Bellwork Geo Thursday, February 6, 2020

Answer these PSAT/SAT practice questions WITHOUT a calculator.

# 3 3

**14**

$$5x + 3y = 38$$
$$x + 3y = 10$$

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

**15**

$$3\sqrt{x-6} = 12$$

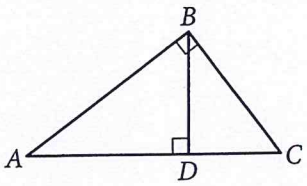
What is the value of $x$ that satisfies the equation above?

**16**

$$7x - 4 = 2(bx - 3)$$

In the equation above, $b$ is a constant. For what value of $b$ does the equation have no solution?

**17**




Note: Figure not drawn to scale.

In the figure above, $BD = 6$ and $AD = 8$. What is the length of $\overline{DC}$ ?

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ANSWERS

# 3 3

## 14

$$5x + 3y = 38$$
$$x + 3y = 10$$

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

$5x+3y=38$
$-\ x+3y=10$
$4x=28$
$\frac{4x}{4}=\frac{28}{4}$

$x=7$

## 15

$$3\sqrt{x-6} = 12$$

What is the value of $x$ that satisfies the equation above?

$\frac{3\sqrt{x-6}}{3}=\frac{12}{3}$

$(\sqrt{x-6})^2=(4)^2$

$x-6=16$
$+6\ \ +6$

$x=22$

## 16

$$7x - 4 = 2(bx - 3)$$

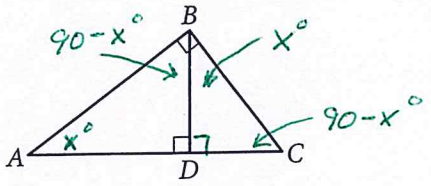
In the equation above, $b$ is a constant. For what value of $b$ does the equation have no solution?

$7x-4=2bx-6$

FOR THERE TO BE NO SOLUTION THE VARIABLE TERMS MUST CANCEL AND THE REMAINING EQ. MUST BE FALSE ∴ $7x=2bx$ $7=2b$

$b=3.5$

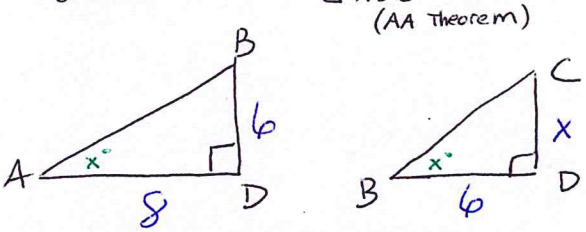
## 17




Note: Figure not drawn to scale.

In the figure above, $BD = 6$ and $AD = 8$. What is the length of $\overline{DC}$ ?

$\triangle ABD \sim \triangle BCD$ (AA Theorem)




In similar $\triangle$s corresponding sides are proportional.

$\frac{x}{6}=\frac{6}{8}$

$x=4.5$