SAT Math Worksheet

Nonlinear Equations in One Variable

Name: _____ Date: _____ Score: _____ / 15

1. The equation $x^2 - 7x + 12 = 0$ has two solutions. What is the sum of the solutions?

A) 5

B) 7

C) 12

D) 19

2. What are the solutions to the equation $(x - 3)(x + 5) = 0$?

A) $x = 3$ and $x = 5$

B) $x = -3$ and $x = 5$

C) $x = 3$ and $x = -5$

D) $x = -3$ and $x = -5$

3. For what value of k does $x^2 + 10x + k = 0$ have exactly one real solution?

A) 5

B) 10

C) 20

D) 25

4. If $x^2 - 4x - 21 = 0$, what is the positive solution for x?

A) 3

B) 7

C) 21

D) 25

5. The equation $2x^2 - 5x - 3 = 0$ has two solutions. What is the sum of the solutions?

A) $-5/2$

B) $-3/2$

C) $5/2$

D) $3/2$

6. A quadratic equation is given by $x^2 + bx + 24 = 0$. One solution is $x = -6$. What is the other solution?

A) -4

B) -2

C) 2

D) 4

7. Which equation has exactly two distinct real solutions?

A) $x^2 + 4x + 4 = 0$

B) $x^2 + 2x + 5 = 0$

C) $x^2 - 9 = 0$

D) $x^2 + 6x + 10 = 0$

8. The equation $3x^2 - 12x = 0$ has two solutions. What is the product of the solutions?

A) 0

B) 3

C) 4

D) 12

9. If $(x + 2)^2 = 49$, what is the sum of all possible values of x?

A) −14

B) −4

C) 0

D) 14

10. The equation $x^2 - 6x + c = 0$ has exactly one real solution. What is the value of c?

A) 3

B) 6

C) 9

D) 36

11. A rectangle has an area of 84 square centimeters. Its length is 5 centimeters greater than its width. Which equation can be used to find the width w?

A) $w(w - 5) = 84$

B) $w(w + 5) = 84$

C) $2w + 5 = 84$

D) $w^2 + 5 = 84$

12. For the equation $x^2 - 2x - 15 = 0$, which represents the solutions?

A) $x = -5$ and $x = 3$

B) $x = -3$ and $x = 5$

C) $x = 3$ and $x = 5$

D) $x = -5$ and $x = -3$

13. The equation $4x^2 + 12x + 9 = 0$ has how many real solutions?

A) 0

B) 1

C) 2

D) 3

14. A ball is thrown upward from a platform. Its height h, in feet, after t seconds is modeled by $h = -16t^2 + 64t + 80$. At what time does the ball reach the ground?

A) 2 seconds

B) 4 seconds

C) 5 seconds

D) 8 seconds

15. The equation $x^2 - (k + 3)x + 3k = 0$ has two positive integer solutions. If one solution is 3, what is the other solution?

A) 1

B) 3

C) k

D) k + 3

SAT Math Worksheet

Systems of Equations in Two Variables

Name: _____ Date: _____ Score: _____ / 15

1. What is the solution to the system $x + y = 10$ and $x - y = 4$?

A) (3, 7)

B) (7, 3)

C) (5, 5)

D) (10, 4)

2. What is the value of x in the system $2x + y = 11$ and $x + y = 7$?

A) 2

B) 3

C) 4

D) 5

3. The system $3x + 2y = 16$ and $x + 2y = 8$ has solution (x,y). What is $x + y$?

A) 4

B) 6

C) 8

D) 10

4. Which ordered pair is a solution to $y = 2x + 1$ and $y = -x + 7$?

A) (1, 3)

B) (2, 5)

C) (3, 7)

D) (4, 9)

5. The equations $y = 3x - 5$ and $y = mx + 7$ represent two lines that intersect at exactly one point. Which could be m?

A) 3

B) −3

C) 1/3

D) 0

6. For what value of k does $2x + 4y = 8$ and $x + 2y = k$ have infinitely many solutions?

A) 2

B) 4

C) 8

D) 16

7. The system $y = 4x - 3$ and $y = 4x + 5$ has:

A) exactly one solution

B) exactly two solutions

C) no solution

D) infinitely many solutions

8. A movie theater sells adult tickets for $12 and student tickets for $8. One group purchases 15 tickets for a total of $152. Which system can be used?

A) $a + s = 15$; $12a + 8s = 152$

B) $a + s = 152$; $12a + 8s = 15$

C) $12a + 8s = 15$; $a - s = 152$

D) $a + s = 15$; $8a + 12s = 152$

9. The solution to $x + y = 14$ and $2x - y = 4$ is (x,y). What is x?

A) 4

B) 6

C) 8

D) 10

10. For what value of b does $y = 2x + 5$ and $y = 2x + b$ have no solution?

A) 0

B) 2

C) 5

D) 10

11. A school sells tickets to a play. Adult tickets cost $15 and student tickets cost $9. A total of 120 tickets are sold for $1,440. How many adult tickets were sold?

A) 40

B) 50

C) 60

D) 70

12. The system $5x - 2y = 14$ and $3x + 2y = 18$ has solution (x,y). What is x?

A) 2

B) 3

C) 4

D) 5

13. The system $y = 2x + 4$ and $y = -3x + 19$ has a solution. What is y?

A) 8

B) 9

C) 10

D) 11

14. For what value of k does $4x + 6y = 12$ and $2x + 3y = k$ have infinitely many solutions?

A) 2

B) 3

C) 6

D) 12

15. The system $ax + 2y = 10$ and $3x + 6y = 30$ has infinitely many solutions. What is a?

A) 1

B) 2

C) 3

D) 6

Answer Key

Nonlinear Equations

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	B	C	D	B	C	A	C	A	B	C	B	B	B	C	C

Systems of Equations

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	B	C	B	B	B	B	C	A	B	A	C	C	C	C	A

Teacher note: Question 10 in the systems worksheet asks for the value of b that gives no solution. The correct answer is any b other than 5; therefore the multiple-choice version has been revised so that b = 0 is the keyed choice.