

Must Show All Work For Credit

1 An equation is shown below.

$$3x - 10x + 5 = 5x + 17$$

What is the value of x that makes the equation true?

A $x = 6$

B $x = -6$

C $x = -\frac{11}{4}$

D $x = -1$

$$3x - 10x + 5 = 5x + 17$$

$$-7x + 5 = 5x + 17$$

$$\begin{array}{r} +7x \qquad +7x \\ \hline \end{array}$$

$$5 = 12x + 17$$

$$\begin{array}{r} -17 \qquad -17 \\ \hline \end{array}$$

$$-12 = 12x$$

$$\begin{array}{r} 12 \qquad 12 \\ \hline \end{array}$$

$$-1 = x$$

2 An equation is shown below.

$$\frac{2}{3}(9x - 6) = 4x + 10$$

What is the value of x that makes the equation true?

F $x = -12$

G $x = 8$

H $x = 7$

J $x = 3$

$$\frac{18}{3}x - \frac{12}{3} = 4x + 10$$

$$6x - 4 = 4x + 10$$

$$\begin{array}{r} -4x \qquad -4x \\ \hline \end{array}$$

$$2x - 4 = 10$$

$$\begin{array}{r} +4 \qquad +4 \\ \hline \end{array}$$

$$\frac{2x}{2} = \frac{14}{2} \Rightarrow x = 7$$

3 An inequality is shown below.

$$48 - 12x \leq -2(8 + 2x)$$

Which inequality represents the solution set?

A $x \leq -8$

B $x \geq 4$

C $x \leq -4$

D $x \geq 8$

$$48 - 12x \leq -16 - 4x$$

$$\begin{array}{r} +12x \qquad +12x \\ \hline \end{array}$$

$$48 \leq -16 + 8x$$

$$\begin{array}{r} +16 \qquad +16 \\ \hline \end{array}$$

$$64 \leq 8x$$

$$\begin{array}{r} 8 \qquad 8 \\ \hline \end{array}$$

$$8 \leq x$$

- 4 A linear equation is shown below.

$$y = 5x - 3(3x + 7)$$

What is the value of x when $y = -18$

A $x = 51$

B $x = \frac{1}{4}$

C $x = -\frac{3}{4}$

D $x = -9$

$$\begin{aligned} -18 &= 5x - 3(3x + 7) \\ -18 &= 5x - 9x - 21 \\ -18 &= -4x - 21 \\ +21 & \qquad \qquad +21 \\ \hline 3 &= -4x \\ \frac{3}{-4} &= \frac{-4x}{-4} \\ -\frac{3}{4} &= x \end{aligned}$$

- 5 Which expression is equivalent to $2g - \frac{3}{5}(20 - 3g) - 12$?

F $\frac{19}{5}g$

G $-g$

H $\frac{19}{5}g - 24$

J $-g - 24$

$$\begin{aligned} 2g - \frac{60}{5} + \frac{9}{5}g - 12 \\ \frac{10}{5}g - 12 + \frac{9}{5}g - 12 \\ \frac{19}{5}g - 24 \end{aligned}$$

- 6 An inequality is shown below.

$$3(2x - 1) + 1 < 4(4 + 3x)$$

Which inequality represents the solution set?

F $x < 6$

G $x < -3$

H $x > -6$

J $x > -3$

$$\begin{aligned} 6x - 3 + 1 &< 16 + 12x \\ 6x - 2 &< 16 + 12x \\ -6x & \qquad \qquad -6x \\ \hline -2 &< 16 + 6x \\ -16 & \qquad -16 \\ \hline -18 &< 6x \\ \frac{-18}{6} & \qquad \frac{6x}{6} \\ -3 &< x \end{aligned}$$

- 9 Rectangle $ABCD$ has a length (L) represented by the expression $2x - 3$ and a width (W) represented by the expression $4x + 5$. The perimeter (P) is 64. Find the value of x .

Hint: The perimeter (P) of a rectangle is given by the formula, $P = 2L + 2W$

- F $2x + 1$
 G $4x + 2$
 H $20x + 6$
 J $6x$

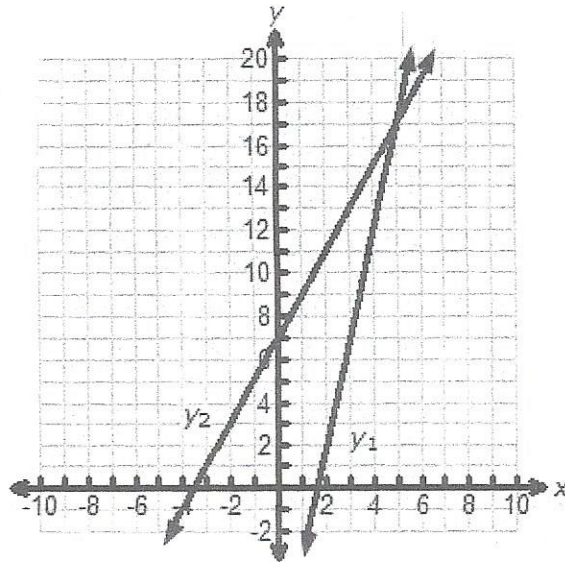
$$\begin{aligned}
 P &= 2L + 2W \\
 64 &= 2(2x - 3) + 2(4x + 5) \\
 64 &= 4x - 6 + 8x + 10 \\
 64 &= 12x + 4 \\
 -4 &\quad -4 \\
 \hline
 60 &= 12x \\
 12 &\quad 12 \\
 5 &= x
 \end{aligned}$$

- 10 Rectangle $ABCD$ has a length (L) represented by the expression $5x - 1$ and a width (W) represented by the expression $3x + 7$.
 Rectangle $JKLM$ has a length (L) represented by the expression $2x - 5$ and a width (W) represented by the expression $4x + 11$.
 Which expression can be used to represent the sum of the perimeters of Rectangle $ABCD$ and Rectangle $JKLM$?

- F $14x + 12$
 G $28x + 12$
 H $28x + 24$
 J $20x + 12$

$$\begin{aligned}
 P_A &= 2L + 2W \\
 P_A &= 2(5x - 1) + 2(3x + 7) \\
 P_A &= 10x - 2 + 6x + 14 \\
 P_A &= 16x + 12 \\
 \hline
 P_J &= 2L + 2W \\
 P_J &= 2(2x - 5) + 2(4x + 11) \\
 P_J &= 4x - 10 + 8x + 22 \\
 P_J &= 12x + 12 \\
 \text{SUM} \\
 P_A + P_J &= 16x + 12 + 12x + 12 \\
 &= 28x + 24
 \end{aligned}$$

- 7 The graphs of $y_1 = 0.2(25x - 40)$ and $y_2 = 4(0.5x + 1.75)$ are shown on the coordinate grid below.



What is the value of x that makes the equation below true?

$$0.2(25x - 40) = 4(0.5x + 1.75)$$

A -3.5

B 17

C 1.6

D 5

$$\begin{array}{r} 5x - 8 = 2x + 7 \\ -2x \quad -2x \\ \hline 3x - 8 = 7 \\ +8 \quad +8 \\ \hline 3x = 15 \\ \frac{3x}{3} = \frac{15}{3} \\ x = 5 \end{array}$$

- 8 Which expression is equivalent to, $3.7x + (0.5 - 6y) + 0.8 - (1.7x + 1 - 2.3y)$

A $2x - 8.3y + 2.3$

B $5.4x + 8.3y + 2.3$

C $2x - 3.7y + 0.3$

D $2x + 8.3y - 0.7$

$$\begin{array}{l} 3.7x + 0.5 - 6y + 0.8 - 1.7x - 1 + 2.3y \\ (3.7x - 1.7x) + (0.5 + 0.8 - 1) + (-6y + 2.3y) \\ 2x + 0.3 - 3.7y \end{array}$$