

# Ashwani Gupta



## Class - IX

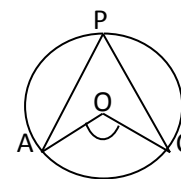
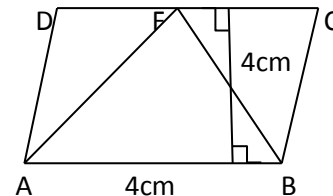
## Mathematics

### GENERAL INSTRUCTIONS:

1. All questions are compulsory.
2. The question paper consists of thirty four questions divided into four sections A, B, C & D. Section A comprises of ten questions of 01 marks each, Section B comprises of eight questions of 02 marks each, Section C comprises of ten questions of 03 marks each and section D comprises of six questions of 04 marks each.
3. All questions in section A are multiple choice questions where you are to select one correct option out of given four.
4. There is no overall choice. However internal choice has been provided in one question of 02 marks each, three questions of 03 marks each and two questions of 04 mark each. You have to attempt only one of the alternatives in all such questions.
5. Use of calculators is not permitted.

### Section - 'A'

1. Which of the following statement is true and why  $4x+3y=15$  has:  
(a) unique solution (b) only two solutions  
(c) no solution (d) infinitely many solutions
2. The perimeter of a parallelogram is 36cm. If the smaller side is 8cm long, then the measure of longer side is:  
(a) 10cm (b) 10.5cm  
(c) 11cm (d) 12cm
3. In the given fig.,  
ABCD is a parallelogram, then  
 $ar(\triangle AFB)$  is:  
(a)  $16\text{cm}^2$  (b)  $8\text{cm}^2$   
(c)  $4\text{cm}^2$  (d)  $10\text{cm}^2$
4. In the given fig., O is the centre of circle  
If  $\angle 32^\circ$  &  $\angle PCO=47^\circ$ , then  $\angle AOC$  is:  
(a)  $160^\circ$  (b)  $158^\circ$   
(c)  $79^\circ$  (d)  $208^\circ$
5. Lateral surface area of a cuboid with dimensions l, b, h is:  
(a)  $2 lb + bh + lh$  (b)  $2 lb + bl + hl$   
(c)  $2 l + b h$  (d)  $lbh$
6. Find the probability of getting a number less than 5 in a single throw of a dice:  
(a)  $\frac{5}{6}$  (b)  $\frac{2}{3}$   
(c)  $\frac{1}{6}$  (d) 1
7. The value of 'p' from the equation  $2x+4y=p$ , is when its one solution is  $x=-1, y=1$ :  
(a) 1 (b) 7  
(c) -1 (d) -12
8. Diagonals of a parallelogram divides it into equal area of:  
(a) two triangles (b) three triangles  
(c) four triangles (d) none of these



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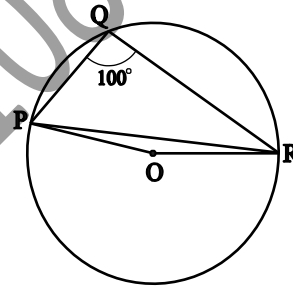
9. Find  $\angle BCD$ , where ABCD is a cyclic quadrilateral, whose diagonals intersect at P &  $\angle DBC=60^\circ$  and  $\angle BAC=40^\circ$ :
- (a)  $80^\circ$  (b)  $70^\circ$   
(c)  $100^\circ$  (d)  $120^\circ$
10. The length of chord of a circle of radius 10cm is 12cm. The distance of the chord from the centre of the circle is:
- (a) 2.5cm (b) 8cm  
(c) 10cm (d)  $3\sqrt{5}$  cm

## Section - 'B'

11. Given the point (1, 2), find the equation of a line on which it lies. How many such equations are there?
12. Show that the diagonals of a rhombus are perpendicular to each other.
13. Show that the bisectors of angles of a parallelogram form a rectangle.
14. If two equal chords of a circle intersect within the circle, prove that the segments of one chord are equal to corresponding segments of the other chord.
15. Prove that angles in the same segment of a circle are equal

“OR”

In Fig  $\angle PQR = 100^\circ$ , where P, Q and R are points on a circle with centre O. Find  $\angle OPR$ .



16. The slant height and base diameter of a conical tomb are 25 m and 14 m respectively. Find the cost of white-washing its curved surface at the rate of Rs 210 per  $100 \text{ m}^2$ .
17. Find the radius of a sphere whose surface area is  $154 \text{ cm}^2$ .
18. The heights (in cm) of 9 students of a class are as follows:  
155 160 145 149 150 147 152 144 148  
Find the median of this data.

## Section - 'C'

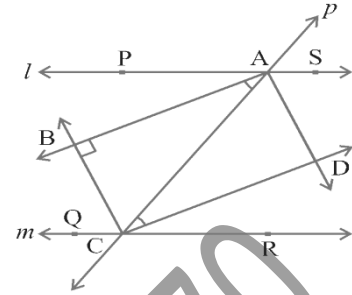
19. Give the geometric representations of  $y = 3$  as an equation
- (i) In one variable  
(ii) two variables
20. Yamani and Fatima, two students of Class IX of a school, together contributed Rs 100 towards the Prime Minister's Relief Fund to help the earthquake victims. Write a linear equation which satisfies this data. Draw the graph of the same

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21. Two parallel lines  $l$  and  $m$  are intersected by a transversal  $p$ . Show that the quadrilateral formed by the bisectors of interior angles is a rectangle.



22. Show that if the diagonals of a quadrilateral bisect each other at right angles, then it is a rhombus  
"OR"

Prove that the line segment joining the mid-points of two sides of a triangle is parallel to the third side.

23. Construct a triangle PQR in which  $QR = 6\text{cm}$ ,  $\angle Q = 60^\circ$  and  $PR - PQ = 2\text{cm}$ .  
24. A lead pencil consists of a cylinder of wood with a solid cylinder of graphite filled in the interior. The diameter of the pencil is 7 mm and the diameter of the graphite is 1 mm. If the length of the pencil is 14 cm, find the volume of the wood and that of the graphite.

"OR"

A dome of a building is in the form of a hemisphere. From inside, it was white-washed at the cost of Rs 498.96. If the cost of white-washing is Rs 2.00 per square meter, find the

- inside surface area of the dome,
  - volume of the air inside the dome.
25. A village, having a population of 4000, requires 150 litres of water per head per day. It has a tank measuring  $20\text{ m} \times 15\text{ m} \times 6\text{ m}$ . For how many days will the water of this tank last?  
26. The following observations have been arranged in ascending order. If the median of the data is 63, find the value of  $x$ .

29, 32, 48, 50,  $x$ ,  $x+2$ , 72, 78, 84, 95

"OR"

The following table gives the life times of 400 neon lamps

Life time (in hours)	Number of
300 - 400	1
400 - 500	4
500 - 600	5
600 - 700	6
700 - 800	6
800 - 900	0

- Represent the given information with the help of a histogram.
- How many lamps have a life time of more than 700 hours?

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27. An insurance company selected 2000 drivers at random (i.e., without any preference of one driver over another) in a particular city to find a relationship between age and accidents. The data obtained are given in the following table

Age of drivers (in years)	Accidents in one year				
	0	1	2	3	over 3
18 - 29	440	160	110	61	35
30 - 50	505	125	60	22	18
Above 50	360	45	35	15	9

Find the probabilities of the following events for a driver chosen at random from the city:

- being 18-29 years of age *and* having exactly 3 accidents in one year.
- being 30-50 years of age *and* having one or more accidents in a year.
- having no accidents in one year.

28. Fifty seeds were selected at random from each of 5 bags of seeds, and were kept under standardised conditions favourable to germination. After 20 days, the number of seeds which had germinated in each collection were counted and recorded as follows:

Bag	1	2	3	4	5
Number of seeds germinated	40	48	42	39	41

What is the probability of germination of

- more than 40 seeds in a bag?
- 49 seeds in a bag?
- more than 35 seeds in a bag?

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## Section – ‘D’

29. The taxi fare in a city is as follows: For the first kilometre, the fare is Rs 8 and for the subsequent distance it is Rs 5 per km. Taking the distance covered as  $x$  km and total fare as Rs  $y$ , write a linear equation for this information, and draw its graph.

“OR”

If the work done by a body on application of a constant force is directly proportional to the distance travelled by the body, express this in the form of an equation in two variables and draw the graph of the same by taking the constant force as 5 units. Also read from the graph the work done when the distance travelled by the body is

- (i) 2 units
- (ii) 0 unit

30. Show that the diagonals of a parallelogram divide it into four triangles of equal area.

“OR”

XY is a line parallel to side BC of a triangle ABC. If BE  $\parallel$  AC and CF  $\parallel$  AB meet XY at E. and F respectively, show that

$$\text{ar}(\text{ABE}) = \text{ar}(\text{ACF})$$

31. ABCD is a trapezium with AB  $\parallel$  DC. A line parallel to AC intersects AB at X and BC at Y. Prove that  $\text{ar}(\text{ADX}) = \text{ar}(\text{ACY})$ .

32. If two circles intersect at two points, prove that their centres lie on the perpendicular bisector of the common chord.

33. A small indoor greenhouse (herbarium) is made entirely of glass panes (including base) held together with tape. It is 30 cm long, 25 cm wide and 25 cm high.

- (i) What is the area of the glass?
- (ii) How much of tape is needed for all the 12 edges?

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34. In a city, the weekly observations made in a study on the cost of living index are given in the following table:

Cost of living index	Number of weeks
140 - 150	5
150 - 160	10
160 - 170	20
170 - 180	9
180 - 190	6
190 - 200	2
<b>Total</b>	<b>52</b>

Draw a frequency polygon for the data above (without constructing a histogram).

## M. C.Q. Answers:

- d
- a
- b
- b
- c
- b
- a
- c
- a
- b

All other question are from NCERT. Check your textbook for Answers