Sample/Pre-Board Paper 11

Class X Term 1 Exam Nov -Dec 2021

Mathematics (Standard) 041

Time Allowed: 90 minutes Maximum Marks: 40

General Instructions:

1. The question paper contains three parts A, B and C.
2. Section A consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.
3. Section B consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.
4. Section C consists of 10 questions based on two Case Studies. Attempt any 8 questions.
5. There is no negative marking.

SECTION A

Section A consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.

1. 225 can be expressed as

(a) 5×3^2 (b) $5^2 \times 3$

(c) $5^2 \times 3^2$ (d) $5^3 \times 3$

2. If a pair of linear equations is consistent, then the lines will be

(a) parallel

(b) always coincident

(c) intersecting or coincident

(d) always intersecting

3. If $\Delta ABC \sim \Delta APQ$ and $\text{ar}(\Delta APQ) = 4\text{ar}(\Delta ABC)$, ar (ΔABC), then the ratio of BC to PQ is

(a) 2 : 1 (b) 1 : 2

(c) 1 : 4 (d) 4 : 1

4. A man steadily goes 10 m due east and then 24 m due north. What is the distance from the starting point.

(a) 25 m (b) 26 m

(c) 15 m (d) 18 m

5. One ticket is drawn at random from a bag containing tickets numbered 1 to 40. The probability that the selected ticket has a number which is a multiple of 5 is

(a) $\frac{1}{5}$ (b) $\frac{3}{5}$

(c) $\frac{4}{5}$ (d) $\frac{1}{3}$

6. The perimeters of two similar triangles are 25 cm and 15 cm respectively. If one side of the first triangle is 9 cm, then the corresponding side of second triangle is ..... .

(a) 4.2 cm (b) 5.4 cm

(c) 20 cm (d) 6 cm

7. If $\sin\alpha = \frac{1}{2}$ and $\cos\beta = \frac{1}{2}$, then the value of $(\alpha + \beta)$ is

(a) 0° (b) 30°

(c) 60° (d) 90°

8. Select the least number that is divisible by all numbers between 1 and 10 (both inclusive).

(a) 2520 (b) 5040

(c) 1010 (d) 2020

9. If $ad \neq bc$, then what do you say about the solution of the pair of linear equations $ax + by = p$ and $cx + dy = q$?

(a) no solution (b) unique solution

(c) infinitely solution (d) can't say anything

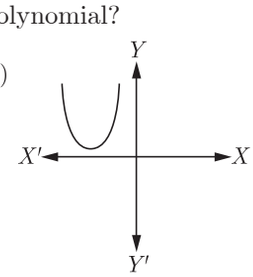
10. The distance between the points $A(0, 6)$ and $B(0, -2)$ is

(a) 6 (b) 8

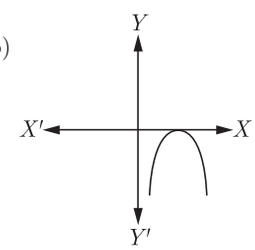
(c) 4 (d) 2

11. Which of the following is not the graph of a quadratic polynomial?

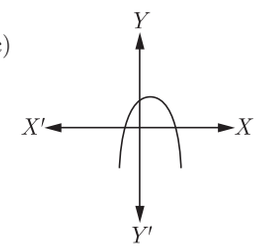
(a)



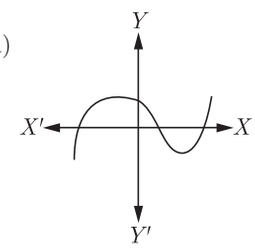
(b)



(c)



(d)



12. What is the decimal form of $\frac{3}{8}$?

(a) 0.458 (b) 0.750

(c) 0.375 (d) 0.305

13. What happens to value of $\cos\theta$ when θ increases from 0° to 90°.

(a) $\cos\theta$ decreases from 1 to 0.

(b) $\cos\theta$ increases from 0 to 1.

(c) $\cos\theta$ increases from $\frac{1}{2}$ to 1

(d) $\cos\theta$ decreases from 1 to $\frac{1}{2}$

14. If $4\sin\theta = 3$, then $\cos\theta$ is equal to

(a) $\frac{3}{\sqrt{7}}$ (b) $\frac{2}{\sqrt{7}}$

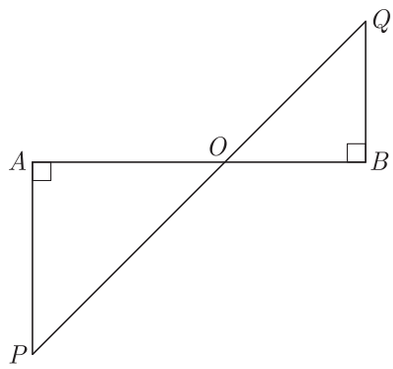
(c) $\frac{\sqrt{7}}{4}$ (d) $\frac{\sqrt{7}}{2}$

15. If the circumference of a circle increases from 4π to 8π, then its area is

(a) halved (b) doubled

(c) tripled (d) quadrupled

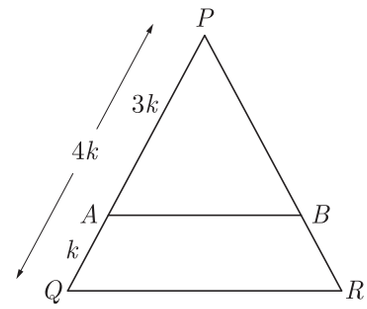
16. In the given figure, if $\angle A = 90^{o}, \angle B = 90^{o}$, $OB = 4.5$ cm $OA = 6$ cm and $AP = 4$ cm then QB will be



(a) 2 cm (b) 3 cm

(c) 4 cm (d) 6 cm

17. In the given figure, $\frac{PA}{AQ} = \frac{BR}{BR} = 3$. If the area of ΔPQR is $32\,\text{cm}^2$, then the area of the quadrilateral $AQRB$ will be



(a) 14 cm^2 (b) 7 cm^2

(c) 12 cm^2 (d) 6 cm^2

18. If $5\tan\theta = 3$, then what is the value of $\left(\frac{5\sin\theta - 3\cos\theta}{4\sin\theta + 3\cos\theta}\right)$?

(a) 1 (b) 0

(c) 3 (d) 4

19. For what value of k, the system of equations $kx + 3y = 1$, $12x + ky = 2$ has no solution.

(a) $k = -6$ (b) $k \neq -6$

(c) $k = 4$ (d) $k = -4$

20. If a letter is chosen at random from the letter of English alphabet, then the probability that it is a letter of the word DELHI is

(a) $\frac{1}{5}$ (b) $\frac{1}{26}$

(c) $\frac{5}{26}$ (d) $\frac{21}{26}$

SECTION B

Section B consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.

21. The HCF and LCM of 378, 180 and 420 of will be

(a) 6 and 3980 (b) 12 and 3780

(c) 6 and 3780 (d) 12 and 3980

22. The point which divides the line segment joining the points $(8, -9)$ and $(2, 3)$ in the ratio $1 : 2$ internally lies in the

(a) I quadrant (b) II quadrant

(c) III quadrant (d) IV quadrant

23. If $b\cos\theta = a$, then $\text{cosec}\,\theta + \cot\theta = ?$

(a) $\sqrt{\frac{b-a}{2ab}}$ (b) $\sqrt{\frac{b+a}{b-a}}$

(c) $\sqrt{\frac{a-b}{2ab}}$ (d) $\sqrt{\frac{b-a}{b+a}}$

24. The father's age is six times his son's age. Four years hence, the age of the father will be four times his son's age. The present ages (in year) of the son and the father are, respectively.

(a) 4 and 24 (b) 5 and 30

(c) 6 and 36 (d) 3 and 24

25. If α and β are the zeroes the polynomial $2x^2-4x+5$, the value of $(\alpha-\beta)^2$ is

(a) 2 (b) 1

(c) -1 (d) -6

26. If a number x is chosen at random from the numbers $-3, -2, -1.$ 0, 1, 2, 3, then What is the probability of $x^2<4$?

(a) $\frac{4}{7}$ (b) $\frac{3}{7}$

(c) $\frac{1}{7}$ (d) $\frac{2}{7}$

27. Two dice are numbered 1, 2, 3, 4, 5, 6 and 1, 1, 2, 2, 3, 3 respectively. They are thrown and the sum of the numbers on them is noted. What is the probability of getting even sum :

(a) $\frac{3}{18}$ (b) $\frac{7}{36}$

(c) $\frac{5}{9}$ (d) $\frac{1}{2}$

28. If $\sin\theta+\cos\theta=\sqrt{3}$, then $\tan\theta+\cot\theta=?$

(a) 1 (b) 2

(c) 3 (d) 4

29. If the point $P(x,y)$ is equidistant from the points $Q(a+b,b-a)$ and $R(a-b,a+b)$ then,

(a) $2ay=xy$ (b) $bx=ay$

(c) $ab=xy$ (d) $by=ax$

30. In ΔABC, the mid-points of sides BC, CA and AB are D, E and F respectively. The ratio of $ar(\Delta DEF)$ to $ar(\Delta ABC)$ is

(a) $\frac{2}{3}$ (b) $\frac{1}{3}$

(c) $\frac{1}{4}$ (d) $\frac{1}{2}$

31. Two point divide the line segment joining $A(2,-3)$ and $B(-4,-6)$ into three equal parts. The coordinates of points are

(a) $(3,4)$ and $(2,-5)$

(b) $(0,-4)$ and $(-2,-5)$

(c) $(0,-3)$ and $(-2,5)$

(d) $(4,3)$ and $(2,\ 5)$

32. $\sqrt{\frac{1+\sin\theta}{1-\sin\theta}}+\sqrt{\frac{1-\sin\theta}{1+\sin\theta}}=?$

(a) $2\sin\theta$ (b) $2\sec\theta$

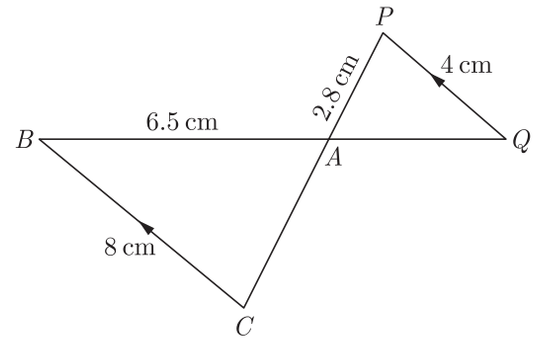
(c) $2\cos\theta$ (d) $2\operatorname{cosec}\theta$

33. If two positive integers p and q are written as $p=a^2b^3$ and $q=a^3b$, where a and b are prime numbers than $\text{LCM}(p,q)\times\text{HCF}(q,q)=?$

(a) pq (b) p^2q

(c) qp^2 (d) q^2p^2

34. In the given figure, $BC||PQ$ and $BC=8$ cm, $PQ=4$ cm, $BA=6.5$ cm $AP=2.8$ cm.
The length of CA is



(a) 2.80 cm (b) 5.60 cm

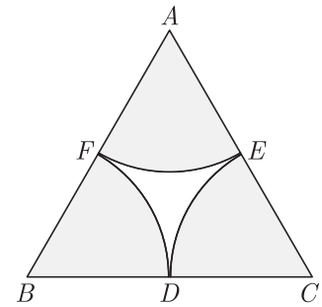
(c) 3.25 cm (d) 2.10 cm

35. What are the co-ordinate of a point P on the line segment joining $A(1,2)$ and $B(6,7)$ such that $AP=\frac{2}{5}AB$?

(a) $(3,4)$ (b) $(4,3)$

(c) $(5,4)$ (d) $(4,5)$

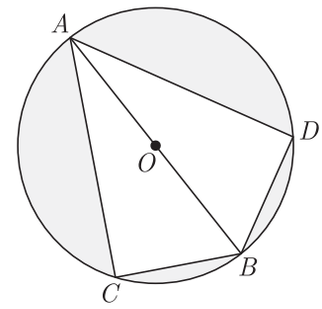
36. In given figure arcs are drawn by taking vertices A, B and C of an equilateral triangle of side 10 cm, to intersect the side BC, CA and AB at their respective mid-points D, E and F. What is the area of the shaded region? (Use $\pi=3.14$).



(a) 180 cm^2 (b) 260 cm^2

(c) 39.25 cm^2 (d) 79.5 cm^2

37. What is the area of the shaded region in figure, if $BC=BD=8$ cm, $AC=AD=15$ cm and O is the centre of the circle? (Take $\pi=3.14$)



(a) 107 cm^2 (b) 210 cm^2

(c) 198 cm^2 (d) 220 cm^2

38. Quadratic polynomial $2x^2 - 3x + 1$ has zeroes as α and β. Which of the following is the quadratic polynomial whose zeroes are 3α and 3β ?

(a) $2x + 9x - 9$ (b) $2x - 9x + 9$

(c) $x^2 - \frac{9}{2}x + \frac{9}{2}$ (d) $x^2 - 9x + 9$

39. Four equal circles are described at the four corners of a square so that each touches two of the others. The shaded area enclosed between the circle is $\frac{24}{7}$ cm^2. What is the radius of each circle?

(a) 2 cm (b) 4 cm

(c) 6 cm (d) 1 cm

40. What are the values of x and y for the following system of equation ?

$$\frac{x}{2} + \frac{2y}{3} = -1$$

$$x - \frac{y}{3} = 3$$

(a) –3 and 2 (b) 2 and –3

(c) 1 and 4 (d) 4 and 1

SECTION C

Case study based questions:
Section C consists of 10 questions of 1 mark each. Any 8 questions are to be attempted.

Case Based Questions: (41-45)

Mahesh works as a manager in a hotel. He has to arrange chairs in hall for a function. The hall has a certain number of chairs. Guests want to sit in different groups like in pairs, triplets, quadruplets, fives and sixes etc. Mahesh want to arrange chairs in such a way that there are no chair left after arrangement.

When Mahesh arranges chairs in such pattern like in 2's, 3's, 4's 5's and 6's then 1, 2, 3, 4 and 5 chairs are left respectively. But when he arranges in 11's, no chair will be left.

41. In the hall, how many chairs are available?

(a) 539 (b) 234

(c) 689 (d) 456

42. If one chair is removed, which arrangement is possible now?

(a) 2 (b) 3

(c) 4 (d) 5

43. If one chair is added to the original number of chairs, how many chairs will be left when arranged in 11's.

(a) 1 (b) 2

(c) 3 (d) 4

44. How many chairs will be left in original arrangement if same number of chairs are arranged in 7's?

(a) 1 (b) 2

(c) 3 (d) 0

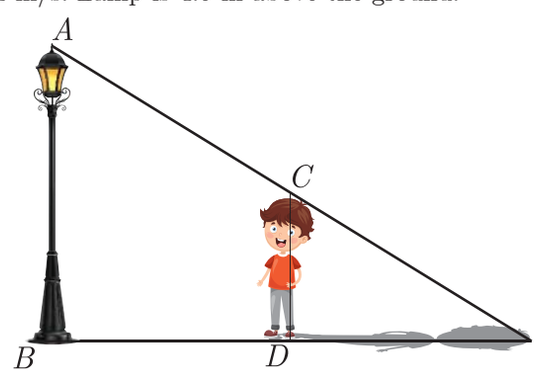
45. How many chairs will be left in original arrangement if same number of chairs will be arranged in 9's?

(a) 8 (b) 7

(c) 8 (d) 4

Case Based Questions: (46-50)

Rohan is very intelligent in maths. He always try to relate the concept of maths in daily life. One day he is walking away from the base of a lamp post at a speed of 1 m/s. Lamp is 4.5 m above the ground.



46. If after 2 second, length of shadow is 1 meter, what is the height of Rohan ?

(a) 145 cm (b) 120 cm

(c) 150 cm (d) 175 cm

47. What is the minimum time after which his shadow will become larger than his original height?

(a) 1 sec (b) 2 sec

(c) 3 sec (d) 4 sec

48. What is the distance of Rohan from pole at this point ?

(a) 2 m (b) 1 m

(c) 3 m (d) 4 m

49. What will be the length of his shadow after 4 seconds?

(a) 2 m (b) 1 m

(c) 3 m (d) 4 m

50. Which similarity criterion is used in solving the above problem

(a) SAS similarity criterion

(b) AA similarity criterion

(c) SSS similarity criterion

(d) None of these

SAMPLE PAPER - 6 Answer Key

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
1	(c)	Ch-1	8
2	(c)	Ch-3	12
3	(b)	Ch-4	13
4	(b)	Ch-4	54
5	(a)	Ch-8	14
6	(b)	Ch-4	23
7	(d)	Ch-6	10
8	(a)	Ch-1	30
9	(b)	Ch-3	27
10	(b)	Ch-5	25
11	(d)	Ch-2	21
12	(c)	Ch-1	S-14
13	(a)	Ch-6	39
14	(c)	Ch-6	120
15	(d)	Ch-7	10
16	(b)	Ch-4	32
17	(a)	Ch-4	S-126
18	(b)	Ch-6	52
19	(a)	Ch-3	37
20	(c)	Ch-8	21
21	(c)	Ch-1	35
22	(d)	Ch-5	13
23	(b)	Ch-6	75
24	(c)	Ch-3	21
25	(d)	Ch-2	40

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
26	(b)	Ch-8	53
27	(d)	Ch-8	123
28	(a)	Ch-6	69
29	(b)	Ch-5	41
30	(c)	Ch-4	79
31	(b)	Ch-5	97
32	(b)	Ch-6	110
33	(a)	Ch-1	S-20
34	(b)	Ch-4	D-67
35	(a)	Ch-5	63
36	(c)	Ch-7	52
37	(a)	Ch-7	64
38	(c)	Ch-2	S-38
39	(a)	Ch-7	74
40	(b)	Ch-3	50
41	(a)	Ch-1	71
42	(a)	Ch-1	72
43	(a)	Ch-1	73
44	(d)	Ch-1	74
45	(a)	Ch-1	75
46	(c)	Ch-4	95
47	(c)	Ch-4	96
48	(c)	Ch-4	97
49	(a)	Ch-4	98
50	(b)	Ch-4	99

*** S- = Self Test Question, * D- = Direction Based Question**