

Q1

1

Remove the fraction by multiplying both sides by 3.

$$3\left(\frac{5w - 8}{3}\right) = 3(4w + 2)$$

$$5w - 8 = 3(4w + 2)$$

[]

Expand the brackets on the right-hand side.
Remember to expand both parts of the bracket.

$$5w - 8 = 12w + 6$$

Bring the w terms to one side by subtracting the term with the smallest coefficient of $w(5w)$.

$$5w - 8 = 12w + 6$$

$$-5w \quad -5w$$

$$-8 = 7w + 6$$

[]

Subtract 6 from both sides.

$$-8 - 6 = 7w$$

$$7w = -14$$

Divide both sides by 7.

$$w = -\frac{14}{7} = -2$$

 $w = -2$ []

Q2

Remove the fraction by multiplying both sides by $3x$.

$$3x\left(\frac{4(8x - 2)}{3x}\right) = 3x(10)$$

$$4(8x - 2) = 3x(10)$$

[]

Multiply out the brackets on both sides.
Remember to expand both parts of the bracket on the left.

$$32x - 8 = 30x$$

Bring the x terms to one side by subtracting the term with the smallest coefficient of $x(30x)$.

$$32x - 8 = 30x$$

$$-30x \quad -30x$$

$$2x - 8 = 0$$

[]

Add 8 to both sides.

$$2x = 8$$

Divide both sides by 2.

$$x = \frac{8}{2} = 4$$

 $x = 4$ []

Q3

3

Remove the fraction by multiplying both sides by 5.

$$5\left(\frac{15-x}{5}\right) = 5(3x+11)$$

$$15-x = 5(3x+11)$$

15 - x must be correct [1]

Expand the brackets on the right-hand side.
Remember to expand both parts of the bracket.

$$15-x = 15x+55$$

Bring the x terms to one side by subtracting the term with the smallest coefficient of x (-x).

$$15-x = 15x+55$$

$$\begin{array}{r} -(-x) \qquad \qquad \qquad -(-x) \\ 15 = 16x+55 \end{array}$$

[1]

Subtract 55 from both sides.

$$15-55 = 16x$$

$$16x = -40$$

Divide both sides by 16.

$$x = \frac{-40}{16} = -\frac{20}{8} = -\frac{5}{2}$$

x = -2.5 [1]

Any equivalent fraction also accepted

Q4

4a

Start by expanding the bracket on the left-hand side.
Remember to expand both parts of the bracket.

$$7(k-3) = 3k-5$$

$$7k-21 = 3k-5$$

[1]

Bring the k terms to one side by subtracting the term with the smallest coefficient of k (3k).

$$7k-21 = 3k-5$$

$$\begin{array}{r} -3k \qquad \qquad \qquad -3k \\ 4k-21 = -5 \end{array}$$

[1]

Add 21 to both sides.

$$4k = -5+21$$

$$4k = 16$$

Divide both sides by 4.

$$k = \frac{16}{4} = 4$$

k = 4 [1]

4b

Remove the fraction by multiplying both sides by 4.

$$4\left(\frac{7-3f}{4}\right) = 4(2)$$

$$7-3f = 8$$

[]

Subtract 7 from both sides.

$$-3f = 8 - 7$$

$$-3f = 1$$

[]

Divide both sides by -3.

$$f = -\frac{1}{3}$$

Q5

5

Remove the fraction by multiplying both sides by 4.

$$4\left(\frac{11-w}{4}\right) = 4(1+w)$$

$$11-w = 4(1+w)$$

[]

Expand the brackets on the right-hand side.
Remember to expand both parts of the bracket.

$$11-w = 4 + 4w$$

Bring the w terms to one side by subtracting the term with the smallest coefficient of w ($-w$).

$$11-w = 4 + 4w$$

$$-(-w) \quad -(-w)$$

$$11 = 4 + 5w$$

[]

Subtract 4 from both sides.

$$11 - 4 = 5w$$

$$5w = 7$$

Divide both sides by 5.

$$w = \frac{7}{5}$$

$$w = \frac{7}{5}$$

Q6

Remove the fraction by multiplying both sides by 2.

$$2\left(\frac{5-x}{2}\right) = 2(2x-7)$$

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

[1]

Expand the brackets on the right-hand side.
Remember to expand both parts of the bracket.

$$5-x = 4x-14$$

Bring the x terms to one side by subtracting the term with the smallest coefficient of $x(-x)$.

$$\begin{array}{r} 5-x = 4x-14 \\ -(-x) \qquad \qquad -(-x) \\ \hline 5 = 5x-14 \end{array}$$

[1]

Add 14 to both sides.

$$\begin{array}{r} 5+14 = 5x \\ 19 = 5x \end{array}$$

Divide both sides by 5.

$$x = \frac{19}{5} = 3.8$$

$$x = \frac{19}{5} \quad [1]$$

$x = 3.8$ is also accepted

Q7

7

Start by multiplying both sides by 2 to clear the fraction.

$$2(6x-5) = 4x-7$$

Expand the brackets, making sure you multiply both of the terms in the bracket by 2.

$$12x-10 = 4x-7$$

[1]

Bring the x terms to one side by subtracting the term with the smallest coefficient of $x(4x)$.

$$8x-10 = -7$$

Add 10 to both sides.

$$8x = 3$$

[1]

Divide both sides by 8.

$$x = \frac{3}{8} \quad [1]$$

It's a good idea to check your answer by using your calculator to substitute it into both sides of the original equation

Q8

8

Start by multiplying both sides by 4 to clear the fraction.

$$4(4 - 3x) = 5 - 8x$$

Expand the brackets, making sure you multiply both of the terms in the bracket by 4.

$$16 - 12x = 5 - 8x$$

[]

Bring the x terms to one side by adding $12x$ to both sides.

$$16 = 5 + 4x$$

Subtract 5 from both sides.

$$11 = 4x$$

[]

Divide both sides by 4.

$$x = \frac{11}{4} \quad []$$

It's a good idea to check your answer by using your calculator to substitute it into both sides of the original equation

Q9

9

Start by multiplying both sides by 2 to clear the fraction.

$$3(2x - 5) = \frac{9 - x}{2}$$

$$\begin{array}{ccc} \times 2 & & \times 2 \\ 6(2x - 5) = 9 - x & & \end{array}$$

[]

Expand the brackets on the left hand side (note that the order in which you perform this step and the step above does not matter).

$$12x - 30 = 9 - x$$

[]

Bring the x terms to one side by adding x to both sides.

$$13x - 30 = 9$$

Add 30 to both sides.

$$13x = 39$$

[]

Divide both sides by 13.

$$x = 3 \quad []$$

It's a good idea to check your answer by substituting it into both sides of the original equation

Q10

10

Start by multiplying both sides by 4 to clear the fraction.

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

Expand the brackets, making sure you multiply both of the terms in the bracket by 4.

$$5x - 3 = 8x + 12$$

[]

Subtract 5x from both sides.

$$-3 = 3x + 12$$

Subtract 12 from both sides.

$$-15 = 3x$$

[]

Divide both sides by 3.

$$x = -5 \quad []$$

It's a good idea to check your answer by substituting it into both sides of the original equation

Q11

11

Start by expanding the bracket on the left-hand side.
Remember to expand both parts of the bracket.

$$\begin{aligned} 4(3x - 2) &= 2x - 5 \\ 12x - 8 &= 2x - 5 \end{aligned}$$

[]

Bring the x terms to one side by subtracting the term with the smallest coefficient of x ($2x$).

$$\begin{aligned} 12x - 8 &= 2x - 5 \\ -2x & & -2x \\ 10x - 8 &= -5 \end{aligned}$$

Add 8 to both sides to isolate the x term.

$$\begin{aligned} 10x - 8 &= -5 \\ +8 & & +8 \\ 10x &= 3 \end{aligned}$$

[]

Divide both sides by 10 to find the value of x .

$$x = \frac{3}{10} = 0.3$$

$$x = 0.3 \quad []$$

Any equivalent fraction is allowed.