

SIMULTANEOUS EQUATIONS

REVISION KIT

Solve the following by the **Elimination** method:

$$\begin{aligned} 16. \quad 3x - 2y &= 18 \\ x + 3y &= 17 \end{aligned}$$

$$\begin{aligned} 17. \quad 3x - y &= 8 \\ 2x - 3y &= 10 \end{aligned}$$

$$\begin{aligned} 18. \quad 2x + y &= 10 \\ 4x + 7y &= 40 \end{aligned}$$

$$\begin{aligned} 19. \quad 5x + 4y &= 22 \\ 4x + 5y &= 23 \end{aligned}$$

$$\begin{aligned} 20. \quad 7x - 5y &= 4 \\ 2x + 3y &= 10 \end{aligned}$$

$$\begin{aligned} 21. \quad x - 2y &= 3 \\ 2x - 3y &= 8 \end{aligned}$$

Solve the following simultaneous equations by **Substitution**:

$$\begin{aligned} 1. \quad 2x - y &= 1 \\ y &= x + 1 \end{aligned}$$

$$\begin{aligned} 2. \quad 2x + 3y &= 14 \\ 2x - y &= 6 \end{aligned}$$

$$\begin{aligned} 3. \quad 4x + y &= 13 \\ y &= x - 2 \end{aligned}$$

$$\begin{aligned} 4. \quad 2x + 3y &= 13 \\ 3x + y &= 9 \end{aligned}$$

$$\begin{aligned} 5. \quad 2x - y &= 4 \\ x - y + 1 &= 0 \end{aligned}$$

$$\begin{aligned} 6. \quad x - y &= 2 \\ y &= 2x - 7 \end{aligned}$$

Solve graphically the following simultaneous equations and check by algebraical solutions:

$$\begin{aligned} 37. \quad 2y - 3x &= 1 \\ y + 3x &= 5 \end{aligned}$$

$$\begin{aligned} 38. \quad y - x &= 3 \\ 3y + x &= 3 \end{aligned}$$

$$\begin{aligned} 39. \quad 4x + 3y &= 4 \\ 3y &= 4x + 8 \end{aligned}$$

$$\begin{aligned} 40. \quad 3x - y &= 2 \\ 2x + y &= 5 \end{aligned}$$

$$\begin{aligned} 41. \quad x + y &= 3 \\ 3x - y &= 5 \end{aligned}$$

$$\begin{aligned} 42. \quad 2x - y &= 5 \\ x + y &= 7 \end{aligned}$$

DURING A CERTAIN CEREMONY GOATS AND CHICKEN WERE SLAUGHTERED. THE NUMBER OF HEADS (FOR BOTH CHICKEN AND GOATS) WAS 45. THE TOTAL NUMBER OF LEGS WAS 100. DETERMINE THE EXACT NUMBER OF GOATS AND CHICKEN SLAUGHTERED. (3MKS)

A construction company employs technicians and artisans. On a certain day 3 technicians and 2 artisans were hired and paid a total of Ksh 9000. On another day the firm hired 4 technicians and 1 artisan and paid a total of Ksh 9500. Calculate the cost of hiring 2 technicians and 5 artisans in a day.

The total number of pupils who play tennis and volleyball in a class is 14. If there are six more pupils playing volleyball than tennis, find the number of pupils in each team, given that no pupil plays more than one game.

The cost of three sandwiches and two cups of tea is 60 shillings. If two sandwiches and three cups of tea cost 65 shillings, find the cost of:

- (a) a sandwich.
- (b) a cup of tea.

Musa spent sh. 207 to buy seven exercise books and four pens while Allan spent sh. 165 to buy five exercise books and five pens of the same type. Find the cost of each item.

The mass of two bags of beans and three bags of salt is 410 kg. If the mass of three bags of beans and two bags of salt is 390 kg, find the mass of each bag.

A courier firm which deals with parcels charges a fixed amount of money on the first 1 kg. For every 1 kg extra or part thereof, the rate per kilogram is different. Jane posts a parcel weighing 6 kg at a cost of sh. 350 while her friend Mary pays sh. 230 to post a parcel of mass 4 grams.

Find:

- (a) the charge on the first 1 kg of parcel weight.
- (b) the charge on each subsequent kilogram for any parcel.

The distance from **A** to **B** is d km and that from **B** to **C** is x km. If a bus maintains an average speed of 50 km/h between **A** and **B** and 60 km/h between **B** and **C**, it takes 3 hours to travel from **A** to **C**. If it maintains 60 km/h between **A** and **B** and 50 km/h between **B** and **C**, the journey takes 8 minutes less. What is the distance from **A** to **C** via **B**?