

A.REI.C.6: Solving Linear Systems 1b

- 1 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) $3\left(\frac{5}{2} - y\right) + 2y = -3$
- 2 What is the solution to the system of equations below?

$$y = 2x + 8$$

$$3(-2x + y) = 12$$

- 3 What is the solution of the system of equations $c + 3d = 8$ and $c = 4d - 6$?
- 4 What is the solution of the following system of equations? $2a + 3b = 12$

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

- 5 The line represented by the equation $4y + 2x = 33.6$ shares a solution point with the line represented by the table below.

x	y
-5	3.2
-2	3.8
2	4.6
4	5
11	6.4

The solution for this system is

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

- 7 Guy and Jim work at a furniture store. Guy is paid \$185 per week plus 3% of his total sales in dollars, x , which can be represented by $g(x) = 185 + 0.03x$. Jim is paid \$275 per week plus 2.5% of his total sales in dollars, x , which can be represented by $f(x) = 275 + 0.025x$. Determine the value of x , in dollars, that will make their weekly pay the same.
- 8 In attempting to solve the system of equations $y = 3x - 2$ and $6x - 2y = 4$, John graphed the two equations on his graphing calculator. Because he saw only one line, John wrote that the answer to the system is the empty set. Is he correct? Explain your answer.

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Answer Section

1 ANS: 1 REF: 081315ia

2 ANS:

no solution

$$3(-2x + 2x + 8) = 12$$

$$24 \neq 12$$

REF: 061708ai

3 ANS:

$$c = 2, d = 2$$

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

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

$$7d = 14 \quad c = 2$$

$$d = 2$$

REF: 061012ia

4 ANS:

$$a = -3 \text{ and } b = 6$$

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

$$2a = -6$$

$$b - 12 + 3b = 12$$

$$a = -3$$

$$4b = 24$$

$$b = 6$$

REF: 061511ia

5 ANS:

(6.0, 5.4)

$$m = \frac{5 - 4.6}{4 - 2} = \frac{.4}{2} = 0.2 \quad 4(0.2x + 4.2) + 2x = 33.6 \quad y = 0.2(6) + 4.2 = 5.4$$

$$5 = .2(4) + b$$

$$0.8x + 16.8 + 2x = 33.6$$

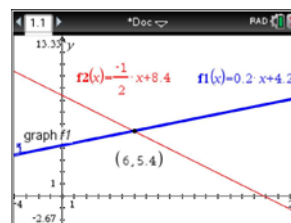
$$4.2 = b$$

$$2.8x = 16.8$$

$$y = 0.2x + 4.2$$

$$x = 6$$

REF: 061618ai



6 ANS: 1

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

REF: 080529a

7 ANS:

$$185 + 0.03x = 275 + 0.025x$$

$$0.005x = 90$$

$$x = 18000$$

REF: 081427ai

8 ANS:

No. There are infinite solutions.

REF: 011725ai