

Section 2: Simultaneous Equations

Exercise

1. Solve the following simultaneous equations:

$$\begin{array}{ll} \text{(i)} & \begin{array}{l} 2x + 5y = 11 \\ 2x - y = 5 \end{array} \\ \text{(ii)} & \begin{array}{l} x + 2y = 6 \\ 4x + 3y = 4 \end{array} \end{array}$$

$$\begin{array}{ll} \text{(iii)} & \begin{array}{l} 3a - 2b = 4 \\ 5a + 4b = 3 \end{array} \\ \text{(iv)} & \begin{array}{l} 2p - 5q = 5 \\ 3p - 2q = -9 \end{array} \end{array}$$

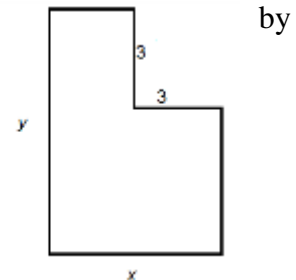
$$\begin{array}{ll} \text{(v)} & \begin{array}{l} 5x + 3y = 9 \\ y = 3x - 4 \end{array} \\ \text{(vi)} & \begin{array}{l} 3a + 2b = 1 \\ 9a - 4b = 4 \end{array} \end{array}$$

2. Solve the following simultaneous equations.

$$\begin{array}{ll} \text{(i)} & \begin{array}{l} 7x^2 + y^2 = 64 \\ x + y = 4 \end{array} \\ \text{(ii)} & \begin{array}{l} 3x^2 - 2y^2 = -5 \\ y - x = 1 \end{array} \end{array}$$

$$\begin{array}{ll} \text{(iii)} & \begin{array}{l} p^2 + pq = 2 \\ q - p = 3 \end{array} \\ \text{(iv)} & \begin{array}{l} 8a^2 - b^2 = 2 \\ 2a + b = 1 \end{array} \end{array}$$

3. A rectangle with length x cm and width y cm has a square 3 cm by 3 cm removed from a corner to leave an L shape. The area of the L shape is 15 cm^2 . The perimeter of the L shape is 20 cm.



Find the values of x and y .

4. Solve the following simultaneous equations:

$$\begin{array}{ll} \text{(i)} & \begin{array}{l} x - y + z = 4 \\ 3x + y + 3z = -4 \\ x + y + 2z = -2 \end{array} \\ \text{(ii)} & \begin{array}{l} 2x + 2y - z = 0 \\ 8x - 12y - z = -32 \\ -2x - 4y - z = 6 \end{array} \end{array}$$

5. Solve the following simultaneous equations:

$$\begin{array}{ll} \text{(i)} & \begin{array}{l} 2x + y + 3z = 8 \\ -3x + 3y + 2z = 12 \\ 3x + 2y - z = -4 \end{array} \\ \text{(ii)} & \begin{array}{l} x - 2y - 2z = 1 \\ 2x - y - 14z = 3 \\ 2x - 3y + 3z = -8 \end{array} \end{array}$$

6. Abby, Ben and Carrie are buying snacks for a fundraiser. Abby bought 16 cupcakes, 40 bags of crisps and 24 cans of soda. Ben bought 24 cupcakes, 20 bags of crisps and 12 cans of soda and Carrie bought 12 cupcakes 10 bags of crisps and 36 cans of soda. Ben and Carrie each spent £30 and Abby spent £36.

How much was a single cupcake, one bag of crisps and a can of soda?