Solve Algebraically

$$-\frac{2}{3}(4x-8)+\frac{1}{2}=-3(9x+2)-5x$$

$$-\frac{8}{3}x+\frac{16}{3}\left(\frac{2}{2}\right)+\frac{1}{2}\left(\frac{3}{3}\right)=-27x-6-5x$$

$$-\frac{8}{3}x+\frac{32}{6}+\frac{3}{6}=-32x-6$$

$$-\frac{8}{3}x+\frac{35}{6}=-32x-6$$

$$-2\tfrac{2}{3}x+5\tfrac{5}{6}=-32x-6$$

$$-5\tfrac{5}{6} \qquad -5\tfrac{5}{6}$$

$$-2\tfrac{2}{3}x=-32x-11\tfrac{5}{6}$$

$$+32x \qquad +32x$$

$$29\tfrac{1}{3}x=-11\tfrac{5}{6}$$

$$\left(\frac{3}{88}\right)\frac{88}{3}x=-\frac{71}{26}\left(\frac{3}{88}\right)$$

$$\boxed{x=-\frac{71}{176}}$$

using the strategy of clearing fractions

$$-\frac{2}{3}(4x-8)+\frac{1}{2}=-3(9x+2)-5x$$

$$6\left[-\frac{8}{3}x+\frac{16}{3}+\frac{1}{2}=-27x-6-5x\right]$$

$$\frac{-48}{3}x+\frac{96}{3}+\frac{6}{2}=-162x-36-30x$$

$$-16x+32+3=-162x+36-30x$$

$$-16x+35=-192x-36$$
$$-35 \qquad -35$$

$$-16x=-192x-71$$
$$+192x \quad +192x$$

$$\frac{176x}{176}=\frac{-71}{176}$$

$$x=\frac{-71}{176}$$

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19) $34 - 2x = 7x$

$+2x \quad +2x$

$\frac{34}{9} = \frac{9x}{9}$

$3\frac{7}{9} = x$

18) $27 - 3x = 3x + 27$

$-3x \quad -3x$

$27 - 6x = 27$

$-27 \quad -27$

$\frac{-6x}{-6} = \frac{0}{-6}$

$x = 0$

26) $\frac{4x+6}{2} = \frac{3x-15}{3}$ OR $\frac{4x+6}{2} = \frac{3x-15}{3}$

$\frac{4x}{2} + \frac{6}{2} = \frac{3x}{3} - \frac{15}{3}$

$2x + 3 = x - 5$

$-x \quad -x$

$x + 3 = -5$

$-3 \quad -3$

$x = -8$

$2(3x-15) = 3(4x+6)$

$6x - 30 = 12x + 18$

$+30 \quad +30$

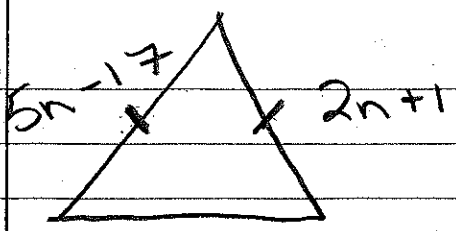
$6x = 12x + 48$

$-12x \quad -12x$

$\frac{-6x}{-6} = \frac{48}{-6}$

$x = -8$

14)



$5n-17 = 2n+1$

$+17 \quad +17$

$5n = 2n+18$

$-2n \quad -2n$

$3n = 18$

$\frac{3n}{3} = \frac{18}{3}$

$n = 6$ cm

$P = 5n-17+n+2n+1$

$P = 8n-16$ CLT

$P = 8(6)-16$ evaluate

$P = 48-16$ simplify

$P = 32$ cm

$4-4y = -2(2y-2)$

$4-4y = -4y+4$

$+4y \quad +4y$

$4 = 4$

$\frac{4-4y}{-2} = \frac{-2(2y-2)}{-2}$

$-2+2y = 2y-2$

$-2y \quad -2y$

$-2 = -2$

OR

$4-4y = -4y+4$

$-4 \quad -4$

$-4y = -4y$

$+4y \quad +4y$

$0 = 0$

Identity b/c the expressions are exactly the same

infinite amount of solutions

$-6z + 8 = z + 10 - 7z$

$-6z + 8 = -6z + 10$
$+6z \qquad +6z$

$8 \neq 10$

No Solution
- no number will ever make the equation true

OR

$-6z + 8 = z + 10 - 7z$

$-6z + 8 = -6z + 10$
$-8 \qquad -8$

$-6z = -6z + 2$
$+6z \quad +6z$

$0 \neq 2$

OR

$-6z + 8 = z + 10 - 7z$

$-6z + 8 = -6z + 10$
$-10 \qquad -10$

$-6z - 2 = -6z$
$+6z \qquad +6z$

$-2 \neq 0$

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

$\frac{1}{3}(x - 6) = 5(3x + 4)$

$4x + 6 = 2(2x + 3)$

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separate piece paper

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

$6x - 5 = 6x + 8$

$-6x \qquad -6x$

$-5 \neq 8$ NO Solution

$\frac{1}{3}(x - 6) = 5(3x + 4)$

$\frac{1}{3}x - 2 = 15x + 20$

$+2 \qquad +2$

$\frac{1}{3}x = 15x + 22$

$-15x \qquad -15x$

$-14\frac{2}{3}x = 22$

$\left(\frac{3}{-44}\right)\left(\frac{-44}{3}\right)x = 22\left(\frac{3}{-44}\right)$

$x = -\frac{3}{2}$

$x = -1\frac{1}{2}$

$4x + 6 = 2(2x + 3)$

$4x + 6 = 4x + 6$
$-4x \qquad -4x$

$6 = 6$ identity
- infinite solutions