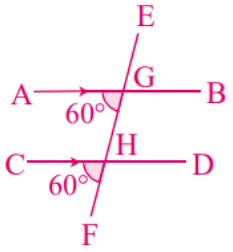
BLE MODEL QUESTION
SET D

Subject: Mathematics F.M.: 100
Time: 3 hours P.M.: 40

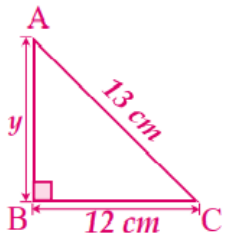
Group"A" $[10 \times 1 = 10]$

1. (a) In the given figure, write the relation between the line segments AB and CD.



(b) If the diameter of a circle is 9 cm, what is its circumference?

2. (a) In the given figure, Δ ABC is a right angled triangle. Find the value of y.



(b) Write down the formula to find the distance between two points $A(x_1, y_1)$ and $B(x_2, y_2)$

3. (a) If $A = \{1, 2, 3, 4, 5\}$ and $B = \{2, 4, 6, 8\}$, find $A \cap B$.

(b) Express 0.00000056 in scientific notaiton.

4. (a) Find the value of $\frac{1}{x^\circ}$.

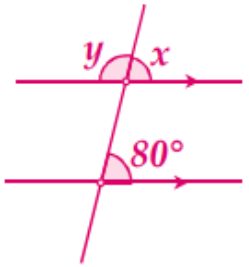
(b) Factorize: $a - b + a^2 - ab$

5. (a) If $a^x = b^x$, what is the value of x ?

(b) Show $3x < 27$ in a number line.

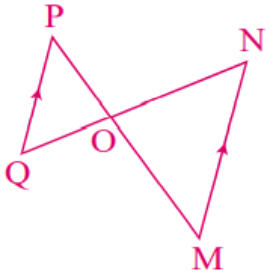
Group"B" $[17 \times 2 = 34]$

6. (a) Find the value of x and y in the given figure.



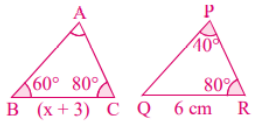
(b) Calculate each interior angle of a regular octagon.

(c) In the given figure, prove that $\Delta MNO \sim \Delta OPQ$.



7. (a) Draw the net of a cube.

(b) In the given figure, $\Delta ABC \cong \Delta PQR$. Find the value of unknown angles and x.



(c) If the circumference of a circular pond is 88 m, find its radius.

8. (a) Find the distance between the points A(–8, 7) and B(– 3, 4).

(b) Find the volume of a tank of 10 m length, 8 m breadth and 6 m height.

(c) If $A = \{a, b, c, d\}$ and $B = \{c, d, e, f\}$ then find $A \cup B$ and $n(A \cup B)$.

9. (a) Find the value of: $2\sqrt{25 - \sqrt{81}}$

(b) For how much rupees 20% is Rs. 400?

(c) If $x + \frac{1}{x} = 4$, find the value of $x^2 + \frac{1}{x^2}$.

10. (a) Factorize: $x^2 + 11x - 80$.

(b) Evaluate: $\left(\frac{81}{625}\right)$

(c) Simplify: $(x^a)^{b-c} \times (x^b)^{c-a} \times (x^c)^{a-b}$

11. (a) Solve: $x^2 - 10x + 24 = 0$

(b) Solve the following inequality and show it in a number line. $2x + 1 < 9$

Group"C" $[14 \times 4 = 56]$

12. Construct a regular hexagon with the side 6 cm by using compass.

13. Verify experimentally that the angles of isosceles triangles are equal to each other. (Two figures of different measures are necessary.)

14. The length and breadth of a rectangular floor are 12 m and 8 m respectively. How many square tiles will be needed to cover the floor if the side of the tile is 60 cm ?

15. A(– 2, 3), B(3, 4) and C(4, 8) are the vertices of a triangle ABC. Write the coordinates of image of the vertices of ΔABC under reflection about x-axis and show the image in graph.

16. In a class of 25 students, 17 like volleyball, 15 like basketball and 10 like both games. Show it in a Venn-diagram and find the number of students who do not like both games.

17. Simplify: $9\sqrt{3} + 3\sqrt{2} - 6\sqrt{3} + 5\sqrt{8}$

18. If a watch was sold for Rs. 1656 after allowing 10% discount on the marked price and adding 15% VAT, find the discount amount.

19. 20 workers can finish a work in 15 days. How many workers must be added to complete the work in 12 days?

20. In how many months a sum of Rs. 1000 amounts to Rs. 1200 at the rate of 10% simple interest per annum?

21. Two numbers are in the ratio 5:7. If 3 is added to both of them, the ratio is found to be 4:5. What are the numbers?

22. Find HCF and LCM of:

$$a^2 - 49, a^2 + 14a + 49$$

23. Factorize: $6p^2q + 30pq + 36q$

24. Simplify: $\frac{x^2 + x - 6}{x + 1} \times \frac{2x^2 + x - 1}{x + 3}$

25. Solve graphically:

$$2x - y = 5, x - y = 1$$

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