

MATHSTIMES-MODEL PRACTICE PAPER-1
CBSE | CLASS-X | MATHEMATICS

Time allowed: 3 Hours

Max. Marks:80

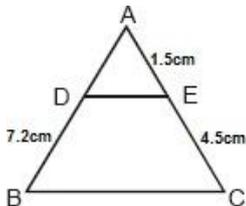
General Instructions:

- (i) *All questions are compulsory.*
- (ii) *The question paper consists of 30 questions divided into four sections A, B, C and D.*
- (iii) *Section A contains 6 questions of 1 mark each. Section B contains 6 questions of 2 marks each. Section C contains 10 questions of 3 marks each. Section D contains 8 questions of 4 marks each.*
- (iv) *There is no overall choice. However, an internal choice has been provided in four questions of 3 marks each and three questions of 4 marks each. You have to attempt only one of the alternatives in all such questions .*
- (v) *Use of calculators is not permitted.*

SECTION- A

Question numbers 1 to 6 carry 1 mark each.

1. If $a=2^3 \times 3$, $b=2 \times 3 \times 5$, $c=3^n \times 5$ and $\text{LCM}(a,b,c)= 2^3 \times 3^2 \times 5$,then find n.
2. For what value of k are $2k$, $k+10$ and $3k +2$ in AP .
3. If in the given figure $DE \parallel BC$,then find the value of AD.



4. If $\sin \alpha = 1/2$, $\cos \beta = 1/2$, find degree measure of $\alpha + \beta$.
5. Find the values of k if $2x^2 + kx + 3 = 0$ has two equal real roots.
6. If $(2,p)$ is the mid point of line segment joining the points $A(6,5)$ and $B(-2,11)$,find value of p.

SECTION - B

Question numbers 7 to 12 carry 2 marks each.

7. If the H.C.F $(90 ,144) = 18$, find the L.C.M $(90,144)$.
8. The 17th term of an AP exceeds its 10th term by 7. Find the common difference.
9. For what value of 'k' will the following system of linear equations have infinite number of solutions.

17. Evaluate $\frac{\sin 25^\circ}{\cos 65^\circ} + \frac{\cot 15^\circ}{\tan 75^\circ} + \frac{2 \cos 43^\circ \operatorname{cosec} 47^\circ}{\tan 10^\circ \tan 40^\circ \tan 50^\circ \tan 80^\circ}$

18. Show that the quadrilateral PQRS formed by P (22,5), Q(7,10), R(12,11) and S(3,24) is not a parallelogram.

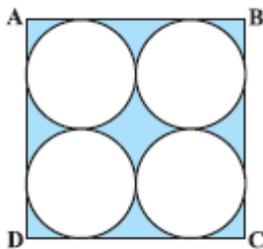
OR

Find the point on x-axis which is equidistant from (2, -5) and (-2, 9)

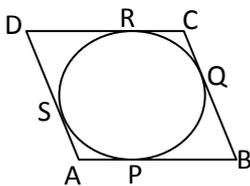
19. If the Mode of following distribution table is 54, find the value of p.

class	0-15	15-30	30-45	45-60	60-75	75-90
Frequency	3	5	p	16	12	7

20. Find the area of the shaded region in the given figure, where ABCD is square of side 14cm . ($\pi=22/7$)



21. A quadrilateral ABCD is drawn to circumscribe a circle as given in figure.
Prove that $AB + CD = AD + BC$



22. A container, opened from the top and made up of metal sheet, is in the shape of a frustum of a cone of height 16 cm with radii of its lower and upper ends as 8 cm and 20 cm respectively . Find the cost of the container if the cost of metal sheet used is Rs 8 per 100 cm^2 . ($\pi=3.14$)

OR

A toy is in the form of a cone mounted on hemisphere of diameter 7 cm. The total height of the toy is 14.5 m. Find the volume of the toy. ($\pi=22/7$)

SECTION- D

Question numbers 23 to 30 carry 4 marks each.

23. Solve for x. $\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}$, $a + b \neq 0$

24. Which term of the sequence $20, 19\frac{1}{4}, 18\frac{1}{2}, 17\frac{3}{4}, \dots$ is the first negative term?

25. . Draw a triangle ABC with side BC = 6 cm, AB = 5 cm and $\angle ABC = 60^\circ$. Then construct a triangle whose sides are $\frac{3}{4}$ of the corresponding sides of the triangle ABC.

26. Prove that, the ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding sides.

OR

Prove that in a triangle, if square of one side is equal to the sum of the squares of the other two sides, then the angle opposite the first side is a right angle.

27. Prove that $\frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta} = 1 + \sec \theta \cdot \operatorname{cosec} \theta$ where θ is an acute angle.

OR

If $\sec \theta + \tan \theta = p$ prove that $\sin \theta = \frac{p^2 - 1}{p^2 + 1}$ where θ is an acute angle .

28. From the top of a building 60m high the angles of depression of the top and the bottom of a tower are observed to be 30° and 60° . Find the height of the tower.

29. Three sides of a triangular field are 15m, 16m and 17m with the three corners of the field a cow, a buffalo and a horse are tied separately with ropes of length 7m each to graze the field. Find the area of the field which can not be grazed by the three animals. ($\pi = 22/7$)

30. To highlight the child labour problem, some students organized a javelin throw competition. 50 students participated in this competition. The distance (in metres) thrown are recorded below.

Distance (in metres)	0-20	20-40	40-60	60-80	80-100
Number of students	6	11	17	12	4

(i) Draw less than type Ogive for the given data .

