

LINEAR EQUATIONS IN ONE VARIABLE

Solve:

1 $5x = 3x + 9$

2 $4(2x - 7) = 3x - 5$

3 $3(x + 3) = 3(9 - 3x)$

7 $4 - 3x = x + 9$

8 $3x - 2 = 5x$

9 $5(2x - 1) = 2(x - 5) - 3$

$\begin{aligned} \textcircled{1} \quad 5x &= 3x + 9 \\ \Leftrightarrow 2x &= 9 \\ \Leftrightarrow x &= 9/2 \end{aligned}$	$\begin{aligned} \textcircled{2} \quad 4(2x - 7) &= 3x - 5 \\ \Leftrightarrow 8x - 28 &= 3x - 5 \\ \Leftrightarrow 5x &= -5 + 28 \\ \Leftrightarrow 5x &= 23 \\ \Leftrightarrow x &= 23/5 \end{aligned}$	$\begin{aligned} \textcircled{3} \quad 3(x + 3) &= 3(9 - 3x) \\ \Leftrightarrow 3x + 9 &= 27 - 9x \\ \Leftrightarrow 12x &= 18 \\ \Leftrightarrow x &= \frac{18}{12} \\ \Leftrightarrow x &= \frac{3}{2} \end{aligned}$
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$\begin{aligned} \textcircled{7} \quad 4 - 3x &= x + 9 \\ \Leftrightarrow -4x &= 9 - 4 \\ \Leftrightarrow -4x &= 5 \\ \Leftrightarrow x &= -\frac{5}{4} \end{aligned}$	$\begin{aligned} \textcircled{8} \quad 3x - 2 &= 5x \\ \Leftrightarrow -2x &= 2 \\ \Leftrightarrow x &= -1 \end{aligned}$
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$$\begin{aligned} \textcircled{9} \quad 5(2x - 1) &= 2(x - 5) - 3 \\ \Leftrightarrow 10x - 5 &= 2x - 10 - 3 \\ \Leftrightarrow 8x - 5 &= -13 \\ \Leftrightarrow 8x &= -8 \\ \Leftrightarrow x &= \frac{-8}{8} = -1 \end{aligned}$$

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16 $18 - 3(a - 2) = 2(a + 2)$

17 $3(2x + 5) = 4 - (3x - 2)$

18 $5(c - 7) = 3(3c + 8)$

19 $6(2x - 3) = 8 - 2(3x + 1)$

20 $a + 6 = 3 - a$

(16) $18 - 3(a - 2) = 2(a + 2)$

$\Leftrightarrow 18 - 3a + 6 = 2a + 4$

$\Leftrightarrow -5a + 24 = 4$

$\Leftrightarrow -5a = 4 - 24$

$\Leftrightarrow -5a = -20$

$\Leftrightarrow a = \frac{-20}{-5} = 4$

(17) $3(2x + 5) = 4 - (3x - 2)$

$\Leftrightarrow 6x + 15 = 4 - 3x + 2$

$\Leftrightarrow 9x + 15 = 6$

$\Leftrightarrow 9x = -9$

$\Leftrightarrow x = \frac{-9}{9} = -1$

(18) $5(c - 7) = 3(3c + 8)$

$\Leftrightarrow 5c - 35 = 9c + 24$

$\Leftrightarrow -4c - 35 = 24$

$\Leftrightarrow -4c = 59$

$\Leftrightarrow c = \frac{-59}{4}$

(19) $6(2x - 3) = 8 - 2(3x + 1)$

$\Leftrightarrow 12x - 18 = 8 - 6x - 2$

$\Leftrightarrow 18x - 18 = 6$

$\Leftrightarrow 18x = 24$

$\Leftrightarrow x = \frac{24}{18} = \frac{12}{9} = \frac{4}{3}$

(20) $a + 6 = 3 - a$

$\Leftrightarrow 2a = 3 - 6$

$\Leftrightarrow 2a = -3$

$\Leftrightarrow a = -\frac{3}{2}$