SAMPLE PAPER - 2
Subject – Mathematics
CLASS -9TH
Time Allowed: 3 hours Maximum Marks: 80

General Instructions:

This Question Paper has 5 Sections A-E.
Section A has 20 MCQs carrying 1 mark each.
Section B has 5 questions carrying 02 marks each.
Section C has 6 questions carrying 03 marks each.
Section D has 4 questions carrying 05 marks each.
Section E has 3 case based integrated units of assessment (04 marks each) with subparts of the values of 1, 1 and 2 marks each respectively.
All Questions are compulsory.
Draw neat figures wherever required. Take π =22/7 wherever required if not stated.

Section A

1. Do Rationalisation of $1/\sqrt{5}+\sqrt{2}$
2. If (4, 19) is a solution of the equation y = ax + 3, then find a.
3. 3. P(5, -7) be a point on the graph. Draw the PM ⊥ y-axis. The coordinates of M are

A. (0, -7)
B. (0, 0)
C. (-7, 0)
D. (-7, 5)

4. Find the class mark of the class 90-120.
5. If the line represented by the equation 3x + ky = 9 passes through the points (2, 3), then find the value of k .
6. The number of dimensions a point has

0 b. 1 c. 2 d. 3

7. If the angles of a triangle are in the ratio 5:3:7, then the triangle is

a. An acute angled triangle
b. A right angled triangle
c. An obtuse angled triangle
d. An isosceles triangle

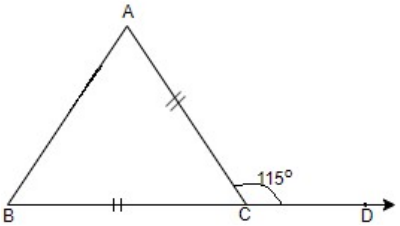
8. In which of the following figures are the diagonals equal?

a. Rhombus b) Rectangle c) Parallelogram d) Trapezium

9. If x + 1 is a factor of the polynomial $2x^2 + kx$, then find k.
10. x = 2, y = 5 is a solution of the linear equation

a. 5 x + y = 7 b. x + y = 7 c. 5x +2y = 7 d. x + 2y = 7

11. In the adjoining figure, BC = AC. If ∠ACD = 115°, the ∠A is



a. 50° b. 65° c. 57.5° d. 70°

12. Diagonals of a quadrilateral ABCD bisect each other. If ∠A = 45°, then ∠B =

a. 125° b. 115° c. 120° d. 135°

13. In the given figure, P and Q are centres of two circles intersecting at B and C. ACD is

a straight line. Then, the measure of ∠BQD is

a. 130° b. 150° c. 105° d. 115°

14. An irrational number between 2 and 2.5 is

a. √5 b. √11. c. √22.5 d. √12.5

15. Express y in terms of x in the equation 5y - 3x - 10 = 0.

16. If the sides of a triangle are produced in order, then the sum of the three exterior angles so formed is

a. 90° b. 270° c. 180° d. 360°

17. x+ 1 is a factor of the polynomial

a. $x^3 + 2x^2 - x - 2$ b. $x^3 + 2x^2 - x + 2$ c. $x^3 - 2x^2 + x + 2$ d. $x^3 + 2x^2 + x - 2$

18. If a solid sphere of radius r is melted and cast into the shape of a solid cone of height r, then the radius of the base of the cone is

a. 3r. b. r c. 2r d. 4r

DIRECTIONS:

Both A and R are true and R is the correct explanation of A.

Both A and R are true but R is not the explanation of A.

A is true but R is false.

A is false but R is true.

19. Assertion (A): The side of an equilateral triangle is 6 cm, then the area of the triangle is 9 cm^2. **Reason (R):** All the sides of an equilateral triangle are equal.

20. Assertion (A): For all values of k, $(\frac{-3}{2}, k)$ is a solution of the linear equation 2x + 3 = 0.

Reason (R): The linear equation ax + b = 0 can be expressed as a linear equation in two variables as ax + y + b = 0.

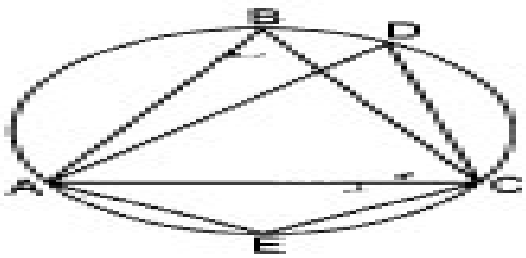
Section B

21. Find the area of a triangle, two sides of which are 8 cm and 11 cm and the perimeter is 32 cm.

22. Prove that if two lines intersect each other, then the vertically opposite angles are equal.

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

24. In the given figure, $\triangle$ABC is an equilateral. Find **i.** ∠ADC ii. ∠AEC



25. Find whether the given equation have x = 2, y = 1 as a solution:

2x + 5y = 9

Section C

26. Rationalise: $\frac{\sqrt{2}+\sqrt{3}}{3\sqrt{2}-2\sqrt{3}}$

27. Factorise : $x^3 - 23x^2 + 142x - 120$.

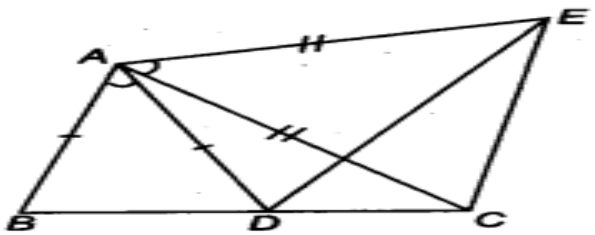
28. The perimeter of a triangle is 480 meters and its sides are in the ratio of 1:2:3. Find the area of the triangle?

29. 100 surnames were randomly picked up from a local telephone directory and a frequency distribution of the number of letters in the English alphabet in the surnames was found as follows:

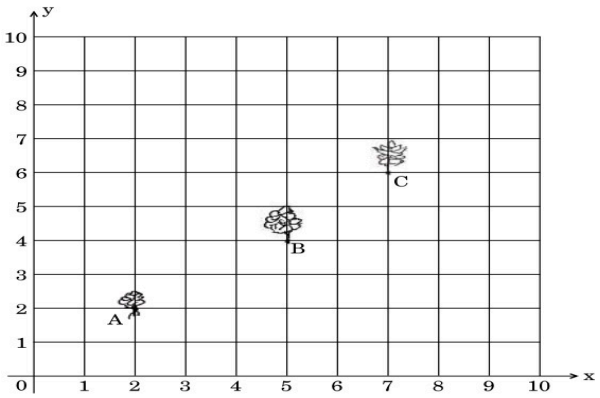
Number of letters	Number of surnames
1-4	6
4-6	30
6-8	44
8-12	16
12-20	4

(i) Draw a histogram to depict the given information.
(ii) Write the class interval in which the maximum number of surnames lie.

30.In figure, AC = AE, AB = AD and ∠BAD = ∠EAC. Show that BC = DE.



31. Seema has a 10 m × 10 m kitchen garden attached to her kitchen. She divides it into a 10 × 10 grid and wants to grow some vegetables and herbs used in the kitchen. She puts some soil and manure in that and sows a green chilly plant at A, a coriander plant at B and a tomato plant at C.
Her friend Kusum visited the garden and praised the plants grown there. She pointed out that they seem to be in a straight line. See the below diagram carefully and answer the following questions :

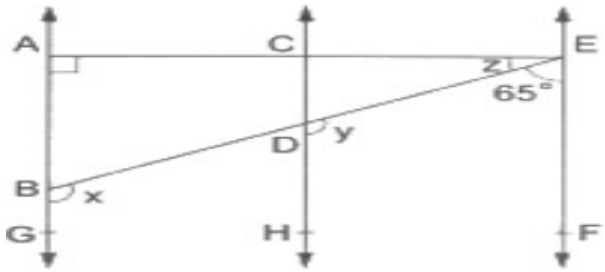


Write the coordinates of the points A, B, and C taking the 10 × 10 grid as coordinate axes.
By distance formula or some other formula, check whether the points are collinear.
Section D
32. The volume of a right circular cone is 9856 centimetre cube. if the diameter of the

base is 28 centimetre, find
i. Height of the cone
ii. slant height of the cone
iii. Curved surface area of the cone

33.P,Q,R and S are midpoints of the sides AB,BC, CD and DA Respectively of a quadrilateral ABCD. Prove that PQRS is a rectangle.

34.In the given figure, AB || CD || EF, ∠DBG = x, ∠EDH = y, ∠AEB = z, ∠EAB = 90° and ∠BEF = 65°.
Find the values of x, y and z.



35.The following data gives the amount of manure (in thousand tonnes) manufactured by a company during some

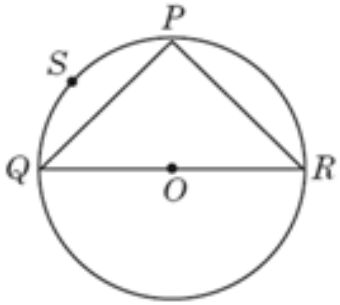
years:

Year	1992	1993	1994	1995	1996	1997
Manure (in thousand tonnes)	15	35	45	30	40	20

Represent the above data with the help of a bar graph.
Indicate with the help of the bar graph the year in which the amount of manufactured by the company was maximum.
Choose the correct alternative :
The consecutive years during which there was maximum decrease in manure production are: a. 1994 and 1995
1992 and 1993
1996 and 1997
1995 and 1996

Section E

36. Read the text carefully and answer the questions:
Sanjay and his mother visited in a mall. He observes that three shops are situated at P, Q, R as shown in the figure from where they have to purchase things according to their need. Distance between shop P and Q is 8 m and between shop P and R is 6 m. Considering O as the centre of the circles.



i. Find the Measure of ∠QPR.
ii. Find the radius of the circle.
iii. Find the Measure of ∠QSR.

OR

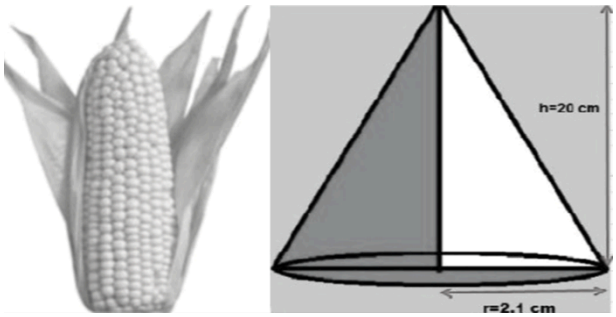
Find the area of ΔPQR.

37. Read the text carefully and answer the questions:

Once upon a time in Ghaziabad was a corn cob seller. During the lockdown period in the year 2020, his business was almost lost.

So, he started selling corn grains online through Amazon and Flipcart. Just to understand how many grains he will have from one corn cob, he started counting them. Being a student of mathematics let's calculate it mathematically. Let's assume that one corn cob (see Fig.),

shaped somewhat like a cone, has the radius of its broadest end as 2.1 cm and length as 20 cm.



i. Find the curved surface area of the corn cub.
ii. What is the volume of the corn cub?
Iii. If each 1 cm^2 of the surface of the cob carries an average of four grains, find how many grains you would find on the entire cob?

OR

How many such cubs can be stored in a cartoon of size 20 cm × 25 cm × 20 cm.

38. Read the text carefully and answer the questions:

AB International School has organised racing event for students of class 9^{th}. The students run for a distance of X meters ronak is the winner of the event. he finished the race in 2 minutes. if his speed is represented by why metre per minute then answer the following questions:

Represent the distance covered in the form of a linear equation using the formula

Distance = speed X time

ii. Write the equation in the standard form.
iii. write 3 solutions of the linear equation x -2y=0

Or

If the speed is 300 metre per minute then find the distance covered.