

## 96. Solving Linear Equations Algebraically

### Practice Questions

1. Solve  $3x + 5 = 14$ .
2. Solve  $5x - 2 = 3x + 6$ .
3. Solve  $2(x - 4) = 10$ .
4. Solve  $4x + 3 = 3x + 7$ .
5. Solve  $7 - 2x = 3x - 8$ .
6. Solve  $6(x + 2) = 18$ .
7. Solve  $5 - 3x = 2x - 10$ .
8. Solve  $\frac{2x}{3} + 4 = 8$ .
9. Solve  $\frac{x-1}{2} = 4$ .
10. Solve  $3x + 5 = 2x - 3$  and represent the solution on a number line.

### Scenario Questions

1. A mobile plan charges a fixed fee of £5 plus £0.10 per minute. If a person's bill is £12, how many minutes did they use?
2. A café sells tea for £2 and coffee for £3. A customer spends £20 on a mix of both. Write and solve a linear equation to find how many drinks they bought.
3. A builder uses  $4x + 10$  bricks for one wall and  $3x + 15$  for another. The total bricks used is 100. Solve for  $x$ .
4. A shop sells pens for £2 each and pencils for £1 each. If a customer buys 10 items for £16, set up and solve a linear equation.
5. A rental car company charges £50 plus £0.20 per mile. If a customer pays £90, how many miles did they drive?
6. The temperature  $T$  in degrees is given by  $T = 5x - 8$ . If the temperature is  $12^{\circ}\text{C}$ , solve for  $x$ .
7. A delivery service charges £3 per package plus a £5 fixed fee. If a person pays £29, how many packages did they send?
8. A concert ticket costs £30, and a person spends £120 in total, including a £30 meal. How many tickets did they buy?
9. A tank is being filled with 5 litres per minute. If it already had 10 litres and now contains 40 litres, how long was the water running?
10. Two friends share a taxi fare of £20 equally, but one pays £3 extra. How much did each pay?

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### Practice Questions

1.  $x = 3$
2.  $x = 4$
3.  $x = 9$
4.  $x = 4$
5.  $x = 3$
6.  $x = 1$
7.  $x = 3$
8.  $x = 6$
9.  $x = 9$
10.  $x = -8$

### Scenario Questions

1.  $0.10x + 5 = 12$ ,  $x = 70$  minutes
2.  $2x + 3y = 20$  (where  $x$  is tea and  $y$  is coffee), multiple solutions possible depending on the mix.
3.  $4x + 10 + 3x + 15 = 100$ ,  $x = 10$
4.  $2x + y = 16$  and  $x + y = 10$ ,  $x = 6$  pens,  $y = 4$  pencils
5.  $50 + 0.20x = 90$ ,  $x = 200$  miles
6.  $5x - 8 = 12$ ,  $x = 4$
7.  $3x + 5 = 29$ ,  $x = 8$  packages
8.  $30x + 30 = 120$ ,  $x = 3$  tickets
9.  $5x + 10 = 40$ ,  $x = 6$  minutes
10.  $x + (x + 3) = 20$ ,  $x = 8.5$  (one pays £8.50, the other pays £11.50)