



Problem sums

Name: _____ Date: _____

Try each question first. Show your working. Worked solutions start on page 3.

01 Passengers on a train

A train left Punggol Station with some passengers. At Seng Kang Station, no passenger alighted and the number of passengers who boarded the train was $\frac{1}{5}$ of the original number of passengers on the train. At Buangkok Station, 36 passengers alighted and 80 passengers boarded the train. At Kovan Station, 40 passengers alighted and thrice as many passengers boarded the train. In the end, there were 820 passengers left on the train. How many passengers were there on the train initially when it left Punggol Station?

Answer: _____

02 A day at the funfair

The ratio of the number of children to the number of adults at a funfair was 6 : 7. Of the children who attended the funfair, $\frac{3}{5}$ were boys. There were 51 more adults than boys. How many people were at the funfair?

Answer: _____



Problem sums

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03 Red and blue marbles

In a box, there were some red and blue marbles. At first, the number of red marbles was $\frac{3}{7}$ of the number of blue marbles. After 12 red marbles were taken out and 12 blue marbles were put into the box, the ratio of the number of red marbles to the number of blue marbles became 1 : 4. How many marbles were there in the box?

Answer: _____

04 The stamp collection

The ratio of the number of foreign stamps to local stamps in a stamp album is 9 : 7. There are 245 local stamps, and the rest are India and Malaysia stamps. The ratio of the number of India stamps to the number of Malaysia stamps is 2 : 3. After some Malaysia stamps are removed, the number of Malaysia stamps is $\frac{2}{5}$ of the number of local stamps. Find the number of Malaysia stamps removed.

Answer: _____

Worked solutions

01 Passengers on a train

WORK BACKWARDS

Original



5 units = ?

After Seng Kang



6 units = 696

Undo Kovan. $3 \times 40 = 120$ passengers boarded. Before Kovan: $820 + 40 - 120 = 740$.

Undo Buangkok. Before Buangkok: $740 + 36 - 80 = 696$ passengers.

Find the original five units. At Seng Kang, 1 unit joined the original 5 units. So 6 units = 696; 1 unit = $696 \div 6 = 116$.

Answer. Original number = $5 \times 116 = 580$ passengers.

Check: $580 + 116 = 696$; $696 - 36 + 80 = 740$; $740 - 40 + 120 = 820$.

02 A day at the funfair

EQUAL UNITS

Children



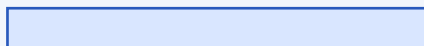
30 units

Adults



35 units

Boys



18 units

Use smaller, equal units. Children : adults = $6 : 7 = 30 : 35$.

Find the boys and the difference. Boys = $\frac{3}{5} \times 30 = 18$ units. Adults – boys = $35 - 18 = 17$ units.

Find one unit. 17 units = 51 people. 1 unit = $51 \div 17 = 3$ people.

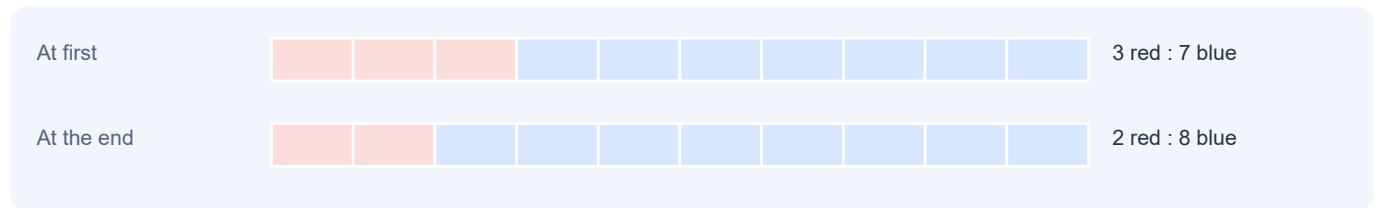
Answer. Total = $(30 + 35) \times 3 = 195$ people.

Check: Children = 90, adults = 105, boys = 54. Then $90 : 105 = 6 : 7$ and $105 - 54 = 51$.

Worked solutions

03 Red and blue marbles

KEEP THE TOTAL CONSTANT



Compare equal totals. At first, red : blue = 3 : 7, a total of 10 units. At the end, 1 : 4 = 2 : 8, also 10 units.

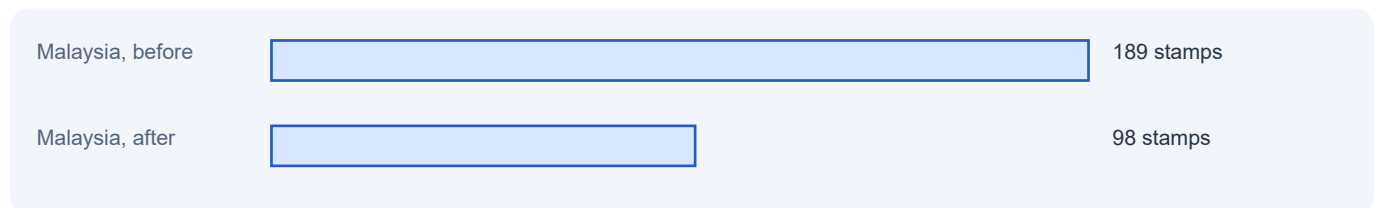
Find the change in red marbles. Red marbles decreased from 3 units to 2 units. The decrease of 1 unit represents 12 marbles.

Answer. Total = $10 \times 12 = 120$ marbles.

Check: Initially red = 36 and blue = 84. Finally red = 24 and blue = 96. Then $24 : 96 = 1 : 4$; the total remains 120.

04 The stamp collection

FIND EACH PART IN TURN



Find all foreign stamps. 7 units = 245 local stamps. 1 unit = 35, so foreign stamps = $9 \times 35 = 315$.

Find Malaysia stamps at first. India : Malaysia = 2 : 3. Malaysia stamps = $\frac{3}{5} \times 315 = 189$.

Find Malaysia stamps remaining. Local stamps remain 245. Malaysia stamps remaining = $\frac{2}{5} \times 245 = 98$.

Answer. Malaysia stamps removed = $189 - 98 = 91$.

Check: India = 126 and Malaysia = 189, giving 2 : 3. After removing 91, Malaysia = $98 = \frac{2}{5} \times 245$.