JAIPUR EDUCATION PLUS
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SUMMATIVE ASSESSMENT – II (2015- 16)

Time allowed : 3 to 3 1/2 hours **MATHEMATICS**

Maximum Marks: 90

Class – IX

General Instructions:

(i) All questions are **compulsory**.

(ii) The question paper consists of **31** 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 **8** questions of **3 marks** each and **Section – D** comprises of **4 marks** each. **Section E comprises of two questions of 3 marks each and 1 question of 4 marks from Open Text theme.**

(iii) There is no overall choice.

(iv) Use of calculator is not permitted.

Section A

(Question numbers **1 to 4** carry **1 mark** each)

1. Find a solution for the equation.

   $3x - 8y = 27$

2. In fig. 1, AOB is a diameter of the circle and AC = BC, find $\angle CAB$.

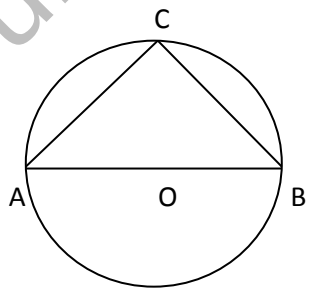


Fig. 1

3. In fig. 2, if the area of the parallelogram ABCD is 30 cm^2, then find the length of the altitude AQ.

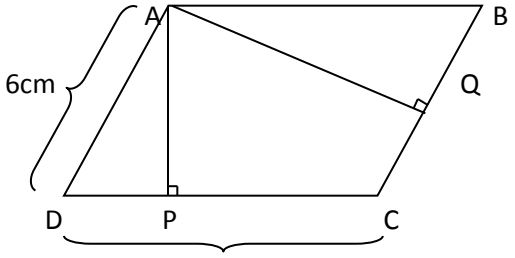


Fig. 2

4. Out of 25 students, participating in a quiz competition 10 are girls. Find the probability that the winner is a boy.

Section B

(Question numbers **5 to 10** carry **2 marks** each)

5. Express the linear equation 6 = 4x in the form $ax+by+c = 0$ and indicate the value of a, b and c

6. Three coins are tossed simultaneously 200 times with the following frequencies of different outcomes.

outcomes	3 Heads	2 Heads	1 Head	3 Tails
Frequency	23	84	71	22

Find the probability of getting:
a) 3 Heads
b) No Heads

7. If the surface area and volume of a sphere are equal, find the diameter of the sphere.

8. If the point (2,-5) lies on the graph of the equation $2ax-y$ = 1, find the value of 'a'.

9. The record of a weather station shows that out of the past 275 consecutive days, its weather forecasts were correct 170 times.
(i) What is the probability that on a given day it was correct?
(ii) What is the probability that it was not correct on a given day?

10. In fig.3 A, B and C are three points on a circle such that the angles subtended by the chords AB and AC at centre O are 80° and 120° respectively. Determine ∠BAC.

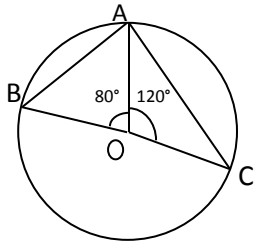


Fig. 3

Section C

(Question numbers **11 to 18** carry **3 marks** each)

11. If the number of hours for which a labourer works is x and y are his wages (in Rupees) and y =2x-1, draw the graph of work-wages equation. From the graph, find the wages of the labourer if he works for 6.

12. If the diagonals of a parallelogram are equal, then prove that it is a rectangle.

13. Prove that parallelograms on the same base and between the same parallels are equal in area.

14. Construct a triangle ABC in which BC = 4cm and $\angle$B = 60° and AB+AC = 6cm.

15. If two circles intersect in two points, prove that the line through the centres is the perpendicular bisector of common chord.

16. The diameter of the roller is 84cm and its lengths are 124cm. It takes 500 complete revolutions to move once over to level a play ground. Find the area of the play ground in m^2.

17. A right triangle ABC with sides 5cm, 12cm and 13cm is revolved about the side 12cm. Find the volume of the solid so obtained.

18. The percentage of marks obtained by a student in the monthly unit test are given below:

Unit test	I	II	III	IV	V
% of marks	58	64	76	62	85

Find the probability that the student gets:

a) at least 60% of marks
b) marks between 70% and 80%
c) less than 65%

Section D

(Question numbers **19 to 28** carry **4 marks** each)

19. 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.

20. Construct a triangle with perimeter $10cm$ and base angles 60° and 45°. Write the steps of construction.

21. Rohini and Fatima are two students of class IX of a school, together contributed Rs 100 towards the Prime Minister's relief Fund to help the flood victims. Write a linear equation which satisfies this data. (You may take their contributions as Rs x and Rs y) Draw the graph of the same. Explain the value depicted here by them.

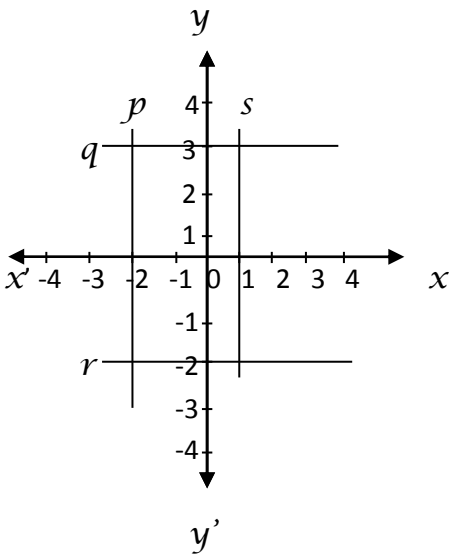
22. The dome of a building in the form of a hemisphere. Its radius is $6.3m$. Find the cost of painting it at the rate of Rs $12/m^2$.

23. A solid cube of side $12cm$ is cut into eight cubes of equal volume. What will be the side of the new cube? Also, find the ratio between their surface areas.

24. Curved surface of a cone is $308cm^2$ and its slant height is $14cm$. Find (a) radius of the base (b) height of the cone (c) total surface area of the cone

25. In a quadrilateral PQRS ∠P = 40°, ∠Q : ∠R: ∠S = 4:5:7. Find the measures of these angles. What type of quadrilateral is it? Give reasons.

26. Write the equations of the lines drawn in the following graph. Also, find the area enclosed between them.



27. ABCD is a parallelogram and AP and CQ are perpendiculars from vertices A and C on diagonal BD. Show that:
    (i) Δ APB ≡ Δ CQD
    (ii) AP = CQ

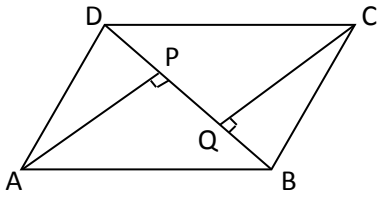


Fig. 4

28. XY is a line parallel to side BC of a triangle ABC. If BE ∥ AC and CF ∥ AB meet XY at E and F respectively, show that ar(ABE) = ar(ACF).