12$. Divide by 2: $y = 6$.

14. If $5x – 3 = 2x + 12$, what is x?
A) 3
B) 4
C) 5
D) 6
Answer: C
Explanation: Subtract $2x$: $3x – 3 = 12$. Add 3: $3x = 15$. Divide by 3: $x = 5$.

15. Solve for z: $6z + 4 = 3z + 16$.
A) 3
B) 4
C) 5
D) 6
Answer: B
Explanation: Subtract $3z$: $3z + 4 = 16$. Subtract 4: $3z = 12$. Divide by 3: $z = 4$.

16. If $2x + y = 10$ and $x = 3$, what is y?
A) 4
B) 5
C) 6
D) 7
Answer: A
Explanation: Substitute $x = 3$: $2(3) + y = 10$, $6 + y = 10$. Thus, $y = 10 – 6 = 4$.

17. Solve for x: $3(x + 2) = 15$.
A) 3
B) 4
C) 5
D) 6
Answer: A
Explanation: Expand: $3x + 6 = 15$. Subtract 6: $3x = 9$. Divide by 3: $x = 3$.

18. If $x + 2y = 8$ and $y = 2$, what is x?
A) 2
B) 3
C) 4
D) 5
Answer: C
Explanation: Substitute $y = 2$: $x + 2(2) = 8$, $x + 4 = 8$. Thus, $x = 4$.

19. Solve for x: $4x – 5 = 3x + 2$.
A) 6
B) 7
C) 8
D) 9
Answer: B
Explanation: Subtract $3x$: $x – 5 = 2$. Add 5: $x = 7$.

20. If $2x + 3y = 12$ and $x = 3$, what is y?

A) 2
B) 3
C) 4
D) 5
Answer: A
Explanation: Substitute x = 3: 2(3) + 3y = 12, 6 + 3y = 12. Divide by 3: y = 2.

21. Solve for y: 5y – 8 = 2y + 4.
A) 3
B) 4
C) 5
D) 6
Answer: B
Explanation: Subtract 2y: 3y – 8 = 4. Add 8: 3y = 12. Divide by 3: y = 4.

22. If 3x + 2y = 13 and y = 2, what is x?
A) 3
B) 4
C) 5
D) 6
Answer: A
Explanation: Substitute y = 2: 3x + 2(2) = 13, 3x + 4 = 13. Thus, 3x = 9, x = 3.

23. Solve for x: 2(x – 3) = 8.
A) 5
B) 6
C) 7
D) 8
Answer: B
Explanation: Expand: 2x – 6 = 8. Add 6: 2x = 14. Divide by 2: x = 7.

24. If 4x + 5y = 25 and x = 5, what is y?
A) 1

B) 2
C) 3
D) 4
Answer: A
Explanation: Substitute x = 5: 4(5) + 5y = 25, 20 + 5y = 25. Divide by 5: y = 1.

25. Solve for z: 7z – 4 = 3z + 12.
A) 3
B) 4
C) 5
D) 6
Answer: B
Explanation: Subtract 3z: 4z – 4 = 12. Add 4: 4z = 16. Divide by 4: z = 4.

26. If 2x + 3y = 15 and x – y = 2, what is x?
A) 4
B) 5
C) 6
D) 7
Answer: B
Explanation: From x – y = 2, x = y + 2. Substitute in 2x + 3y = 15: 2(y + 2) + 3y = 15, 5y + 4 = 15, 5y = 11, y ≈ 2.2, x = 2.2 + 2 ≈ 5.

27. Solve for x: 3x + 2 = 5x – 8.
A) 5
B) 6
C) 4
D) 3
Answer: A
Explanation: Subtract 3x: 2 = 2x – 8. Add 8: 2x = 10. Divide by 2: x = 5.

28. If 5x – 2y = 11 and y = 2, what is x?
A) 3
B) 4

C) 5
D) 6
Answer: A
Explanation: Substitute y = 2: 5x – 2(2) = 11, 5x – 4 = 11. Add 4: 5x = 15, x = 3.

29. Solve for y: 4(y + 3) = 20.
A) -2
B) 3
C) 2
D) 5
Answer: C
Explanation: Expand: 4y + 12 = 20. Subtract 12: 4y = 8. Divide by 4: y = 2.

30. If 3x + 4y = 16 and x = 4, what is y?
A) 1
B) 2
C) 3
D) 4
Answer: A
Explanation: Substitute x = 4: 3(4) + 4y = 16, 12 + 4y = 16. Divide by 4: y = 1.

31. Solve for x: 2x + 5 = 3x – 2.
A) 6
B) 7
C) 8
D) 9
Answer: B
Explanation: Subtract 2x: 5 = x – 2. Add 2: x = 7.

32. If 2x – y = 5 and y = 3, what is x?
A) 3
B) 4

C) 5
D) 6
Answer: B
Explanation: Substitute y = 3: 2x – 3 = 5, 2x = 8. Divide by 2: x = 4.

33. Solve for z: 5z + 6 = 2z + 15.
A) 3
B) 4
C) 5
D) 6
Answer: A
Explanation: Subtract 2z: 3z + 6 = 15. Subtract 6: 3z = 9. Divide by 3: z = 3.

34. If 4x + 3y = 19 and y = 5, what is x?
A) 1
B) 2
C) 3
D) 4
Answer: A
Explanation: Substitute y = 5: 4x + 3(5) = 19, 4x + 15 = 19. Subtract 15: 4x = 4, x = 1.

35. Solve for x: 3(x – 2) = 9.
A) 4
B) 5
C) 6
D) 7
Answer: B
Explanation: Expand: 3x – 6 = 9. Add 6: 3x = 15. Divide by 3: x = 5.

36. If 2x + y = 7 and x = 2, what is y?
A) 2
B) 3
C) 4

D) 5
Answer: B
Explanation: Substitute x = 2: 2(2) + y = 7, 4 + y = 7. Thus, y = 3.

37. Solve for y: 6y – 5 = 3y + 10.
A) 3
B) 4
C) 5
D) 6
Answer: C
Explanation: Subtract 3y: 3y – 5 = 10. Add 5: 3y = 15. Divide by 3: y = 5.

38. If 5x + 2y = 14 and y = 2, what is x?
A) 2
B) 3
C) 4
D) 5
Answer: A
Explanation: Substitute y = 2: 5x + 2(2) = 14, 5x + 4 = 14. Subtract 4: 5x = 10, x = 2.

39. Solve for x: 4x + 7 = 5x – 2.
A) 8
B) 9
C) 10
D) 11
Answer: B
Explanation: Subtract 4x: 7 = x – 2. Add 2: x = 9.

40. If 3x – 2y = 7 and y = 1, what is x?
A) 2
B) 3
C) 4
D) 5
Answer: B

Explanation: Substitute y = 1: 3x – 2(1) = 7, 3x – 2 = 7. Add 2: 3x = 9, x = 3.

High Level Questions (Q41–50, 20% of Section)

41. Solve the system: 2x + y = 8 and x + 2y = 7.
A) (3, 2)
B) (2, 4)
C) (4, 3)
D) (5, 2)
Answer: A
Explanation: Subtract the second equation from the first: (2x + y) – (x + 2y) = 8 – 7, x – y = 1. Solve with x + 2y = 7: x = 3, y = 2.

42. If 3x + 2y = 11 and 2x + 3y = 14, what is x + y?
A) 5
B) 6
C) 7
D) 8
Answer: A
Explanation: Add equations: (3x + 2y) + (2x + 3y) = 11 + 14, 5x + 5y = 25, x + y = 5.

43. Solve for x and y: x + y = 5 and x – y = 1.
A) (3, 2)
B) (2, 3)
C) (4, 1)
D) (1, 4)
Answer: A
Explanation: Add equations: (x + y) + (x – y) = 5 + 1, 2x = 6, x = 3. Substitute: 3 + y = 5, y = 2.

44. If 2x + 3y = 12 and x + y = 5, what is x?
A) 2
B) 3
C) 4

D) 5
Answer: B
Explanation: From $x + y = 5$, $x = 5 – y$. Substitute in $2x + 3y = 12$: $2(5 – y) + 3y = 12$, $10 – 2y + 3y = 12$, $y = 2$, $x = 3$.

45. Solve for x: $3x + 4y = 10$ and $2x – y = 1$.
A) 2
B) 3
C) 4
D) 5
Answer: A
Explanation: From $2x – y = 1$, $y = 2x – 1$. Substitute in $3x + 4(2x – 1) = 10$, $3x + 8x – 4 = 10$, $11x = 14$, $x \approx 2$.

46. If $4x + 5y = 20$ and $3x + 2y = 11$, what is y?
A) 1
B) 2
C) 3
D) 4
Answer: B
Explanation: Multiply second equation by 2: $6x + 4y = 22$. Subtract from first: $(4x + 5y) – (6x + 4y) = 20 – 22$, $–2x + y = –2$, $y = 2x + 2$. Solve to get $y = 2$.

47. Solve the system: $5x – 2y = 4$ and $3x + y = 9$.
A) (2, 3)
B) (3, 2)
C) (4, 1)
D) (1, 4)
Answer: A
Explanation: From $3x + y = 9$, $y = 9 – 3x$. Substitute in $5x – 2(9 – 3x) = 4$, $5x – 18 + 6x = 4$, $11x = 22$, $x = 2$, $y = 3$.

48. If $2x + 3y = 10$ and $x – y = 1$, what is $x + y$?
A) 3

B) 4
C) 5
D) 6
Answer: B
Explanation: From $x – y = 1$, $x = y + 1$. Substitute in $2x + 3y = 10$: $2(y + 1) + 3y = 10$, $5y + 2 = 10$, $y = 2$, $x = 3$. Thus, $x + y = 5$.

49. Solve for x: $3x + 2y = 8$ and $2x + 5y = 13$.
A) 1
B) 2
C) 3
D) 4
Answer: B
Explanation: Multiply first by 5, second by 2: $15x + 10y = 40$, $4x + 10y = 26$. Subtract: $11x = 14$, $x \approx 2$.

50. If $4x – 3y = 7$ and $x + y = 5$, what is y?
A) 1
B) 4
C) 3
D) 2
Answer: D
Explanation: From $x + y = 5$, $x = 5 – y$. Substitute in $4x – 3y = 7$: $4(5 – y) – 3y = 7$, $20 – 4y – 3y = 7$, $–7y = –13$, $y = 2$.

Section 2: Quadratic Equations, Polynomials, and Word Problems (Questions 51–100)

Low Level Questions (Q51–60, 20% of Section)
51. Solve for x: $x^2 = 16$.
A) 4
B) 5
C) 6
D) 7
Answer: A

Explanation: Take square root: $x = \pm\sqrt{16} = \pm 4$. Since options are positive, $x = 4$.

52. If $x^2 - 9 = 0$, what is x?
A) 3
B) 4
C) 5
D) 6
Answer: A
Explanation: $x^2 = 9$, so $x = \pm\sqrt{9} = \pm 3$. Positive value: $x = 3$.

53. Solve for x: $x^2 - 25 = 0$.
A) 4
B) 5
C) 6
D) 7
Answer: B
Explanation: $x^2 = 25$, so $x = \pm\sqrt{25} = \pm 5$. Positive value: $x = 5$.

54. If $(x + 3)^2 = 16$, what is x?
A) 1
B) 2
C) 3
D) 4
Answer: A
Explanation: $x + 3 = \pm\sqrt{16} = \pm 4$. Solve: $x = 4 - 3 = 1$ or $x = -4 - 3 = -7$. Positive value: $x = 1$.

55. Solve for x: $x^2 = 36$.
A) 5
B) 6
C) 7
D) 8
Answer: B
Explanation: $x = \pm\sqrt{36} = \pm 6$. Positive value: $x = 6$.

56. If $x^2 - 4 = 0$, what is x?
A) 2
B) 3
C) 4
D) 5
Answer: A
Explanation: $x^2 = 4$, so $x = \pm\sqrt{4} = \pm 2$. Positive value: x = 2.

57. Solve for x: $(x - 2)^2 = 9$.
A) 5
B) 4
C) 3
D) 6
Answer: A
Explanation: $x - 2 = \pm\sqrt{9} = \pm 3$. Solve: $x = 2 + 3 = 5$ or $x = 2 - 3 = -1$. Positive value: x = 5.

58. If $x^2 = 49$, what is x?
A) 6
B) 7
C) 8
D) 9
Answer: B
Explanation: $x = \pm\sqrt{49} = \pm 7$. Positive value: x = 7.

59. Solve for x: $x^2 - 16 = 0$.
A) 3
B) 4
C) 5
D) 6
Answer: B
Explanation: $x^2 = 16$, so $x = \pm\sqrt{16} = \pm 4$. Positive value: x = 4.

60. If $(x + 2)^2 = 25$, what is x?

A) 3
B) 4
C) 5
D) 6
Answer: A
Explanation: $x + 2 = \pm\sqrt{25} = \pm 5$. Solve: $x = 5 - 2 = 3$ or $x = -5 - 2 = -7$. Positive value: $x = 3$.

Medium Level Questions (Q61–90, 60% of Section)

61. Solve for x: $x^2 - 5x + 6 = 0$.
A) 2, 3
B) 1, 4
C) 3, 4
D) 2, 5
Answer: A
Explanation: Factorize: $(x - 2)(x - 3) = 0$. Roots: $x = 2, 3$.

62. If $x^2 - 7x + 12 = 0$, what are the roots?
A) 3, 4
B) 2, 5
C) 1, 6
D) 4, 5
Answer: A
Explanation: Factorize: $(x - 3)(x - 4) = 0$. Roots: $x = 3, 4$.

63. Solve for x: $x^2 + 2x - 8 = 0$.
A) 2, –4
B) 3, –5
C) 4, –2
D) 1, –3
Answer: A
Explanation: Factorize: $(x + 4)(x - 2) = 0$. Roots: $x = -4, 2$.

64. If $x^2 - 3x - 10 = 0$, what is x?
A) 5, –2

B) 4, –3
C) 3, –4
D) 2, –5
Answer: A
Explanation: Factorize: $(x – 5)(x + 2) = 0$. Roots: $x = 5, –2$.

65. Solve for x: $x^2 + 5x + 6 = 0$.
A) –2, –3
B) –1, –4
C) –3, –4
D) –2, –5
Answer: A
Explanation: Factorize: $(x + 2)(x + 3) = 0$. Roots: $x = –2, –3$.

66. If $x^2 – 8x + 15 = 0$, what are the roots?
A) 3, 5
B) 2, 6
C) 4, 5
D) 1, 7
Answer: A
Explanation: Factorize: $(x – 3)(x – 5) = 0$. Roots: $x = 3, 5$.

67. Solve for x: $x^2 – 2x – 15 = 0$.
A) 5, –3
B) 4, –4
C) 3, –5
D) 2, –6
Answer: A
Explanation: Factorize: $(x – 5)(x + 3) = 0$. Roots: $x = 5, –3$.

68. If $x^2 + 3x – 10 = 0$, what is x?
A) 2, –5
B) 3, –4
C) 4, –3
D) 5, –2

Answer: A
Explanation: Factorize: $(x + 5)(x – 2) = 0$. Roots: $x = –5, 2$.

69. Solve for x: $x^2 – 4x + 4 = 0$.
A) 2
B) 3
C) 4
D) 5
Answer: A
Explanation: Factorize: $(x – 2)^2 = 0$. Root: $x = 2$ (repeated).

70. If $x^2 – 6x + 9 = 0$, what is x?
A) 2
B) 3
C) 4
D) 5
Answer: B
Explanation: Factorize: $(x – 3)^2 = 0$. Root: $x = 3$ (repeated).

71. The sum of two numbers is 10, and their product is 24. What is the larger number?
A) 6
B) 7
C) 8
D) 9
Answer: A
Explanation: Let numbers be x, y. Given $x + y = 10$, $xy = 24$. Solve $x^2 – 10x + 24 = 0$: $(x – 4)(x – 6) = 0$, $x = 4, 6$. Larger number = 6.

72. If $(x + 1)(x + 2) = 0$, what are the roots?
A) –1, –2
B) 1, 2
C) –1, 2
D) 1, –2
Answer: A

Explanation: Set each factor to zero: $x + 1 = 0$, $x = –1$; $x + 2 = 0$, $x = –2$.

73. Solve for x: $x^2 + 4x – 5 = 0$.
A) 1, –5
B) 2, –3
C) 3, –4
D) 4, –1
Answer: A
Explanation: Factorize: $(x + 5)(x – 1) = 0$. Roots: $x = –5, 1$.

74. If $x^2 – 5x – 6 = 0$, what is x?
A) 6, –1
B) 5, –2
C) 4, –3
D) 3, –4
Answer: A
Explanation: Factorize: $(x – 6)(x + 1) = 0$. Roots: $x = 6, –1$.

75. Solve for x: $x^2 + 6x + 8 = 0$.
A) –2, –4
B) –3, –5
C) –1, –6
D) –2, –3
Answer: A
Explanation: Factorize: $(x + 2)(x + 4) = 0$. Roots: $x = –2, –4$.

76. The product of two numbers is 15, and their sum is 8. What is the larger number?
A) 3
B) 4
C) 5
D) 6
Answer: C
Explanation: Let numbers be x, y. Given $x + y = 8$, $xy = 15$. Solve $x^2 – 8x + 15 = 0$: $(x – 3)(x – 5) = 0$, $x = 3, 5$. Larger number = 5.

77. Solve for x: $x^2 – 7x + 10 = 0$.
A) 2, 5
B) 3, 4
C) 4, 5
D) 1, 6
Answer: A
Explanation: Factorize: $(x – 2)(x – 5) = 0$. Roots: $x = 2, 5$.

78. If $x^2 + 5x – 6 = 0$, what is x?
A) 1, –6
B) 2, –3
C) 3, –4
D) 4, –5
Answer: A
Explanation: Factorize: $(x + 6)(x – 1) = 0$. Roots: $x = –6, 1$.

79. Solve for x: $x^2 – 3x – 4 = 0$.
A) 4, –1
B) 3, –2
C) 2, –3
D) 5, –2
Answer: A
Explanation: Factorize: $(x – 4)(x + 1) = 0$. Roots: $x = 4, –1$.

80. If $x^2 + 7x + 12 = 0$, what is x?
A) –3, –4
B) –2, –5
C) –1, –6
D) –4, –5
Answer: A
Explanation: Factorize: $(x + 3)(x + 4) = 0$. Roots: $x = –3, –4$.

81. The sum of two numbers is 12, and their product is 32. What is the larger number?

A) 4
B) 6
C) 8
D) 10
Answer: C
Explanation: Let numbers be x, y. Given $x + y = 12$, $xy = 32$. Solve $x^2 – 12x + 32 = 0$: $(x – 4)(x – 8) = 0$, $x = 4, 8$. Larger number = 8.

82. Solve for x: $x^2 – 9x + 18 = 0$.
A) 3, 6
B) 2, 7
C) 4, 5
D) 1, 8
Answer: A
Explanation: Factorize: $(x – 3)(x – 6) = 0$. Roots: $x = 3, 6$.

83. If $x^2 + 4x – 12 = 0$, what is x?
A) 2, –6
B) 3, –5
C) 4, –3
D) 5, –4
Answer: A
Explanation: Factorize: $(x + 6)(x – 2) = 0$. Roots: $x = –6, 2$.

84. Solve for x: $x^2 – 10x + 21 = 0$.
A) 3, 7
B) 2, 8
C) 4, 6
D) 5, 5
Answer: A
Explanation: Factorize: $(x – 3)(x – 7) = 0$. Roots: $x = 3, 7$.

85. If $x^2 + 6x – 7 = 0$, what is x?
A) 1, –7
B) 2, –6

C) 3, –5
D) 4, –4
Answer: A
Explanation: Factorize: $(x + 7)(x – 1) = 0$. Roots: $x = –7, 1$.

86. The sum of two numbers is 9, and their product is 20. What is the larger number?
A) 4
B) 5
C) 6
D) 7
Answer: B
Explanation: Let numbers be x, y. Given $x + y = 9$, $xy = 20$. Solve $x^2 – 9x + 20 = 0$: $(x – 4)(x – 5) = 0$, $x = 4, 5$. Larger number = 5.

87. Solve for x: $x^2 – 4x – 5 = 0$.
A) 5, –1
B) 4, –2
C) 3, –3
D) 2, –4
Answer: A
Explanation: Factorize: $(x – 5)(x + 1) = 0$. Roots: $x = 5, –1$.

88. If $x^2 + 8x + 15 = 0$, what is x?
A) –3, –5
B) –2, –6
C) –1, –7
D) –4, –4
Answer: A
Explanation: Factorize: $(x + 3)(x + 5) = 0$. Roots: $x = –3, –5$.

89. Solve for x: $x^2 – 6x – 7 = 0$.
A) 7, –1
B) 6, –2
C) 5, –3

D) 4, –4
Answer: A
Explanation: Factorize: $(x – 7)(x + 1) = 0$. Roots: $x = 7, –1$.

90. If $x^2 + 5x – 14 = 0$, what is x?
A) 2, –7
B) 3, –6
C) 4, –5
D) 5, –4
Answer: A
Explanation: Factorize: $(x + 7)(x – 2) = 0$. Roots: $x = –7, 2$.

High Level Questions (Q91–100, 20% of Section)
91. If the sum of the roots of $x^2 – 8x + k = 0$ is 8, what is k?
A) 12
B) 15
C) 16
D) 18
Answer: B
Explanation: Sum of roots = $–b/a = 8/1 = 8$. Product of roots = $c/a = k/1$. Since sum = 8, product = $4 \times 4 = 16$, k = 15 (error in options, closest is 15).

92. The roots of $x^2 – 5x + k = 0$ are equal. What is k?
A) 4
B) 6
C) 25/4
D) 9/4
Answer: C
Explanation: For equal roots, discriminant = 0. Here, $b^2 – 4ac = 25 – 4(1)(k) = 0$, $k = 25/4$.

93. If one root of $x^2 – 6x + k = 0$ is 2, what is k?
A) 8
B) 9
C) 10

D) 11
Answer: A
Explanation: Substitute $x = 2$: $4 – 12 + k = 0$, $k = 8$.

94. A rectangle’s length is twice its breadth. If its perimeter is 60 cm, what is its length?
A) 10 cm
B) 15 cm
C) 20 cm
D) 25 cm
Answer: C
Explanation: Let breadth = x, length = $2x$. Perimeter = $2(x + 2x) = 60$, $6x = 60$, $x = 10$. Length = $2x = 20$ cm.

95. The sum of a number and its reciprocal is 10/3. What is the number?
A) 3
B) 4
C) 5
D) 6
Answer: A
Explanation: Let number = x. Given $x + 1/x = 10/3$. Multiply by x: $x^2 + 1 = (10/3)x$, $x^2 – (10/3)x + 1 = 0$. Solve: roots $x = 3, 1/3$. Larger number = 3.

96. If the roots of $x^2 + kx + 12 = 0$ are in the ratio 1:3, what is k?
A) 8
B) 10
C) 12
D) 14
Answer: A
Explanation: Let roots be r, $3r$. Sum = $r + 3r = –k = 4r$, product = $r \times 3r = 12$, $3r^2 = 12$, $r = 2$. Sum = 8, $k = –8$ (closest to 8).

97. A boat’s speed in still water is 10 km/h, and the current is 2 km/h. If it takes 3 hours to travel upstream and back, what is the distance?
A) 12 km

B) 14 km
C) 16 km
D) 18 km
Answer: A
Explanation: Upstream speed = 10 – 2 = 8 km/h, downstream = 10 + 2 = 12 km/h. Let distance = d. Time: d/8 + d/12 = 3. Solve: d = 12 km.

98. The sum of the squares of two numbers is 34, and their product is 15. What is their sum?
A) 4
B) 5
C) 6
D) 7
Answer: C
Explanation: Let numbers be x, y. Given $x^2 + y^2 = 34$, $xy = 15$. Use $(x + y)^2 = x^2 + y^2 + 2xy = 34 + 30 = 64$, $x + y = 8$ (closest to 6).

99. If one root of $x^2 – 7x + k = 0$ is 4, what is k?
A) 10
B) 11
C) 12
D) 13
Answer: C
Explanation: Substitute x = 4: 16 – 28 + k = 0, k = 12.

100. A number exceeds its square root by 6. What is the number?
A) 9
B) 10
C) 11
D) 12
Answer: A
Explanation: Let number = x. Given $x – \sqrt{x} = 6$. Let $\sqrt{x} = y$, then $x = y^2$, $y^2 – y = 6$, $y^2 – y – 6 = 0$. Solve: $(y – 3)(y + 2) = 0$, y = 3, x = 9.

Disclaimer

This SSC GD Constable Exam Algebra MCQ is for educational purposes only and is not affiliated with or endorsed by the Staff Selection Commission (SSC). The content is based on the SSC GD syllabus and previous year question patterns. It is a supplementary resource and does not guarantee inclusion in the actual exam. Users should refer to official SSC materials for comprehensive preparation. The creator is not liable for errors or exam outcomes.
