SUMMATIVE ASSESSMENT-II (2013-14) 2/2014

CLASS-IX

SUBJECT : MATHEMATICS

Time : 3-3½ hrs. **M.M.: 100**

General Instructions :

(i) All questions are compulsory.

(ii) The question paper consists of 32 questions divided into five sections A, B, C, D and E. Section-A comprises of 4 questions of 1 mark each. Section-B comprises of 6 questions of 2 marks each. Section-C comprises of 10 questions of 3 marks each and Section-D comprises of 11 questions of 4 marks each. Section-E comprises of one question from Open Text theme of 10 marks.

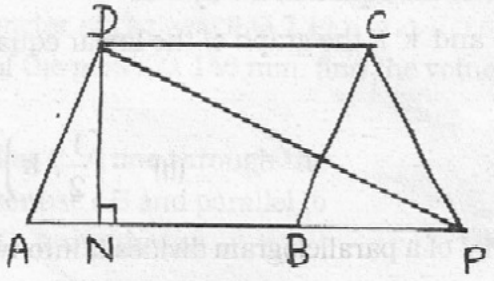
(iii) Use of calculator is not permitted.

SECTION-A

Q1. Express the linear equation $3x = \sqrt{2}y - 5$ in the form $ax + by + c = 0$ and write the values of a, b and c.

Q2. Give the equation of one line passing through the point (3, 7), How many more such lines are possible?

Q3. ABCD is a parallelogram, P is a point on AB (produced) and DN ⊥ AB. If AB = 8 cm and DN = 5 cm, then find the area of ΔPCD.

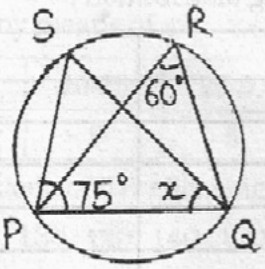


Q4. Find the side of a cube if the perimeter of one face of a cube is 40 cm.

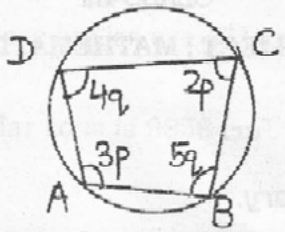
SECTION-B

Q5. Construct an angle of 45° and draw its angle bisector also.

Q6. In the adjoining figure, if ∠PRQ = 60° and ∠SPQ = 75°, then find the value of x (∠PQS)



Q7. In the adjoining figure, ABCD is a cyclic quadrilateral. Find the values of p and q.



Q8. If the ratio of the radii of two spherical metallic balls is 2:3, then find the ratio of their volumes.

Q9. The marks obtained by 30 students of a class in a test are given below. Construct a grouped frequency distribution table using the class intervals 0-5 and so on :

18, 8, 12, 6, 8, 16, 12, 5, 23, 16, 23, 10, 21, 12, 9, 7,
23, 21, 20, 17, 18, 17, 17, 3, 22, 21, 24, 24, 19, 14

Q10. To know the opinion about "Chinese food", a survey of 200 people was conducted. The data is recorded as follows :

Opinion	Like	Dislike
No. of people	130	70

Find the probability that a person selected at random

(i) likes Chinese food (ii) does not like Chinese food

SECTION-C

Q11. Write any 3 solutions of the equation $x + 2y = 6$.

Q12. Find the values of 'h' and 'k' if the graph of the linear equation $2x - y + 1 = 0$ passes through the points :

(i) (h, 4) (ii) $\left(\frac{1}{2}, k\right)$

Q13. Prove that the diagonal of a parallelogram divides it into two congruent triangles.

Q14. Show that the bisectors of the angles of a parallelogram form a rectangle.

Q15. Diagonals AC and BD of a trapezium ABCD with AB || DC intersect each other at O. Prove that ar (ΔAOD) = ar (ΔBOC).

Q16. Construct a ΔABC in which BC = 7 cm, $\angle B = 75°$ and AB + AC = 13 cm.

Q17. Find the mean of the following distribution :

x_i	f_i
4	5
6	10
9	10
10	7
15	8

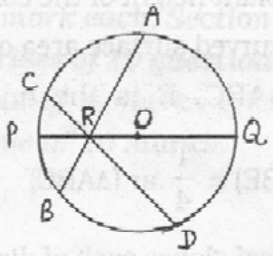
Q18. Following data shows the weights of 50 people in a group :

Weight (kg.)	35	40	45	50	55	60
No. of People	10	9	7	12	9	3

Find the probability that the weight of a person chosen at random is (i) atmost 50 kg (ii) atleast 45 kg (iii) exactly 40 kg.

Q19. The total surface area of a hemisphere is $192\ \pi\ cm^2$. Find the diameter of this hemisphere.

Q20. If two intersecting chords of a circle make equal angle with the diameter passing through their point of intersection, then prove that the chords are equal.



SECTION-D

Q21. Give the geometrical representation of $y - 5 = 2$ as an equation in :

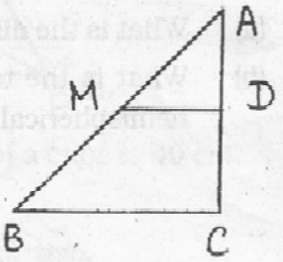
(i) one variable (ii) two variables

Q22. (i) Dhruv and Shivam, together contributed ₹ 800 towards Prime Minister's Relief Fund to help the earthquake victims. Write a linear equation which satisfies this data and draw the graph of the same.

(ii) Which value is being promoted by Dhruv and Shivam?

Q23. 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 2 mm. If the length of the pencil is 140 mm, find the volume of the graphite and the volume of the wood.

Q24. ΔABC is right angled at C. A line through the mid-point M of hypotenuse AB and parallel to BC intersects AC at D. Prove that :



(i) D is the mid-point of AC.

(ii) $MD \perp AC$

(iii) $CM = MA = \frac{1}{2} AB$.

Q25. Represent the following data by means of a histogram

C.I.	10-15	15-20	20-25	25-30	30-40	40-60	60-80
Frequency	7	9	8	5	12	12	8

Q26. Find the mean, median and mode of the following data :

110, 120, 130, 120, 110, 140, 130, 120, 140, 120

Q27. Prove that the angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle.

Q28. Construct a ΔABC whose base angles are $45°$ and $60°$ and perimeter of triangle is 12 cm.

Q29. The volume of a right circular cone is 9856 cm^3. If the radius of the base is 14 cm, find

(i) height of the cone

(ii) Slant height of the cone

(iii) curved surface area of the cone

Q30. In a ΔABC, E is the mid-point of the median AD of a ΔABC. Show that

$$\text{ar}(\Delta ABE) = \frac{1}{4}\text{ar}(\Delta ABC)$$

Q31. Spherical globes each of diameter 21 cm are to be painted with blue colour. Find the cost of painting 8 globes of this diameter at the cost of ₹ 10 per cm^2.

SECTION-E (OPEN TEXT)

(*Please ensure that open text of the given theme is supplied with this question paper)

Q32. Theme II (Adventure Camp) (5+3+2)

(i) From the survey, find the probability that the chosen student was successful in rock climbing in

(a) First attempt (b) Two attempts

(c) More than two attempts (d) Did not attempt at all

Can the bar graph representing the success rate in rock climbing be converted into a histogram?

(ii) (a) What is the difference in volumes of two cups provided by the manager?

(b) What is the total volume of welcome drink served to the students in hemispherical glasses?