

1. At noon, a car travels from  $A$  to  $B$  at a uniform speed of 60 km/h. At the same time, a van travels uniformly from  $B$  to  $A$ . At 3.30 p.m., the car and the van are 85 km apart after having passed each other earlier. If the car arrives at  $B$  at 5 p.m., find the time at which the van will arrive at  $A$ .
2. Three girls,  $A$ ,  $B$  and  $C$ , shared a box of beads in the ratio 5 : 3 : 4, and there were 4 beads left over. Later, they shared these 4 beads together with a second box, containing  $12\frac{1}{2}\%$  less beads than the first box, in the same ratio as before, and there was no remainder. If the additional number of beads they each received in the second round of sharing was the same as before, find the total number of beads each of them received.
3. 300 ml of pure alcohol is poured from a bottle containing 2 l of pure alcohol. Then, 300 ml of water is added into the bottle. Again 300 ml of the diluted alcohol is poured out and 300 ml of water is added into the bottle. Find the percentage of pure alcohol in the solution now.
4. The pupils in a certain class are divided equally into 3 groups  $A$ ,  $B$  and  $C$ . The number of boys in group  $A$  is equal to the number of girls in group  $B$ . 25% of the boys in the class are in group  $C$ . Find the ratio of the number of boys to the number of girls in the class.
6. The following was a telephone conversation between Mr Tan, a contractor, and Mr Wang, an electrical engineer.
- Mr Tan : 'Hello, Mr Wang. Do you remember how long you took to complete the electrical work for my 12 factories the last time?'
- Mr Wang : '10 weeks because I had only 4 electricians.'
- Mr Tan : 'Now, I have 16 similar factories. Can you complete the job in 8 weeks?'
- Mr Wang : 'I may not have enough men to complete the job on time.'
- Mr Tan : 'How many hours a day did your men work the last time?'
- Mr Wang : 'On the average, each man worked 6 hours a day.'
- Mr Tan : 'Can they work for longer hours?'
- Mr Wang : '10 hours at most.'
- Mr Tan : 'At least how many men do you need to complete the job on time?'
- Mr Wang : 'I'll let you know later after lunch.'

Study the above conversation and calculate the number of electricians needed to complete the electrical work for 16 factories in 8 weeks if each of them works 10 hours a day.

- 1) The van will arrive at 6:00 pm.
- 2) A received  $\frac{5}{12} \times 120 = 50$  beads  
B " "  $\frac{3}{12} \times 120 = 30$  beads  
C " "  $\frac{4}{12} \times 120 = 40$  beads
- 3) Percentage of pure alcohol is  $72\frac{1}{4}\%$
- 4)  $\frac{\text{number of boys}}{\text{number of girls}} = \frac{4}{5}$
- 5a) By mass, Percentage of milk powder =  $12.6\%$   
5b) By volume, " " =  $10\%$
- 6) the number of Electrician's needed is 4.