

SUMMATIVE ASSESSMENT –II

MATHEMATICS

Class – IX

Time allowed: 3 hours

Maximum Marks: 90

General Instructions:

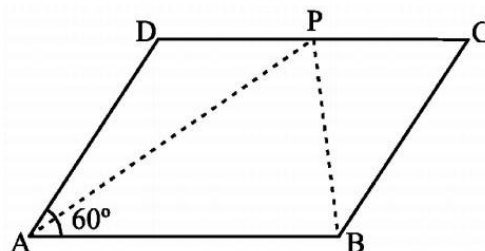
- All questions are compulsory.
- The question paper consists of 31 questions divided into five sections – A, B, C, D and E.
- Section A contains 4 questions of 1 mark each which are multiple choice questions, Section B contains 6 questions of 2 marks each, Section C contains 8 questions of 3 marks each, Section D contains 10 questions of 4 marks each and Section E contains three OTBA questions of 3 mark, 3 mark and 4 mark.
- Use of calculator is not permitted.

Section A

- The numerator of a fraction is less than the denominator. Write a linear equation in two variables to represent the statement.
(a) $x = y - 1$ (b) $x + y + 1 = 0$ (c) $x + y = 1$ (d) $x = y$
- Area of the triangle is equal to
(a) Base \times corresponding altitude (b) $\frac{1}{2} \times$ Base \times corresponding altitude
(c) $\frac{1}{4} \times$ Base \times corresponding altitude (d) $\frac{1}{3} \times$ Base \times corresponding altitude
- The diameter of a roller is 84 cm and its length is 120 cm. it takes 500 complete revolution to move once over to level a playground. The area of the playground in m^2 is
(a) 1184 (b) 1584 (c) 1284 (d) 1384
- There are 60 boys and 40 girls in a class. A student is selected at random. Find the probability that the student is a girl.
(a) $\frac{4}{5}$ (b) $\frac{1}{5}$ (c) $\frac{2}{5}$ (d) $\frac{3}{5}$

Section B

- Draw the graph of the linear equation $3x + 4y = 6$. At what points, the graph cuts the x-axis and the y-axis.
- In the below figure ABCD is a parallelogram and $\angle DAB = 60^\circ$. If the bisector AP and BP of angles A and B respectively meet P on CD. Prove that P is the midpoint of CD.



7. If two circles intersect at two points, prove that their centres lie on the perpendicular bisector of the common chord.
8. P, Q, R, S are four consecutive points on a circle such that $PQ = RS$. Prove that $PR = QS$
9. Construct a triangle PQR given that $QR = 3$ cm, $\angle PQR = 45^\circ$ and $QP - PR = 2$ cm.
10. A die is rolled once. Find the probability of getting an odd number?

Or

Twelve defective balls are mixed with 132 good balls. It is not possible to just look at a ball and tell whether or not it is defective. One ball is taken out at random from this lot. Determine the probability that the ball taken is a good one.

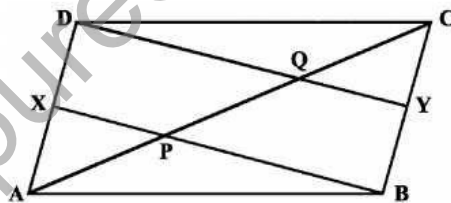
Section C

11. Give the equations of two lines passing through (2, 3). How many more such lines are there and why?

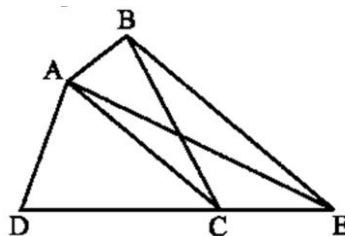
Or

Two student of your class contributed Rs. 200 together in a charity fund. Write the linear representing this data. Give some points.

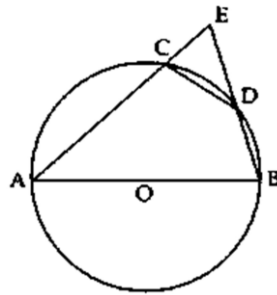
12. In the below figure X and Y are respectively the mid-points of the opposite sides AD and BC of a parallelogram ABCD. Also BX and DY intersect AC at P and Q respectively. Show that $AP = PQ = QC$.



13. In the below figure ABCD is a quadrilateral and $BE \parallel AC$ and also BE meets DC produced at E. show that area of $\triangle ADE$ is equal to the area of the quadrilateral ABCD.



14. If a pair of parallel line is intersected by a transversal, show that the bisectors of a pair of alternate interior angles are also parallel.
15. In the given figure AB is a diameter of the circle; CD is a chord equal to the radius of the circle. AC and BD when extended intersect at a point E. prove that $\angle AEB = 60^\circ$.



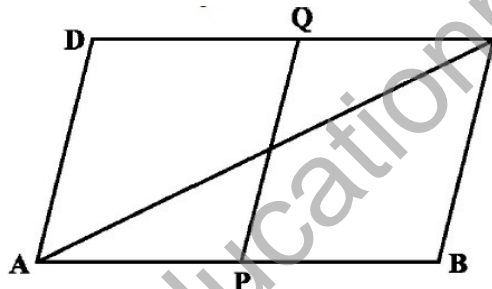
16. The pillars of a temple are cylindrically shaped. If each pillar has a circular base of radius 20 cm and height 10 m, how much concrete mixture would be required to build 14 such pillars?
17. The radius of a spherical balloon increases from 7 cm to 14 cm as air is pumped into it. Find the ratio of surface areas of the balloon in two cases.
18. A company selected 4000 households at random and surveyed them to find out a relationship between income level and the number of television sets in a home. The information so obtained is listed in the following table:

Monthly Income (In Rs)	Number of Televison/Household			
	0	1	2	above 2
< 10000	20	80	10	0
10000 - 14999	10	240	60	0
15000 - 19999	0	380	120	30
20000 - 24999	0	520	370	80
25000 and above	0	1100	760	220

Find the probability of:

- Of a household earning Rs. 10000 – 14999 and having exactly one television.
- A household earning Rs. 25000 and more per year and owning two televisions.
- A household not having any television. **Section D**

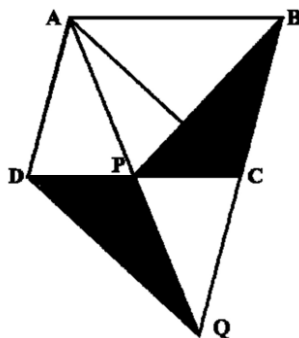
19. Let the vertex of an angle ABC be located outside a circle and let the sides of the angle intersect equal chords AD and CE with the circle. Prove that $\angle ABC$ is equal to half the difference of the angles subtended by the chords AC and DE at the centre.
20. A cancer detective centre is going to develop in our city of cuboid shape having 600 m, breadth 500 m and height 400 m.
- (a) Calculate its total area.
- (b) What concept derived from this activity?
21. One of the two digits of a two digit number is three times the other digit. If you interchange the digits of this two-digit number and add the resulting number to the original number, you get 88. What is the original number?
22. Construct a triangle with perimeter 20 cm and base angle 60° and 45° .
23. Points P and Q have been taken on opposite sides AB and CD respectively of a parallelogram $ABCD$ such that $AP = CQ$. Show that AC and PQ bisect each other.



Or

Prove that the parallelogram on the same base and between the same parallels is equal area.

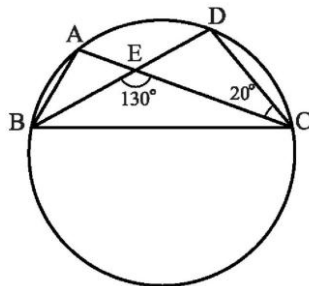
24. A storage tank is in the form of a cube. When it is full of water, the volume of the water is 15.625 m^3 . If the present depth of the water is 1.3 m. find the volume of water already used from the tank.
25. In the below figure $ABCD$ is a parallelogram and BC is produced to a point Q such that $AD = CQ$. If AQ intersects DC at P , show that $ar(\triangle BPC) = ar(\triangle DPQ)$



26. $ABCD$ is a quadrilateral whose diagonals AC and BD intersect at O , prove that

- (i) $AB + BC + CD + DA > AC + BD$
 (ii) $AB + BC + CD + DA < 2(AC + BD)$

27. In the below figure, A, B, C and D are four points on a circle. AC and BD intersect at a point E such that $\angle BEC = 130^\circ$ and $\angle ECD = 20^\circ$. Find $\angle BAC$



28. Over the past 200 working days, the number of defective parts produced by a machine is given in the following table:

Number of defective parts	0	1	2	3	4	5	6	7	8	9	10	11	12	13
Days	50	32	22	18	12	12	10	10	10	8	6	6	2	2

Determine the probability that tomorrow's output will have

- (a) No defective part
 (b) At least one defective part
 (c) Not more than 5 defective parts (d) More than 13 defective parts

Section E

29. OTBA Question for 3 marks from Statistics. Material will be supplied later.
 30. OTBA Question for 3 marks from Statistics. Material will be supplied later.
 31. OTBA Question for 4 marks from Statistics. Material will be supplied later.