CLASS- IX (2016-17) SUBJECT- MATHEMATICS SET- 1

Section – A

1. If (3,0) is a solution of the linear equation 2x+3y=k , then find value of k.

2. In a Δ ABC , having AD as its median and arΔ ABD = 20 m^2 .Find the arΔ ABC.

3. Find the volume of hemisphere whose radius is 4.2 cm.

4. Find the class marks of the class 130-150

Section – B

5. Express the linear equation3x=8 in the form $ax + by + c = 0$ and indicate the values of a, b and c .

6. You are given a circle. Give a construction to find its centre.

7. In the given figure, E is any point on median AD of ΔABC. Show that ar (ΔABE)=ar (ΔACE).

8. Find the total surface area of a solid hemisphere of radius 10cm. (use π=3.14)

9. The distance (in km) of 40 engineers from their residence to their place of work were found as follows:
5, 3, 10, 20, 25, 11, 13, 7, 12, 31,19, 10, 12, 17, 18, 11, 32, 17, 16, 2, 7, 9, 7, 8, 3, 5, 12, 15, 18, 3,12, 14, 2, 9, 6, 15, 15, 7, 6, 12.
What is the empirical probability that an engineer lives:
(i) less than 7 km from her place of work ? (ii) more than or equal to 7 km from her place of work?

10. In a cricket match, a batswoman hits a boundary 6 times out of 30 balls she plays. Find the probability that she did not hit a boundary.

Section – C

11. The cost of a notebook is twice the cost of a pen. Write a linear equation in two variables to represent this statement.

12.Find two solution of the linear equation 2x+3y=5 , and check whether (-3,4) is a solution of the given equation.

13. Draw the graph of 2x+y=6 and find the point on x-axis where graph of this equation cut the x-axis.

14. Construct a triangle ABC in which BC = 7cm, ∠B = 75° and AB + AC = 13 cm.

15. A joker's cap is in the form of a right circular cone of base radius 7 cm and height 24 cm. Find the area of the sheet required to make 10 such caps.

16. The following table gives the life times of 400 neon lamps:

Life time (in hours)	300-400	400-500	500-600	600-700	700-800	800-900	900-1000
Number of lamps	14	56	60	86	74	62	48

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

17. 1500 families with 2 children were selected randomly, and the following data were recorded:

Number of girls in a family	2	1	0
Number of families	475	814	211

Compute the probability of a family, chosen at random, having (i) 2 girls (ii) 1 girl (iii) No girl

18. A recent survey found that the age of the workers in a factory are distributed as follows:

Age(in years)	20-29	30-39	40-49	50-59	60 and above
No. of worker	38	27	86	46	3

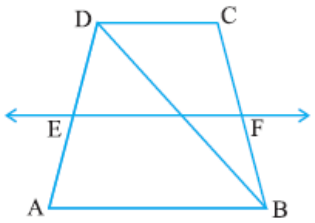
If a person is selected at random, then find the probability that the person is

(i) 40 year or more (ii) under 40 year (iii) under 60 year but over 39 year

Section – D

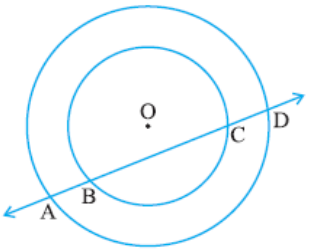
19. Anu and Richa ,two students of class IX together contribute Rs.300 to a blind school. Write a linear equation which satisfies this data and draw the graph of the same. What values depicted by Anu and Richa in helping the blind ?

20. ABCD is a trapezium in which AB || DC, BD is a diagonal and E is the mid-point of AD. A line is drawn through E parallel to AB intersecting BC at F. As shown in the given figure .Show that F is the mid-point of BC.



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

22. 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.



23. If E,F,G and H are respectively the mid-points of the sides of a parallelogram ABCD, show that ar (EFGH) = $\frac{1}{2}$ ar (ABCD)

24. If a line intersects two concentric circles with Centre O at A, B, C and D, prove that AB = CD

25 A village, having a population of 4000, requires 150 liters of water per head per day. It has a tank measuring 20 m × 15 m × 6 m. For how many days will the water of this tank last?

26. 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 m^2.

27. If the lateral surface of a cylinder is 94.2 cm^2 and its height is 5 cm, then find (i) radius of its base (ii) its volume. (Use π = 3.14)

28. 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	140-150	150-160	160-170	170-180	180-190	190-200	Total
Numbers of weeks	5	10	20	9	6	2	52

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

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CLASS- IX (2016-17) SUBJECT- MATHEMATICS Marking Scheme

SECTION -A

1. K=6 1 marks
2. x=12 1 mark
3. Vol.=155.232 cm^3 1 mark
4. Class Marks = 140 1 mark

SECTION -B

5. 10-3x+0.y-8=0 1mark

a=3,b=0,c=-8 1mark

6. E is the mid points of the sides AB

F is the mid points of the sides AC

EF= ½ BC 1 mark

= ½ x 5.6 ½ mark

=2.8cm ½ mark

7. ar(ΔABD)= ar(ΔACD) ----- (i)
(Median of a triangle divides it into two triangles of equal areas.)

ar(ΔEBD)= ar(ΔECD) -------(ii) 1 mark
(Median of a triangle divides it into two triangles of equal areas.)

Subtracting eq. (ii) from (i)
ar(ΔABD)- ar(ΔEBD)= ar(ΔACD)- ar (ΔECD)

ar (ΔABE)=ar (ΔACE). 1 mark

8. Total surface area of a solid hemisphere=$3\pi r^2$ ½ mark

= 3 x 3.14 x10 x10 1 mark

= 942cm^2 ½ mark

9. (i)$\frac{9}{40}$ 1 mark

(ii)$\frac{31}{40}$ 1 mark

10. Correct solution$\frac{24}{30}$,i.e. , $\frac{4}{5}$ 2marks

SECTION -C

11. Correct statement 1½ marks
Correct equation 1 ½ marks

12 for correct solution(any two) 1 mark

To check the solution2marks

13.for correct solution(any two) 1 mark
for correct graph 1½ mark
for correct point on x-axis(3,0) ½ mark

14. For correct construction 3 marks

15. . $l^2=h^2+r^2$ ½ mark

= 576+49 =625

Slant height of cone(l) =25cm ½ mark

Curved surface area of a cone =π.r.l ½ mark

Sheet required for one cap=$\frac{22}{7}$x 7 x 25 ½ mark

=550cm^2 ½ mark

Sheets required for 10 such cap =10 x 550

=5500cm^2 ½ mark

16. (i) For correct histogram 2 ½ marks.

(ii) 184 lamps ½ mark

17. (i)$\frac{19}{60}$ 1 mark (ii) $\frac{407}{750}$ 1 mark (iii) $\frac{135}{200}$ 1 mark

18. (i) $\frac{135}{200}$ = $\frac{27}{40}$ 1 mark (ii) $\frac{65}{200}$ = $\frac{13}{40}$ 1 mark (iii) $\frac{132}{200}$ = $\frac{33}{50}$ 1 mark

19.IfAnu and Richa contributes Rs x and Rs y respectively then

x + y = 300 1marks.

corrrrect graph 2 marks.

Helping the blinds shows kindness and gives moral satisfaction to the students.
1marks.

20. Given ½ mark
To prove ½ mark
Correct Proof 3 marks

21 Given ½ mark
To prove ½ mark
Diagram ½ mark
Correct Proof 2½ marks

22. Given ½ mark
To prove ½ mark
Diagram ½ mark
Correct Proof 2½ marks

23. Given and To prove 1 mark

For correct diagram 1 mark

For correct proof 2 marks

24Given , To proveand construction 1½ marks

For correct proof 2 ½ marks

25 . Volume of tank = l×b×h ½ mark
= 20×15×6 ½ mark
= 1800m^3 ½ mark
= 1800×1000
= 1800000liters ½ mark
Quantity of water required per day= 4000×150 ½ mark
= 600000 liters ½ mark
Numbers of days = 1800000/600000 ½ mark
= 3 days ½ mark

26 . d= 14m, r=7m, l= 25m ½ mark
Curved surface area of conical tomb = πrl ½ mark
= 22/7×7×25 1 mark
= 550 m^2 ½ mark
cost of whitewashing = Rs210/100×550 1 mark
= Rs115 ½ mark

27. -(i) Lateral surface area of a cylinder = 2πrh ½ mark
94.2 = 2×3.14×r×5 1 mark
r= 3cm ½ mark
ii. Volume of cylinder = $\pi r^2 h$ ½ mark
= 3.14×3×3×5 1 mark
= 141.3 cm^3 ½ mark
28. for correct frequency polygon 4 marks