

**Sample Paper S.A 2nd  
Mathematics - IX  
2011 - 2012**

Time : 3 or 3½ hours

Maximum Marks: 90

**General Instructions:**

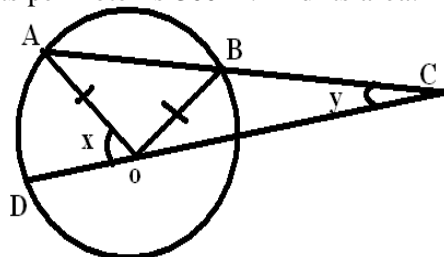
1. All questions are compulsory.
2. The question paper consists of 34 questions divided into four sections - A, B, C and D. Section - A contains 8 questions of 1 mark each, Section B is of 6 questions of 2 marks each, Section C is of 10 questions of 3 marks each and section D is of 10 questions of 4 marks each.
3. In question on construction, the drawing should be neat and exactly as per the given measurements.
4. Use of calculator is not permitted.

**SECTION – A**

1. Given a cuboid of dimensions  $l = 6$  cm,  $b = 5$  cm and  $h = 4$  cm. How many cubes, each of side 2 cm can be cut out from it ?  
i. 6    ii. 15    iii. 30    iv. None of these
2. Given figure A and figure B such that  $ar(A) = 20 \text{ units}^2$  and  $ar(B) = 20 \text{ units}^2$ . Then  
i. Fig. A and B are congruent    iii. Fig. A and B are not congruent  
ii. Fig. A and B may be or may not be congruent
3. A data is such that its minimum value is 86 and range is 22. Then the maximum value is:  
i. 54    ii. 811    iii. 118    iv. 181
4. The region between a chord and either of the arcs is called:  
i. An arc    ii. A sector    iii. A segment    iv. A semicircle.
5. If angles A, B, C and D of the quadrilateral ABCD, taken in order, are in the ratio 3 : 7 : 6 : 4, then ABCD is  
i. Trapezium    ii. Rhombus    iii. Parallelogram    iv. Kite.
6. In an experiment, probability of an event is better approximated, when an experiment is performed :  
i. 10 times    ii. 20 times    iii. Large number of times    iv. 30 times.
7. A semi circular sheet of metal of diameter 28 cm is bent into an open conical cup, then radius of cone is :  
i. 14 cm    ii. 7 cm    iii. 12.12 cm    iv. None of the above.
8. The equation  $2x + 5y = 7$  has unique solution, if x and y are :  
i. Natural number    ii. Positive real number    iii. Real number    iv. Rational number

**SECTION – B**

9. Ten observations 6, 14, 15, 17,  $x + 1$ ,  $2x - 13$ , 30, 32, 34, 43 are written in an ascending order. The median of the data is 24. Find the value of x.
10. Show that the points A(1,2), B(-1,-16) and C(0,-7) lie on the graph of the linear equation  $y = 9x - 7$ .
11. Three cubes each of side 6 cm are joined end to end. Find the surface area of the resulting cuboid.
12. If  $x = 3$ ,  $y = -2$  is a solution of the linear equation  $3x - ky = 1$ , then find the value of k.
13. The sides of a triangular plot are in the ratio 3 : 5 : 7 and its perimeter is 300 m. Find its area.
14. In the given, AB is the chord of a circle with centre O. AB is produced to C such that  $BC = OB$ , CO is joined and produced to meet the circle in D. If  $\angle ACD = y$  and  $\angle AOD = x$ , prove that  $x = 3y$ .

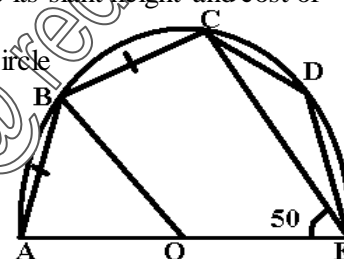


## SECTION – C

15. Construct a right  $\Delta^{\text{le}}$  in which one side is 3.5 cm and sum of the other side and hypotenuse is 5.5 cm.
16. The water for a factory is stored in a hemispherical tank whose internal diameter is 14 m. The tank contains 50 kilolitres of water. Water is pumped into the tank to fill to its capacity. Calculate the volume of water pumped into the tank.
17.  $\Delta ABC$  and  $\Delta DBC$  are on the same base BC with vertices A and D on opposite sides of BC such that area of  $\Delta ABC =$  area of  $\Delta DBC$ . Show that BC bisects AD.
18. Ram is half of his father's age. Twenty years ago the age of father was six times age of Ram. Find the age of Ram and his father.
19. Draw a histogram and a frequency polygon from the following data :

Class Interval	21 - 25	26 - 30	31 - 35	36 - 40	41 - 45	46 - 50	51 - 55	55 - 60
Frequency	21	22	50	110	87	51	18	23

20. A diagonal of a parallelogram bisects one of its angles. Show that it is a rhombus.
21. Two coins are tossed simultaneously 100 times and we get the following outcomes :  
i. No head = 30      ii. One head = 20      iii. Two heads = 50  
Find the probability of each event.
22. The diagonals of a parallelogram ABCD intersect at a point O. Through O, a line is drawn to intersect AD at P and BC at Q. Show that PQ divides the parallelogram into two parts of equal areas.
23. A conical tent is 10 m high and the radius of its base is 24 m. Calculate its slant height and cost of canvas required to make it at the rate of Rs. 70 per meter square.
24. In the given figure, O is the centre and AE is the diameter of the semicircle ABCDE. If  $AB = BC$  and  $\angle AEC = 50^\circ$ , then find  
(a)  $\angle CBE$  (b)  $\angle CDE$  (c)  $\angle AOB$ . Prove that  $BO \parallel CE$ .



## SECTION – D

25. Prove that the angle subtended at any point on the arc of a circle is half the angle subtended at the centre of a circle.
26. Water flows in a tank 150 m X 100 m at the base through a pipe whose cross section is 2 dm by 1.5 dm at the speed of 15 km/hr. In what time will the water be 3 m deep ?
27. The force exerted to pull a cart is directly proportional to the acceleration produced in the body. Express the statement as a linear equation of two variables and draw the graph of the same by taking the constant mass equal to 6 kg. Read from the graph, the force required when the acceleration produced is (a)  $5 \text{ m/sec}^2$  (b)  $6 \text{ m/sec}^2$
28. How much steel was actually used, if  $\frac{1}{12}$  of the steel actually used was wasted in making the closed circular tank whose diameter is 4.2 m and length is 4.5 m.
29. Construct a triangle with perimeter 10 cm and base angles 60 and 45.
30. The mean marks (out of 100) of boys and girls in an examination are 70 and 73, respectively. If the mean marks of all the students in that examination are 71, find the ratio of the number of boys to the number of girls.
31. "Two years later a father will be 8 years more than three times the age of the son" taking the present age of father and son as x and y respectively. Write a linear equation for the above and draw its graph. From the graph, find the age of the father when the son's age is 10 years.
32. E and F are respectively the mid - points of the non - parallel sides AD and BC of a trapezium ABCD. Prove that  $EF \parallel AB$  and  $EF = \frac{1}{2} (AB + CD)$ .
33. Prove that, if two triangles are on the same base and between the same parallel lines then their areas are equal.
34. Following table shows a frequency distribution for the speed of cars passing through at a particular spot on a high way. Draw a histogram for the given data.

C.I (km/h)	10 - 20	20 - 30	30 - 50	50 - 70	70 - 100
Frequency	6	17	15	16	26

## Answer Key

### Section A

- iv. None of these
- ii. Fig. A and B may be or may not be congruent
- iii. 118
- iii. A segment
- i. Trapezium
- iii. Large number of times
- ii. 7 cm
- i. Natural number

### Section B

- $x = 20$
- Satisfies
- $504 \text{ cm}^2$
- $K = -4$
- Area =  $1500\sqrt{3} \text{ m}^2$

### Section C

- $668.66 \text{ m}^3$
- Ram age = 25 years and father age = 50 years
- i.  $\frac{3}{10}$     ii.  $\frac{1}{5}$     iii.  $\frac{1}{2}$
- $l = 26$ , cost = Rs. 137280.
- $\angle CBE = 40$ ,  $\angle CDE = 50$ ,  $\angle AOB = 100$ .

### Section - D

- 100 hours
- a. 30 Newton, b. 36 Newton
- T.S.A = 87.12 steel used =  $95.04 \text{ m}^2$
- Ratio of boys to girl = 2 : 1
- 42 years and 10 years

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