

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.
$$\begin{aligned}x + y &= 2 \\5x - y &= 22\end{aligned}$$

2.
$$\begin{aligned}-3x + 4y &= 20 \\6x + 3y &= 15\end{aligned}$$

3.
$$\begin{aligned}2x - y &= 6 \\x + 2y &= -2\end{aligned}$$

4.
$$\begin{aligned}x + y &= -9 \\x + 2y &= -25\end{aligned}$$

5.
$$\begin{aligned}x + y &= 0 \\3x - 2y &= 10\end{aligned}$$

6.
$$\begin{aligned}3x + 2y &= 9 \\5x - y &= -11\end{aligned}$$

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

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

9.
$$\begin{aligned}3x + 4y &= -23 \\2y - x &= -19\end{aligned}$$

10.
$$\begin{aligned}-2x &= 4y + 6 \\2(2y + 3) &= 3x - 5\end{aligned}$$

11.
$$\begin{aligned}3x - 4y &= -11 \\4x - 3y &= 4\end{aligned}$$

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.

“Only he who never plays, never loses.”