A.REI.C.6 Solving Linear Systems 2

1 When solved graphically, which system of equations will have exactly one point of intersection?

1) $y = -x - 20$
$y = x + 17$

2) $y = 0.5x + 30$
$y = 0.5x - 30$

3) $y = \frac{3}{5}x + 12$
$y = 0.6x - 19$

4) $y = -x + 15$
$y = -x + 25$

2 Using the substitution method, Ken solves the following system of equations algebraically.

$$2x - y = 5$$
$$3x + 2y = -3$$

Which equivalent equation could Ken use?

1) $3x + 2(2x - 5) = -3$
2) $3x + 2(5 - 2x) = -3$
3) $3\left(y + \frac{5}{2}\right) + 2y = -3$
4) $3\left(\frac{5}{2} - y\right) + 2y = -3$

3 If $x + y = -10$ and $x - y = 2$, what is the value of x?

1) -6
2) 6
3) -4
4) 4

4 What is the value of x in the solution of the system of equations $3x + 2y = 12$ and $5x - 2y = 4$?

1) 8
2) 2
3) 3
4) 4

5 What is the value of the y-coordinate of the solution to the system of equations $x + 2y = 9$ and $x - y = 3$?

1) 6
2) 2
3) 3
4) 5

6 What is the value of the y-coordinate of the solution to the system of equations $x - 2y = 1$ and $x + 4y = 7$?

1) 1
2) -1
3) 3
4) 4

7 What is the value of the y-coordinate of the solution to the system of equations $2x + y = 8$ and $x - 3y = -3$?

1) -2
2) 2
3) 3
4) -3

8 What is the value of y in the following system of equations?

$$2x + 3y = 6$$

$$2x + y = -2$$

1) 1
2) 2
3) –3
4) 4

9 What is the value of A in the following system of equations?

$$2A + 3W = 12$$

$$6A - 5W = 8$$

1) 1
2) 2
3) 3
4) 9

10 If $a + 3b = 13$ and $a + b = 5$, the value of b is
1) 1
2) 7
3) 4.5
4) 4

11 What is the solution of the system of equations $c + 3d = 8$ and $c = 4d - 6$?
1) $c = -14, d = -2$
2) $c = -2, d = 2$
3) $c = 2, d = 2$
4) $c = 14, d = -2$

12 What is the solution of the system of equations $2x - 5y = 11$ and $-2x + 3y = -9$?
1) $(-3,-1)$
2) $(-1,3)$
3) $(3,-1)$
4) $(3,1)$

13 What is the solution of the system of equations below?

$$2x + 3y = 7$$

$$x + y = 3$$

1) $(1,2)$
2) $(2,1)$
3) $(4,-1)$
4) $(4,1)$

14 What is the solution of the following system of equations? $2a + 3b = 12$

$$a = \frac{1}{2}b - 6$$

1) $a = -6$ and $b = 0$
2) $a = -4.5$ and $b = 3$
3) $a = -3$ and $b = 6$
4) $a = 24$ and $b = 6$

15 Which ordered pair is the solution of the following system of equations?

$$3x + 2y = 4$$

$$-2x + 2y = 24$$

1) $(2,-1)$
2) $(2,-5)$
3) $(-4,8)$
4) $(-4,-8)$

16 What point is the intersection of the graphs of the lines $2x - y = 3$ and $x + y = 3$?

1) $(2,1)$
2) $(1,2)$
3) $(3,0)$
4) $(3,3)$

17 Which ordered pair satisfies the system of equations below?

$$3x - y = 8$$
$$x + y = 2$$

1) $(3,-1)$
2) $(2.5,-0.5)$
3) $(2.5,0.5)$
4) $(5,-3)$

18 The equations $5x + 2y = 48$ and $3x + 2y = 32$ represent the money collected from school concert ticket sales during two class periods. If x represents the cost for each adult ticket and y represents the cost for each student ticket, what is the cost for each adult ticket?

1) \$20
2) \$10
3) \$8
4) \$4

19 The equations $6x + 5y = 300$ and $3x + 7y = 285$ represent the money collected from selling gift baskets in a school fundraising event. If x represents the cost for each snack gift basket and y represents the cost for each chocolate gift basket, what is the cost for each chocolate gift basket?

1) \$20
2) \$25
3) \$30
4) \$54

20 Solve the following system of equations algebraically for y:

$$2x + 2y = 9$$
$$2x - y = 3$$

21 Solve the following system of equations algebraically:

$$3x + 2y = 4$$
$$4x + 3y = 7$$

[Only an algebraic solution can receive full credit.]

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Answer Section

1 ANS: 1
In (2) – (4), the equations in each system have equal slope, and therefore do not intersect.

REF: 080529a
2 ANS: 1 REF: 081315ia
3 ANS: 3

$$x + y = -10$$
$$x - y = 2$$
$$2x = -8$$
$$x = -4$$

REF: 060824a
4 ANS: 2

$$3x + 2y = 12$$
$$5x - 2y = 4$$
$$8x = 16$$
$$x = 2$$

REF: 061409ia
5 ANS: 2

$$x + 2y = 9$$
$$x - y = 3$$
$$3y = 6$$
$$y = 2$$

REF: 060925ia
6 ANS: 1

$$x - 2y = 1$$
$$x + 4y = 7$$
$$-6y = -6$$
$$y = 1$$

REF: 080920ia

7 ANS: 2

$2(x - 3y = -3)$

$2x + y = 8$

$2x - 6y = -6$

$7y = 14$

$y = 2$

REF: 081021ia

8 ANS: 4

$2x + 3y = 6$

$2x + y = -2$

$2y = 8$

$y = 4$

REF: 080013a

9 ANS: 3

$10A + 15W = 60$

$\underline{18A - 15W = 24}$

$28A = 84$

$A = 3$

REF: 061609ia

10 ANS: 4

$a + 3b = 13$

$a + b = 5$

$2b = 8$

$b = 4$

REF: 080706a

11 ANS: 3

$c + 3d = 8 \quad c = 4d - 6$

$4d - 6 + 3d = 8 \quad c = 4(2) - 6$

$7d = 14 \quad c = 2$

$d = 2$

REF: 061012ia

12 ANS: 3

$2x - 5y = 11 \quad 2x - 5(-1) = 11$

$-2x + 3y = -9 \qquad 2x = 6$

$-2y = 2 \qquad x = 3$

$y = -1$

REF: 081109ia

13 ANS: 2

$2x + 3y = 7$

$3x + 3y = 9$

$x = 2$

REF: 011410ia

14 ANS: 3

$2\left(\frac{1}{2}b - 6\right) + 3b = 12 \quad 2a + 3(6) = 12$

$2a = -6$

$b - 12 + 3b = 12$

$a = -3$

$4b = 24$

$b = 6$

REF: 061511ia

15 ANS: 3

$3x + 2y = 4 \quad . \qquad 3x + 2y = 4$

$-2x + 2y = 24 \quad 3(-4) + 2y = 4$

$5x = -20 \quad -12 + 2y = 4$

$x = -4 \qquad y = 8$

REF: 060007a

16 ANS: 1

$2x - y = 3. \quad x + y = 3$

$x + y = 3 \quad 2 + y = 3$

$3x = 6 \qquad y = 1$

$x = 2$

REF: 080429a

17 ANS: 2

$3x - y = 8$

$x + y = 2$ $\quad 2.5 + y = 2$

$4x = 10$ $\quad y = -0.5$

$x = 2.5$

REF: 060716a

18 ANS: 3

$5x + 2y = 48$

$3x + 2y = 32$

$2x = 16$

$x = 8$

REF: fall0708ia

19 ANS: 3

$6x + 5y = 300$

$6x + 14y = 570$

$9y = 270$

$y = 30$

REF: 011519ia

20 ANS:

2. Subtracting the equations: $3y = 6$

$y = 2$

REF: 061231ia

21 ANS:

$(-2, 5)$. $3x + 2y = 4$ $\quad 12x + 8y = 16.$ $\quad 3x + 2y = 4$

$4x + 3y = 7$ $\quad 12x + 9y = 21$ $\quad 3x + 2(5) = 4$

$y = 5$ $\quad 3x = -6$

$x = -2$

REF: 010937ia