1. A box of apples was shared among the pupils in a class. If each pupil received 2 apples, there would be 12 apples left. If each pupil received 3 apples, there would be a shortage of 27 apples.

(a) How many pupils were there?
(b) How many apples were there?

(a) Step 1: Add the excess and shortage. (This is the additional number of apples needed.)
Excess + Shortage = 12 + 27 = 39 apples

Step 2: Find the increase. (This is what caused the increase in additional number of apples.)
3 – 2 = 1 apple

Step 3: Divide the sum by the increase. (This will give us the constant in the question, i.e. number of pupils)
In order for each pupil to have 1 more apple, 39 more apples are needed
39 ÷ 1 = 39
Number of pupils = 39 (Ans)

(b) Step 4: Use the given information in the question to find the answer required.
1 pupil ⟷ 2 apples
39 pupils ⟷ 39 × 2
   = 78 apples
Number of apples = 78 + 12
   = 90 (Ans)
Alternatively
1 pupil ⟷ 3 apples
39 pupils ⟷ 39 × 3
   = 117 apples
Number of apples = 117 – 27
   = 90 (Ans)
2. A shopkeeper wants to pack a bag of sugar into smaller packets. If each packet of sugar is 5 kg, he will have 4 kg of sugar left. If each packet of sugar is 6 kg, he will need 5 kg of sugar more.

(a) How many packets of sugar does he pack?
(b) What is the original mass of the bag of sugar?

(a) Step 1: Add the excess and shortage. (This is the additional amount of sugar needed.)
Excess + Shortage = 4 + 5 = 9 kg

Step 2: Find the increase. (This is what caused the increase in additional amount of sugar.)
6 – 5 = 1 kg

Step 3: Divide the sum by the increase. (This will give us the constant in the question, i.e. number of packets of sugar)
In order for each packet to have 1 kg more, he needs 9 kg more sugar.
9 ÷ 1 = 9
Number of packets of sugar = 9 (Ans)

(b) Step 4: Use the given information in the question to find the answer required.
1 packet → 5 kg
9 packets → 9 × 5
    = 45 kg
Original mass of the bag of sugar = 45 + 4
    = 49 kg (Ans)

Alternatively
1 packet → 6 kg
9 packets → 9 × 6
    = 54 kg
Original mass of the bag of sugar = 54 – 5
    = 49 kg (Ans)
3. Jack planted 5 beans each in some flower pots, and he had 9 beans left. If he planted 6 beans in each flower pot instead, he would need 5 more beans.
(a) How many flower pots did he have?
(b) How many beans did he have?

(a) Excess + Shortage = 9 + 5 = 14
Increase = 6 − 5 = 1
In order for each pot to have 1 more bean, he needed 14 more beans.
Number of pots = 14 ÷ 1
= 14 (Ans)

(b) 1 pot → 14
14 pots → 14 × 5
= 70
Number of beans he had = 70 + 9
= 79 (Ans)

Alternatively
1 pot → 14
14 pots → 14 × 6
= 84
Number of beans he had = 84 − 5
= 79 (Ans)

4. Mrs Low gave some children 8 cookies each and had 10 cookies left. If she gave them 10 cookies each, she would need 2 more cookies.
(a) How many children were there?
(b) How many cookies did she have?

(a) Excess + Shortage = 10 + 2 = 12
Increase = 10 − 8 = 2
In order to give each child 2 more cookies, she needed 12 more cookies.
Number of children = 12 ÷ 2
= 6 (Ans)

(b) 1 child → 8
6 children → 6 × 8
= 48
Number of cookies she had = 48 + 10
= 58 (Ans)

Alternatively
1 child → 10
6 children → 6 × 10
= 60
Number of cookies she had = 60 − 2
= 58 (Ans)
5. Joyce has some pieces of chocolate. If she gives her friends 5 pieces each, she will have 6 pieces left. If she gives her friends 7 pieces each instead, she will need 18 pieces more.

(a) How many friends are there?
(b) How many pieces of chocolate does she have?

(a) Excess + Shortage = 6 + 18 = 24
Increase = 7 - 5 = 2
In order to give each friend 2 more pieces, she needs 24 more pieces.
Number of friends = 24 ÷ 2
= 12 (Ans)

(b) 1 friend → 5
12 friends → 12 × 5
= 60
Number of pieces of chocolates she has = 60 + 6
= 66 (Ans)

Alternatively
1 friend → 7
12 friends → 12 × 7
= 84
Number of pieces of chocolates she has = 84 - 18
= 66 (Ans)

6. Roy gave 3 pencils each to his classmates and had 4 pencils left. If he gave them 6 pencils each instead, he would need 92 pencils more.

(a) How many classmates were there?
(b) How many pencils did he have?

(a) Excess + Shortage = 4 + 92 = 96
Increase = 6 - 3 = 3
In order to give each classmate 3 more pencils, he needed 96 more pencils.
Number of classmates = 96 ÷ 3
= 32 (Ans)

(b) 1 classmate → 3
32 classmates → 32 × 3
= 96
Number of pencils he had = 96 + 4
= 100 (Ans)

Alternatively
1 classmate → 6
32 classmates → 32 × 6
= 192
Number of pencils he had = 192 - 92 = 100 (Ans)
7. Mary has some ice cream sticks. If she bundles them into groups of 7, she will not have any ice cream stick left over. If she bundles them into groups of 11, she will need 100 more ice cream sticks. How many ice cream sticks does she have?

\[
\text{Excess} + \text{Shortage} = 100 \\
\text{Increase} = 11 - 7 = 4 \\
\text{In order to include 4 more in each bundle, she needs 100 more ice cream sticks.} \\
\text{Number of bundles} = 100 \div 4 = 25 \\
\text{Number of ice cream sticks she has} = 25 \times 7 \\
= 175 \text{ (Ans)}
\]

8. Jacqueline plans to put some stalks of rose into her vases. If she puts 4 stalks of rose in each vase, the last vase will only have 1 stalk. If she puts 7 stalks of rose in each vase, she will need 48 more stalks. How many stalks of rose does Jacqueline have?

\[
\text{Shortage in the last vase of 4 stalks} = 4 - 1 \\
= 3 \\
\text{In order to put 3 more stalks in each vase, she needs 45 more stalks of rose.} \\
\text{Number of vases she has} = 45 \div 3 \\
= 15 \\
\text{Number of stalks of roses Jacqueline has} = 15 \times 4 - 3 \\
= 60 - 3 \\
= 57 \text{ (Ans)}
\]
9. Mr Lim plans to reserve some buses for a school excursion. If he arranges for 35-seater buses, 5 pupils will not able to board the bus. If he arranges for 40-seater buses, he can reserve 1 less bus.
(a) How many 40-seater buses should Mr Lim reserve?
(b) How many pupils are going for the excursion?

(a) Excess + Shortage = 40 + 5 = 45
Increase = 40 – 35 = 5
In order to accommodate 5 more pupils, there are 45 extra seats.
Number of 35-seater buses = 45 ÷ 5
= 9
Number of 40-seater buses Mr Lim should reserve = 9 – 1
= 8 (Ans)

(b) Number of pupils = 8 × 40
= 320 (Ans)
10. Some workers are changing the rail tracks of the MRT line. It takes them 8 more days to complete the project if they change 140 m of tracks every day. If they change 180 m of tracks every day instead, they will complete the project 6 days in advance.

(a) How many days of work are scheduled for this project?
(b) How long is rail tracks to be changed for this project?

(a) Excess = 6 × 180 = 1080 m
(After the completion of scheduled work, the workers can continue to change 1080 m of rail tracks before the scheduled days are up.)
Shortage = 8 × 140 = 1120 m
(The workers still need to change another 1120 m of rail tracks when the scheduled days of work has ended.)
Excess + Shortage = 1080 + 1120 = 2200 m
Increase = 180 – 140 = 40 m
If the workers work 40 m more each day, they would change another 2200 m of rail tracks.
Number of days = 2200 ÷ 40
= 55 (Ans)

(b) 1 day → 140 m
55 days → 55 × 140
= 7700 m
Length of rail tracks to be changed = 7700 + 1120
= 8820 m (Ans)

Alternatively
1 day → 180 m
55 days → 55 × 180
= 9900 m
Length of rail tracks to be changed = 9900 – 1080
= 8820 m (Ans)

END