The Weekly Rigor

No. 136 "A mathematician is a machine for turning coffee into theorems." January 28, 2017

SAT Math Test Problem Children: Systems of Linear Equations

(Part 4)

PROBLEMS

Solve the following systems:

1. $x + y = 2$
$5x - y = 22$

2. $-3x + 4y = 20$
$6x + 3y = 15$

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

4. $x + y = -9$
$x + 2y = -25$

5. $x + y = 0$
$3x - 2y = 10$

6. $3x + 2y = 9$
$5x - y = -11$

7. $\frac{1}{2}x - \frac{1}{4}y = 10$
$\frac{1}{8}x - \frac{1}{8}y = 19$

8. $\frac{x}{y} = 6$
$4(y + 1) = x$

9. $3x + 4y = -23$
$2y - x = -19$

10. $-2x = 4y + 6$
$2(2y + 3) = 3x - 5$

11.
$3x - 4y = -11$
$4x - 3y = 4$

If (x, y) is a solution to the system of equations above, what is the value of $x - y$?

A) -15

B) -7

C) -1

D) 7

12.

$2x + 3y = 16$
$3x - 2y = -2$

If (x, y) is a solution to the system of equations above, what is the value of $x - y$?

A) 14

B) -18

C) 0

D) -2

13.

$2x + b = 4x - 6$
$2y + c = 4y - 6$

In the equations above, *b* and *c* are constants. If *b* is *c* minus $\frac{1}{2}$, which of the following is true?

A) *x* is *y* plus $\frac{1}{4}$.

B) *x* is *y* minus $\frac{1}{2}$.

C) *x* is *y* minus 1.

D) *x* is *y* minus $\frac{1}{4}$.

14.

$3x + b = 5x - 7$
$3y + c = 5y - 7$

In the equations above, *b* and *c* are constants. If *b* is *c* minus $\frac{1}{4}$, which of the following is true?

A) *x* is *y* minus $\frac{1}{4}$.

B) *x* is *y* plus $\frac{1}{2}$.

C) *x* is *y* plus $\frac{1}{8}$.

D) *x* is *y* minus 1.