

**INTERNATIONAL INDIAN SCHOOL, RIYADH**

**GULF SAHODAYA EXAMINATION (SAUDI CHAPTER)**

**FEBRUARY/ MARCH 2021**

**CLASS: IX**

**DURATION: 3 HOURS**

**SUBJECT: MATHEMATICS [041]**

**MAXIMUM MARKS: 80**

**General Instructions:**

1. This question paper contains two parts A and B.
2. Both Part A and Part B have internal choices.

**Part-A:**

1. It consists of two sections- I and II
2. Section I has 16 questions. Internal choice is provided in 5 questions.
3. Section II has four case study-based questions. Each case study has 5 case-based sub-parts.

An examinee is to attempt any 4 out of 5 sub-parts.

**Part-B:**

1. Question No 21 to 26 are Very short answer Type questions of 2 mark each.
2. Question No 27 to 33 are Short Answer Type questions of 3 marks each.
3. Question No 34 to 36 are Long Answer Type questions of 5 marks each.
4. Internal choice is provided in 2 questions of 2 marks, 2 questions of 3 marks and 1 question of 5 marks

**PART- A**

**Section 1 (Q. 1 – 16 : 1 mark each)**

1. Express  $0.272727\dots$  in the form  $\frac{p}{q}$  where p and q are integers and  $q \neq 0$ .
2. Simplify  $(27)^{2/3} \times (125)^{1/3}$
3. Write two irrational numbers between  $\frac{1}{5}$  and  $\frac{1}{2}$

**OR**

Give example of two irrational numbers whose sum is a rational number.

4. If  $x + y = 5$  and  $xy = 10$ , then find the value of  $x^2 + y^2$
5. Find the value of k, if  $x = 3$ ,  $y = -2$  is a solution of the equation  $2x - 3y = k$

6. Find the value of  $p(x) = x^3 - 3x^2 - 4x + 15$  at  $x = -3$

**OR**

Verify whether  $x = \frac{-1}{\sqrt{3}}$  is a zero of the polynomial  $p(x) = 3x^2 - 1$

7. Find the value of  $m$  if  $(-m, 2)$  is a solution of the equation  $4x + 9y - 6 = 0$

8. Write the equation of a line parallel to the X-axis at a distance of 5 units below the X-axis.

**OR**

Express the equation  $5x = 7$  in the form  $ax + by + c = 0$  and indicate the value of  $a$ ,  $b$  and  $c$ .

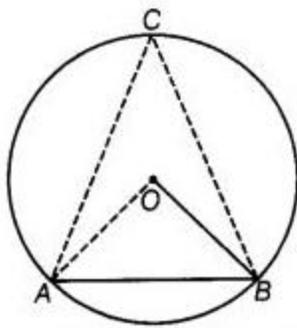
9. ABC is a right angled triangle in which  $\angle B = 90^\circ$  and  $AB = BC$ . Find  $\angle A$  and  $\angle C$

**OR**

Is  $\Delta ABC$  possible if  $\angle A = 60^\circ$ ,  $\angle B = 85^\circ$  and  $\angle C = 45^\circ$ . Justify your answer.

10. Which of the following is not a congruence rule for triangles? ASA, SAS or ASS

11. In the figure O is the center of the circle and  $\angle OAB = 55^\circ$  then  $\angle ACB = \underline{\hspace{2cm}}$



12. Using protractor, draw a right angle. Bisect it to get an angle of  $45^\circ$

13. Area of an equilateral triangle is  $36\sqrt{3} \text{ cm}^2$ . Find its side.

14. The surface area of a sphere is  $576\pi \text{ cm}^2$ , find its radius

15. Base perimeter of a cuboid is 25cm and its height is 10cm. What is its lateral surface area

**OR**

The total surface area of a cube is  $726 \text{ cm}^2$ . Find the length of its edge

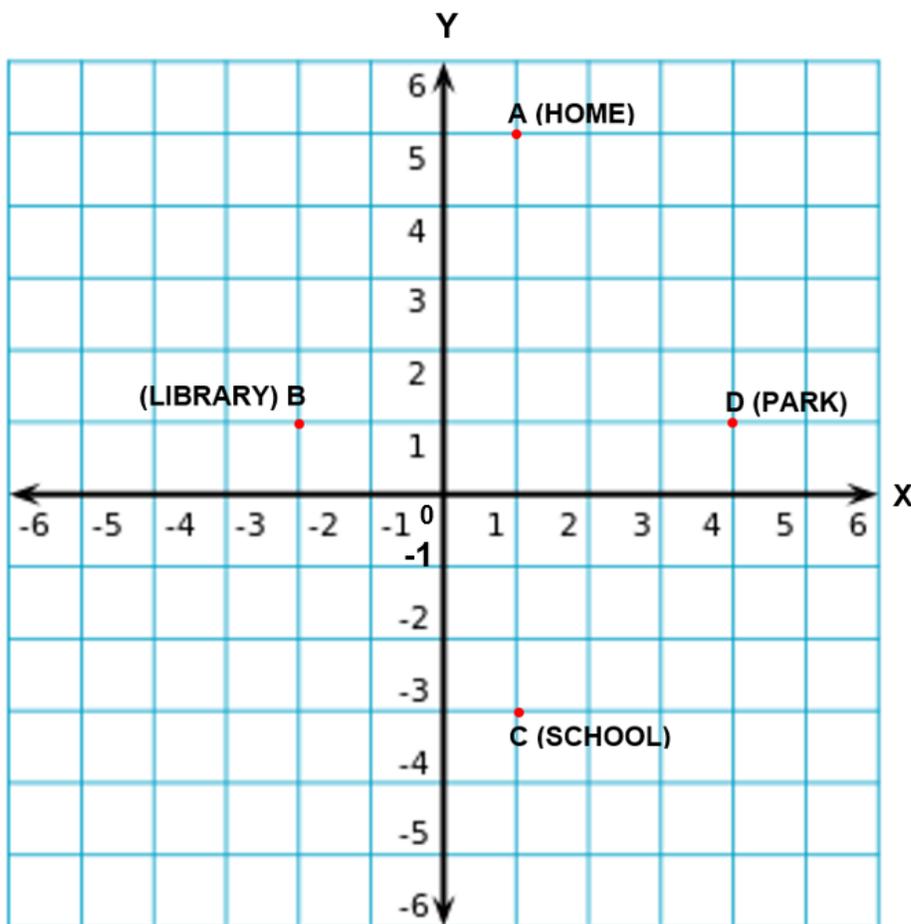
16. 2 coins are tossed 200 times. Find the probability of getting 0 Head

Outcomes	2 Heads	1 Head	0 Head
Frequency	56	80	64

## SECTION 2: Case Study Based Questions

Attempt any four sub-parts from each question. Each sub-part carries one mark.

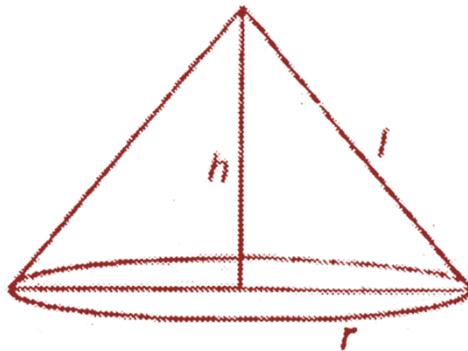
17. Two brothers Harish and Rama were at home and had to reach school. Harish went to library first to return a book and then reached school directly whereas Ramesh went to Skate park first to meet his friend and then reached school directly. Based on the given Coordinate plane answer the following  
Each grid represents 1km x 1km



- What are the coordinates of the point which represents school?  
a) (1, 3)      b) (1, -3)      c) (-3, 1)      d) (-1, -3)
- Write the abscissa of the point represented by the home.  
a) -5      b) 5      c) 1      d) -1
- Library is in which quadrant?  
a) I      b) II      c) III      d) IV
- What is the distance of the point represented by the park from the Y- axis?  
a) 4 km      b) 1 km      c) 5 km      d) 2 km

- v) Find the area of the figure obtained by joining the points A, B, C, D in order.  
 a)  $48 \text{ km}^2$       b)  $12.5 \text{ km}^2$       c)  $24.5 \text{ km}^2$       d)  $24 \text{ km}^2$

18. Once four friends A, B, C and D went for a picnic at a hill station. Due to peak season, they did not get a proper hotel in the city. The weather was fine, so they decided to make a conical tent at a park to take rest for some time. They were carrying  $300 \text{ m}^2$  cloth with them. As shown in the figure, they made the tent with 10m height and 14m diameter



- (i) What was the slant height of the tent  
 a) 11.2m      b) 12.2m      c) 13.2m      d) 14.2m
- (ii) What was the area of the floor  
 a)  $513.3 \text{ m}^2$       b)  $154 \text{ m}^2$       c)  $312 \text{ m}^2$       d)  $422.4 \text{ m}^2$
- (iii) What was the curved surface area of the tent  
 a)  $268.4 \text{ m}^2$       b)  $312.4 \text{ m}^2$       c)  $513.4 \text{ m}^2$       d)  $154.4 \text{ m}^2$
- (iv) What was the total surface area of the tent  
 a)  $312.4 \text{ m}^2$       b)  $268.4 \text{ m}^2$       c)  $424.4 \text{ m}^2$       d)  $422.4 \text{ m}^2$
- (v) How much remaining cloth was used for the floor  
 a)  $25.6 \text{ m}^2$       b)  $31.6 \text{ m}^2$       c)  $36.6 \text{ m}^2$       d)  $41.6 \text{ m}^2$

19. Students of class IX D went for an educational trip to a botanical garden. They collected 40 apples and measured its weight as follows:

45, 55, 30, 110, 75, 100, 40, 60, 65, 40, 100, 75, 70, 60, 70, 95, 85, 80, 35, 45,  
 40, 50, 60, 65, 55, 45, 30, 90, 85, 75, 85, 75, 70, 110, 100, 80, 70, 55, 30, 70.

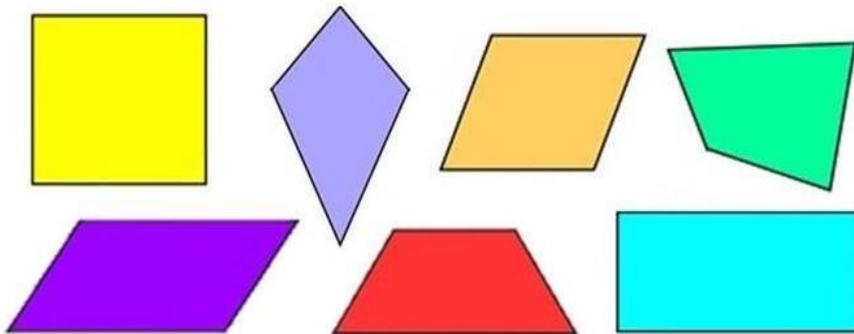
According to the teacher's instruction a student made a frequency distribution table given below:



<i>Weights (in grams)</i>	<i>Tally marks</i>	<i>Frequency</i>
30 – 45		7
45 – 60		7
60 – 75		10
75 – 90		9
90 – 105		5
105 – 120		2
<b>Total</b>		<b>40</b>

- i) Class size of the given data is
  - a) 30
  - b) 45
  - c) 15
  - d) 5
- ii) Class mark of the 5<sup>th</sup> class is
  - a) 107.5
  - b) 92.5
  - c) 102.5
  - d) 97.5
- iii) Number of apples that weigh more than 60 grams is
  - a) 33
  - b) 24
  - c) 26
  - d) 16
- iv) What is the range of the data?
  - a) 94
  - b) 80
  - c) 60
  - d) 34
- v) What is the sum of the lower limits of the 3<sup>rd</sup> class and 6<sup>th</sup> class?
  - a) 125
  - b) 100
  - c) 225
  - d) 165

20. During a math lab activity each student was given four broomsticks to make quadrilaterals.



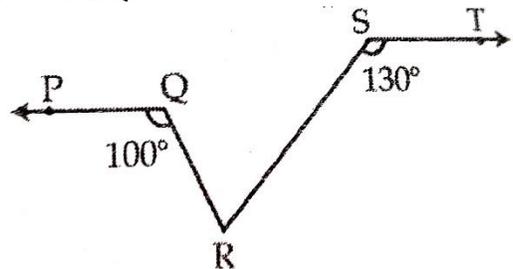
- i) Arun got broomsticks of length 7cm, 7cm, 4cm, 4cm. What are the types of quadrilateral he can make?
  - a) Rectangle, parallelogram, Trapezium
  - b) Rectangle, parallelogram, kite

- c) Rectangle, rhombus, Square  
 d) Rectangle, square, kite
- ii) In a Trapezium ABCD,  $AB \parallel CD$  and  $\angle A = \angle B = 75^\circ$ , the teacher asked the students to find  $\angle D$ . Neethu answered it correctly as:  
 a)  $75^\circ$       b)  $105^\circ$       c)  $115^\circ$       d)  $180^\circ$
- iii) Choose the false statement from the following.  
 a) The opposite angles of a parallelogram are equal  
 b) In a parallelogram, the sum of any two consecutive angles is  $180^\circ$   
 c) Every rhombus is a parallelogram  
 d) Every rectangle is a rhombus.
- iv) Rahul made a quadrilateral with one angle as  $108^\circ$  and the remaining three angles are equal, then each of the three equal angles is  
 a)  $84^\circ$       b)  $74^\circ$       c)  $86^\circ$       d)  $76^\circ$
- v) The line joining the mid-points of two consecutive sides of a rectangle is 15 cm. The length of the diagonal of the rectangle is  
 a) 28 cm      b) 25 cm      c) 30 cm      d) 33 cm

**PART B**

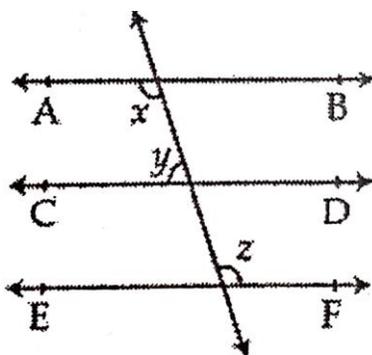
**Q 21 – 26 carries 2 marks each**

21. In the figure  $PQ \parallel ST$ ,  $\angle PQR = 100^\circ$  and  $\angle RST = 130^\circ$ . Find  $\angle QRS$



**OR**

In figure  $AB \parallel CD \parallel EF$  and  $x : y = 3 : 2$ , find the value of  $z$ .



22. Evaluate  $(103)^3$  using identity.

23. Factorise:  $6x^2 + 5x - 6$

24. Show that a diagonal of a parallelogram divides it into two congruent triangles.

25. The radius of a circle is 13 cm and the length of one of its chords is 24 cm. Find the distance of the chord from the center.

26. Draw a bar graph to represent the given data:

Political party	A	B	C	D
Number of seats won	70	50	30	40

**OR**

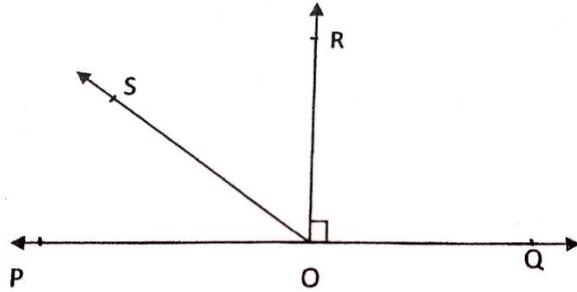
Draw a histogram based on the following data

Class interval	30-35	35-40	40-45	45-50	50-55
frequency	12	6	4	10	8

**Q 27-33 carries 3 marks each**

27. Factorise :  $x^3 - 3x^2 - x + 3$

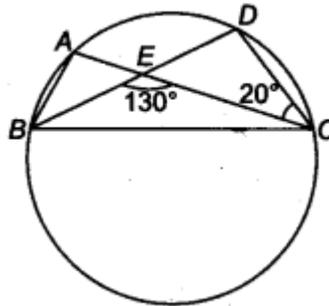
28. In the figure, POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that  $\angle ROS = \frac{1}{2} [\angle QOS - \angle POS]$



29. Prove that the quadrilateral formed by the internal angle bisectors of any quadrilateral is cyclic

**OR**

In 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  $\angle BAC$



30. Construct a triangle PQR in which  $QR = 6.5\text{cm}$ ,  $\angle Q = 60^\circ$  and  $PQ + PR = 11\text{ cm}$

31. The sides of a triangle are in the ratio 3: 4: 5 & its perimeter is 144 cm. Find the area

32. 50 circular plates of radius 7cm and thickness  $\frac{1}{2}$  cm, are placed one above the other to form a solid right circular cylinder. Find its total surface area.

**OR**

A hollow metallic cylinder is made from a metallic sheet of 2.4 cm thickness. The inner radius of the cylinder is 5.8 cm and the length is 50 cm. Find the volume of the metal used.

33. A recent survey found that the ages of 200 workers in a factory is as follows:

Age (in years)	Number of workers
20-29	38
30-39	27
40-49	86
50-59	46
60 and above	3

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

- i) 40 years or more  
Under 40 years
- ii) Under 60 but over 39 years

**Q 34 – 36 carries 5 marks each**

34. Prove that  $\frac{1}{3+\sqrt{7}} + \frac{1}{\sqrt{7}+\sqrt{5}} + \frac{1}{\sqrt{5}+\sqrt{3}} + \frac{1}{\sqrt{3}+1} = 1$

**OR**

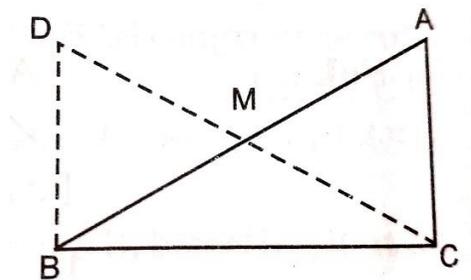
Evaluate:  $\sqrt[4]{81} - 8(\sqrt[3]{216}) + 15(32)^{1/5} + \sqrt{225}$

35. For the linear equation  $3x + 4y = 6$

- a) Draw the graph of the given equation
- b) Write the name of the triangle obtained by the equation along with x and y axis
- c) Find the area of the triangle obtained
- d) From the graph, find the points where the line intersects x and y axis

36. In a right triangle ABC, right angled at C, M is the midpoint of hypotenuse AB, C is joined to M and produced to a point D such that  $DM = CM$ . Point D is joined to Point B. Show that:

- i)  $\triangle AMC \cong \triangle BMD$
- ii)  $\angle DBC$  is a right angle.
- iii)  $\triangle DBC \cong \triangle ACB$
- iv)  $CM = \frac{1}{2} AB$



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