1. Express the following ratios in simplest form :
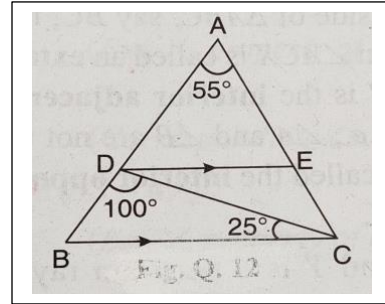
   (i) $\quad 3\frac{1}{2}:7\frac{3}{4}$ (ii) $\quad$ 36 minutes : $1\frac{1}{2}$ hours (iii) $\quad$ 76 ml : 1 L 710 mL

2. There are 1500 students and 250 teachers in a school. Out of them 650 are girls and the rest are boys. Find the ratio of :

   (i) Number of boys : Number of girls

   (ii) Number of girls : Number of teacher

   (iii) Number of boys : Number of students

   (iv) Number of students : Number of teachers

3. Divide Rs. 10400 among Maria, Sapna and Sachin in the ratio $\frac{1}{2}:\frac{1}{3}:\frac{1}{4}$.

4. If $\ p:q=2\frac{1}{3}:4\frac{1}{5}\ $ and q : r $=1\frac{1}{2}:1\frac{3}{4}$, find (i) p : r $\quad$ (ii) p : q : r

5. The monthly income and expenditure of a person are in the ratio 7 : 2. Find the income and savings if the expenditure is Rs. 6300.

6. Determine if 3, $3\frac{1}{2}$, 2, $4\frac{1}{2}$ are in the proportion or not.

7. Find the mean proportion between 1.44 and 0.25.

8. There are 4 eggs required to make 12 dozens. How many eggs are required to prepare 48 dozens cakes ?

9. A car travels 40 km in 2.5 litres of petrol.

   (i) How much distance will it cover in 16.5 litres of petrol ?

   (ii) How much petrol is required to cover 1650 km ?

10. 45 packets of cheese each weighing 100 g cost Rs. 607.50. What will be the cost of 18 packets of cheese each weighing 500 g ?

11. Find the volume whose $16\frac{2}{3}\%$ is 0.75 litre.

12. What percentage of 2 minutes 40 seconds is 40 seconds ?

13. The length of a pipe is decreased by $12\frac{1}{2}\%$. What is the new length if it was 150 meters ?

14. A sum of money is shared among Meena, Babita and Sarita in the ratio 1 : 2 : 5. What is their share in percentage ?

15. Sushma weighed 80 kg. After she had joined a gym, she weighed 56 kg. By what per cent did her weight reduce ?

16. If the ratio of selling price to the cost price of an article is 5 : 6, what is the gain or loss percentage ?

17. A cycle is sold for Rs. 880 at a loss of 20%. For how much should it be sold to gain 10% ?

18. A man bought 60 sheep at Rs. 120 per sheep. He sold 40 of them at Rs. 150. 10 of the sheep died. What would be the selling price of the remaining sheep, if he wants a profit of Rs. 800 ?

19. Sheetal bought eggs at Rs. 8.40 a dozen. At what price per hundred must she sell them so as to earn a profit of 15% ?

20. If the cost price of 20 mangoes is equal to selling price of 25 mangoes. Find the profit or loss per cent.

21. Vineet borrowed Rs. 8500 at 10% interest per annum. At the end of 4 years he cleared his account by paying Rs. 10000 and giving a cycle. Find the cost of cycle.

22. In how many years will a sum of money become four times at 8% per annum ?

23. At what rate of simple interest will a sum of money triple itself in 20 years ?

24. In $\triangle ABC$, if $\frac{\angle A}{3} = \frac{\angle B}{4} = \frac{\angle C}{6}$, find the angles.

25. Find :
    (i) $\angle B$
    (ii) $\angle EDC$
    (iii) $\angle ADE$
    (iv) $\angle AED$
    (v) $\angle DEC$
    (vi) $\angle DCE$
    (vii) $\angle ACB$

Fig. Q. 12

26. O is any point within a $\triangle ABC$, prove that : $2(OA + OB + OC) > (AB + BC + CA)$

27. In a $\triangle ABC$, $\angle A = 60^0$, $\angle B = 80^0$ and the bisectors of $\angle B$ and $\angle C$ meet at O. Find :
    (i) $\angle C$
    (ii) $\angle BOC$

28. Construct a $\triangle ABC$, in which $BC = 4.5\ cm$ and $\angle B = 60^0$ and $\angle A = 75^0$.

29. Construct a right triangle $\triangle PQR$ right angled at R, in which $PQ = 10\ cm$ and side $PR = 7\ cm$.

30. In the given figure, find the value of x.