

Solve for x :

$$\frac{2-x}{6} + \frac{5x+1}{2} = \frac{2x+4}{3}$$

Put the fractions in $\frac{2-x}{6} + \frac{5x+1}{2}$ over a common denominator.

Put each term in $\frac{2-x}{6} + \frac{5x+1}{2}$ over the common denominator 6: $\frac{2-x}{6} +$

$$\frac{5x+1}{2} = \frac{2-x}{6} + \frac{3(5x+1)}{6};$$

$$\frac{2-x}{6} + \frac{3(5x+1)}{6} = \frac{2x+4}{3}$$

Combine $\frac{2-x}{6} + \frac{3(5x+1)}{6}$ into a single fraction.

$$\frac{2-x}{6} + \frac{3(5x+1)}{6} = \frac{(2-x)+3(5x+1)}{6};$$

$$\frac{2-x+3(5x+1)}{6} = \frac{2x+4}{3}$$

Distribute 3 over $5x+1$.

$$3(5x+1) = 15x+3:$$

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

Group like terms in $15x - x + 2 + 3$.

Grouping like terms, $15x - x + 2 + 3 = (-x + 15x) + (2 + 3)$:

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

Combine like terms in $15x - x$.

$$15x - x = 14x:$$

$$\frac{14x}{6} + (2 + 3) = \frac{2x+4}{3}$$

Evaluate $2 + 3$.

$$2 + 3 = 5:$$

$$\frac{14x + 5}{6} = \frac{2x+4}{3}$$

Make $\frac{14x+5}{6} = \frac{2x+4}{3}$ simpler by multiplying both sides by a constant.

Multiply both sides by 6:

$$\frac{6(14x+5)}{6} = \frac{6(2x+4)}{3}$$

Cancel common terms in the numerator and denominator of $\frac{6(14x+5)}{6}$.

$$\frac{6(14x+5)}{6} = \frac{6}{6} \times (14x+5) = 14x+5:$$

$$14x+5 = \frac{6(2x+4)}{3}$$

In $\frac{6(2x+4)}{3}$, divide 6 in the numerator by 3 in the denominator.

$$\frac{6}{3} = \frac{3 \times 2}{3} = 2:$$

$$14x+5 = 2(2x+4)$$

Write the linear polynomial on the left hand side in standard form.

Expand out terms of the right hand side:

$$14x+5 = 4x+8$$

Move terms with x to the left hand side.

Subtract $4x$ from both sides:

$$(14x - 4x) + 5 = (4x - 4x) + 8$$

Combine like terms in $14x - 4x$.

$$14x - 4x = 10x:$$

$$10x + 5 = (4x - 4x) + 8$$

Look for two terms that sum to zero.

$$4x - 4x = 0:$$

$$10x + 5 = 8$$

Isolate terms with x to the left hand side.

Subtract 5 from both sides:

$$10x + (5 - 5) = 8 - 5$$

Look for two terms that sum to zero.

$$5 - 5 = 0:$$

$$10x = 8 - 5$$

Evaluate $8 - 5$.

$$8 - 5 = 3:$$

$$10x = 3$$

Divide both sides by a constant to simplify the equation.

Divide both sides of $10x = 3$ by 10:

$$\frac{10x}{10} = \frac{3}{10}$$

Any nonzero number divided by itself is one.

$$\frac{10}{10} = 1:$$

Answer:

$$x = \frac{3}{10}$$