TARGET MATHEMATICS by **Dr. AGYAT GUPTA**

The Excellence Key...

(M.Sc, B.Ed., M.Phill, P.hd)

CLASS – X (PRE - BOARD) TERM -I

(CODE–041) TMC-TS-AG-TS-1-OBJ-(MCQ)

Time : 90 MINUTES **Maximum Marks : 40**

General Instructions:

1. This question paper contains three sections – A, B and C. Each part is compulsory.
2. Section - A has 20 MCQs, attempt any 16 out of 20.
3. Section - B has 20 MCQs, attempt any 16 out of 20
4. Section - C has 10 MCQs, attempt any 8 out of 10.
5. There is no negative marking.
6. All questions carry equal marks.

SECTION – A

In this section, attempt any 16 questions out of Questions 1 – 20. Each Question is of 1 mark weightage.

Q.1

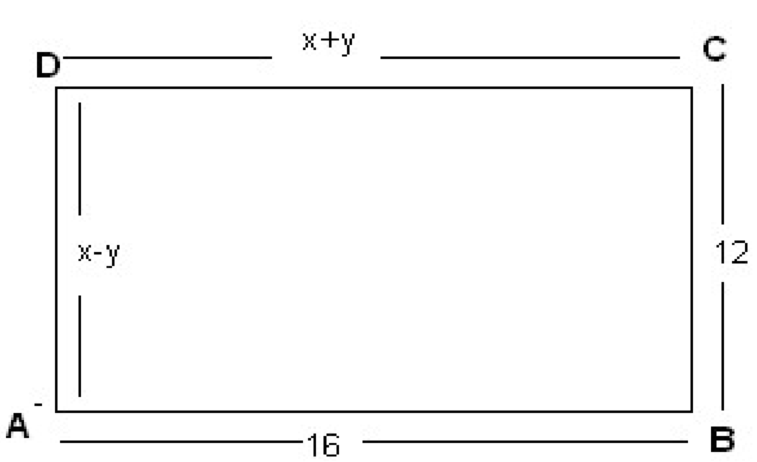
MATCHING QUESTIONS

DIRECTION : Each question contains statements given in two columns which have to be matched. Statement (A , B , C , D,E) in column I have to be matched with statement (p,q,r,s,t) in column II .

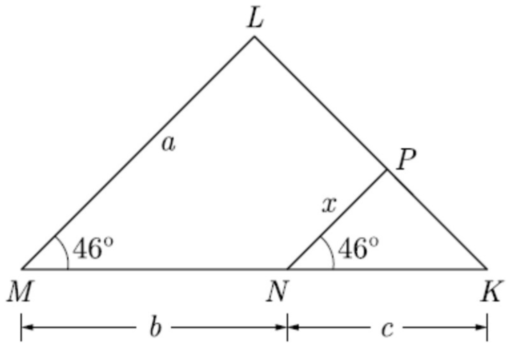
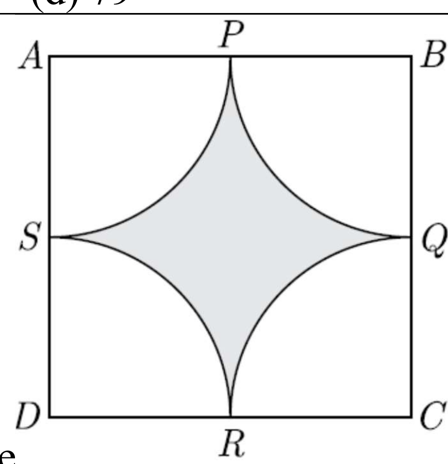
	Column-I		Column-II
(A)	$3-\sqrt{2}$ is	(p)	A Rational number between 1 and 2
(B)	$\frac{\sqrt{50}}{\sqrt{80}}$ is	(q)	An Irrational number
(C)	3 and 11 are	(r)	Co-prime number
(D)	2	(s)	Neither composite nor prime
(E)	1	(t)	The only even prime number

(a) (A) – (q) , (B) - (p) , (C) - (t) , (D) – (s) , E – (r)
(b) (A) – (q) , (B) - (p) , (C) - (r) , (D) – (t) , E – (s)
(c) (A) – (q) , (B) - (s) , (C) - (r) , (D) – (t) , E – (p)
(d) none of these

Q.2 In the given figure, ABCD is a rectangle. Find the values of x and y.



(A) $x = 18$, $y = 2$ (B) $x = 14, y = 2$ (C) $x = 2, y = 14$ (D) NONE .

Q.3	 In the given figure, x is (a) $\frac{ab}{a+b}$ (b) $\frac{ac}{b+c}$ (c) $\frac{bc}{b+c}$ (d) $\frac{ac}{a+c}$
Q.4	In $\triangle$ABC, AB=6 cm and DE$\parallel$ $\parallel$BC such that $AE=\frac{1}{4}AC$, then the length of AD is: a. 2 cm b. 1.2 cm c. 1.5 cm d. 4 cm
Q.5	A girl calculates that the probability of her winning the first prize in a lottery is 0.08. If 6000 tickets are sold, then how many tickets has she bought? (a) 40 (b) 240 (c) 480 (d) 750
Q.6	If a line divides any two sides of a triangle in the same ration, then the line parallel to the third side." This theorem is known as converse of: a. Area Theorem b. Basic Proportionality Theorem c. Pythagoras Theorem d. Laplace Theorem
Q.7	$\frac{\cos\theta - \sin\theta + 1}{\cos\theta + \sin\theta - 1} =$ (a) $\cos ec\theta + \cot\theta$ (b) $\cos ec\theta - \cot\theta$ (c) $\sec\theta + \tan\theta$ (d) none of these
Q.8	If the product of two coprime numbers is 217, then their L.C.M. is (A) can't be determined (B) 217 (C) 651 (D) 434
Q.9	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.
Q.10	If P $\left(\frac{a}{3},4\right)$ is the midpoint of the line segment joining the points Q (-6,5) and R (-2,3), then the value of a is: (A)-4(B) -12 (C) 12 (D) -6
Q.11	The rational form of $0.2\overline{54}$ is in the form of $\frac{p}{q}$ then $(p+q)$ is (a) 14 (b) 55 (c) 69 (d) 79
Q.12	Find the area of the shaded region in Figure  , where arcs drawn with centers A, B , C and D intersect in pairs at midpoint P, Q, R and S of the sides AB , BC , CD and DA respectively of a square ABCD of side 12 cm. [Use π = 3.14] (a) $144cm^2$ (b) $30.96cm^2$ (c) $113.04cm^2$ (d) none
Q.13	$\sec^4 A - \sec^2 A$ is equal to

(a) $\tan^2 A - \tan^4 A$ (b) $\tan^4 A - \tan^2 A$
(c) $\tan^4 A + \tan^2 A$ (d) NONE

Q.14 $if\ 2\cos\theta - \sin\theta = x$ & $\cos\theta - 3\sin\theta = y$. Then $2x^2 + y^2 - 2xy =$
(a) 5 (b) 3 (c) 4(d) none

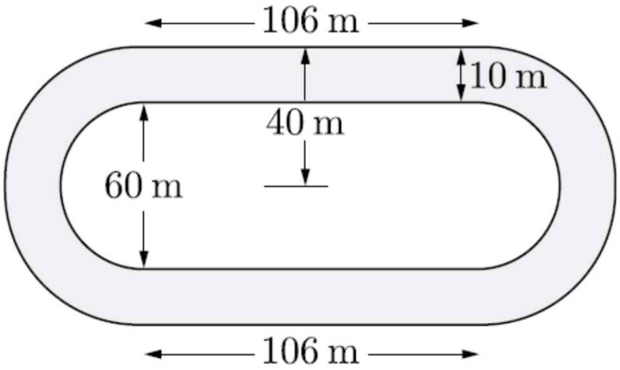
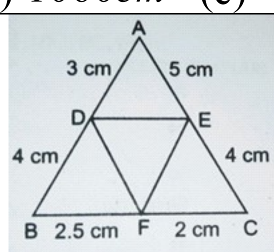
Q.15


Fig. depicts a racing track whose left and right ends are semi-circular. The distance between the two inner parallel line segments is 60 m and they are each 106 m long. If the track is 10 m wide everywhere, The area of the track
(a) $2200cm^2$ (b) $1060cm^2$ (c) $4320cm^2$ (d) none

Q.16
In Given figure 

, AD=3 cm, AE=5 cm, BD=4 cm, CE=4 cm, CF cm, BF=2.5 cm, BF=2.5 cm,
a. DE ‖ ‖BC b. DF ‖ ‖AC c. EF ‖ ‖AB d. none of the above

Q.17 PQ is drawn parallel to the base BC of a ΔABC cutting AB at P and AC at Q. If AB = 4BP and CQ = 2 cm, then AQ is equal to :
(a) 2 cm (b) 4 cm (c) 6 cm (d) 8 cm

Q.18 $(1-\sin\theta+\cos\theta)^2 =$
(a) $2(1+\sin\theta)(1-\cos\theta)$ (b) $2(1-\sin\theta)(1+\cos\theta)$
(c) $2(1-\sin\theta)(1-\cos\theta)$ **(d)** $2(1+\sin\theta)(1+\cos\theta)$

Q.19 Solve for x and y: $\frac{x}{a}=\frac{y}{b}; ax+by=a^2+b^2$
(a) $x=a, y=b$ (b) $x=-a, y=b$ © $x=a, y=-b$ (d) none

Q.20 The probability of selecting a green marble at random from a jar that contains only green, white and yellow marbles is 1/4. The probability of selecting a white marble at random from the same jar is 1/3 . If this jar contains 10 yellow marbles. The total number of marbles in the jar
(A) 6 (B) 24 (C) 10 (D) NONE

SECTION – B

In this section, attempt any 16 questions out of the Questions 21 - 40. Each Question is of 1 mark weightage.

Q.21 Find the largest number which divides 445, 572 and 699 leaving remainders 4, 5 and 6 respectively .
(A) 61(B)62 (C) 63 (D) none

Q.22 The graphical representation of the pair of equations $x+2y-4=0$ and $2x+4y-12=0$ represents:
((a)intersecting lines(b)parallel lines (c) coincident lines (d)all the above.

Target Mathematics by- Dr.Agyat Gupta
visit us: agyatgupta.com ; Resi.: D-79 Vasant Vihar ; Office : 89-Laxmi bai colony
Ph. : 4010685(O), 7000636110(O) Mobile : 9425109601(P)

Q.23 If p(x)= $x^2 + 5x + 2$, then p(3)+p(2)+p(0)is:

(A)40 (B)44 (c)8 (D)42

Q.24 Without actually performing the long division, the terminating decimal expansion of $\frac{51}{1500}$ is in the form of $\frac{17}{2^n \times 5^m}$, then $(m + n)$ is equal to

(a) 2 (b) 3 (c) 5 (d) 8

Q.25 A person starts his job with a certain monthly salary and earns a fixed increment every year. If his salary was ₹4500 after 4 years of service and Rs. 5400 after. 10 years of service, find the sum of initial salary and the annual increment .

(A) 3900 (B) 4050 (C) 150 (D) none

Q.26 Two different dice are thrown together. Find the probability that the product of the number appeared is perfect square number

(a) $\frac{8}{36}$ (b) $\frac{7}{36}$ (c) $\frac{6}{36}$ (d) $\frac{5}{36}$

Q.27 If $0 < \theta < \frac{\pi}{4}$, then the simplest form of $\sqrt{1 - 2\sin\theta\cos\theta}$

(a) $\sin\theta - \cos\theta$ (b) $\cos\theta - \sin\theta$

(c) $\cos\theta + \sin\theta$ (d) $\sin\theta\cos\theta$

Q.28 Match option of Column I with the appropriate option of Column II.

	Column-I		Column-II
(A)	The probability of getting one head is	(p)	$\frac{3}{4}$
(B)	The probability of getting at least one head is	(q)	$\frac{1}{4}$
(C)	The probability of getting two heads is	(r)	$\frac{1}{2}$

(a) (A) - r , (B) - p , (C) - q

(b) (A) - q , (B) - p , (C) - r

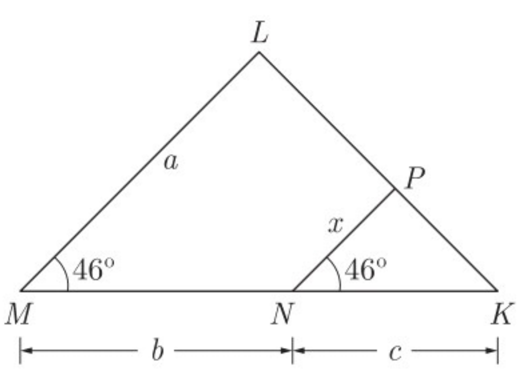
(c) (A) - r , (B) - q , (C) - p

(d) none of these

Q.29 The midpoint of the line joining the points (2p+2, 3) and (4, 2q+1) are (2p, 2q). Find the values of p and q.

(a) p = 3 & q = 2(b) p = 2 & q = 3 (c) p = - 2 & q = 3 (d) none

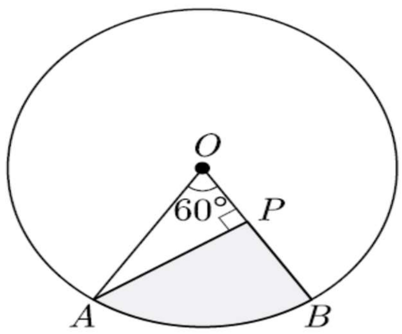
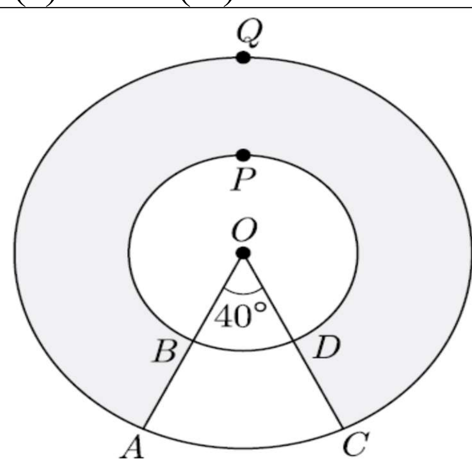
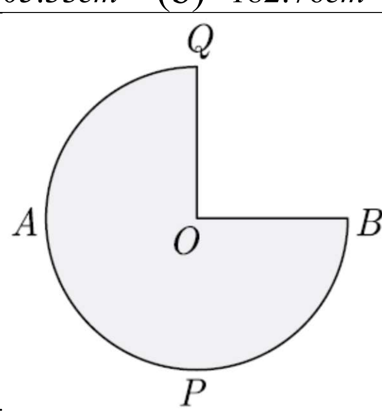
Q.30

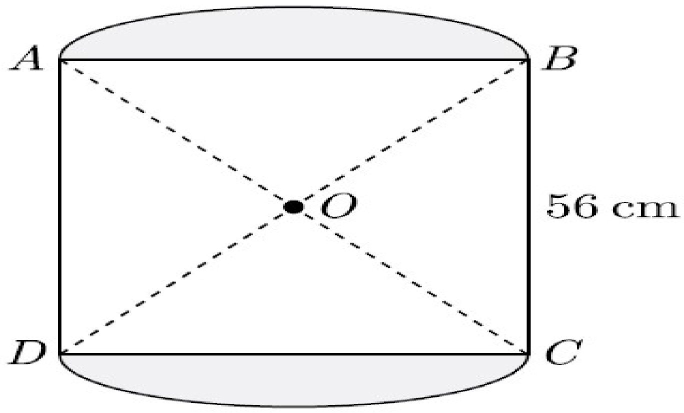
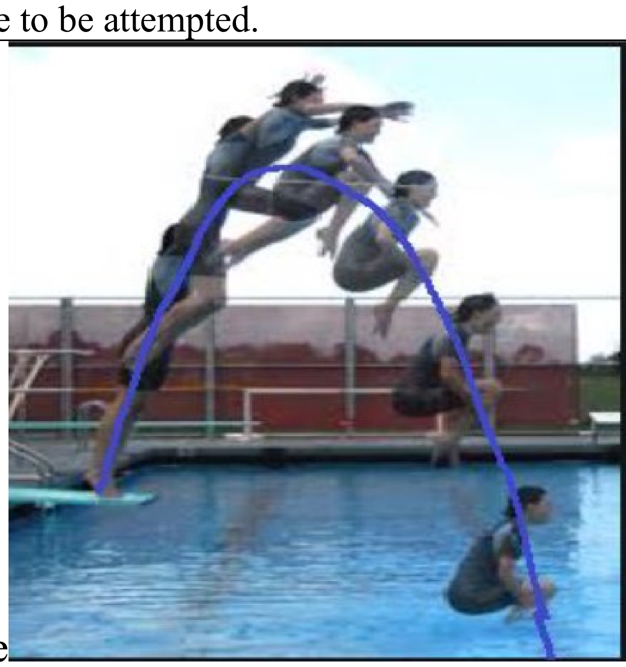


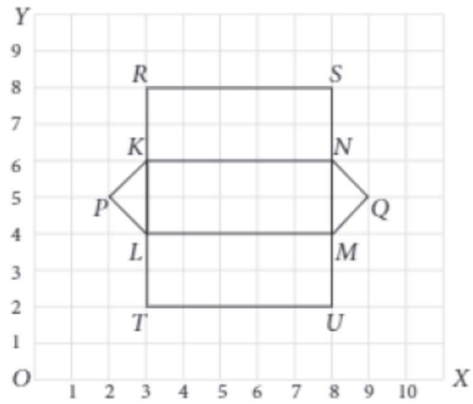
In the given figure, express x in terms of a, b and c.

(a) $x = \frac{ab}{a+b}$ (b) $x = \frac{ac}{b+c}$ (c) $x = \frac{bc}{b+c}$ (d) $x = \frac{ac}{a+c}$

Q.31 If the point P (6, 2) divides the line segment joining A(6, 5) and B(4, y) in the

	ratio 3 :1 then the value of y is (a) 4 (b) 3 (c) 2 (d) 1
Q.32	If $\tan\theta + \sin\theta = m$ and $\tan\theta - \sin\theta = n$, Then $m^2 - n^2 =$ (a) $4\sqrt{mn}$ (b) $4\sqrt{m+n}$ (c) $4\sqrt{m-n}$ (d) none
Q.33	HCF of $(2^3 \times 3^2 \times 5)$, $(2^2 \times 3^3 \times 5^2)$ and $(2^4 \times 3 \times 5^3 \times 7)$ is (a) 30 (b) 48 (c) 60 (d) 105
Q.34	In the given figure, AOB is a sector of angle 60 of a circle with center O and radius 17 cm. If AP = 15 cm, find the area of the shaded region  (a) $45.19cm^2$ (b) $182.76cm^2$ (c) $91.38cm^2$ (d) none
Q.35	A straight line is drawn joining the points (3, 4) and (5 ,6) . If the line is extended, the ordinate of the point on the line , whose abscissa is -1 is : (a) – 1 (b) 0 (c) 1 (d) 2
Q.36	In the given figure  , find the area of the shaded region, enclosed between two concentric circles of radii 7 cm and 14 cm where $\angle AOC = 40^0$ (a) $205.33cm^2$ (b) $182.76cm^2$ (c) $410.67cm^2$ (d) none
Q.37	In fig  . APB and AQP are semi-circle, and AO = OB . If the perimeter of the figure is 47 cm, find the area of the shaded region. (Use π = 22/7) (a) $57.75cm^2$ (b) $346.5cm^2$ (c) $115.5cm^2$ (d) none
Q.38	The zeroes of the quadratic polynomial $x^2 + 99x - 100$ are : (a) both positive (b) both negative © one positive and one negative (d) both equal

Q.39	 In fig. , two circular flower beds have been shown on two sides of a square lawn ABCD of side 56 m. If the center of each circular flower bed is the point of intersection O of the diagonals of the square lawn, find the sum of the areas of the lawn and flower beds (a) $2016cm^2$ (b) $1008cm^2$ (c) $4032cm^2$ (d) none
Q.40	Graphically, the pair of equations $6x - 3y + 10 = 0$; $2x - y + 9 = 0$ represents two lines which are (A) intersecting at exactly one point. (B) intersecting at exactly two points. (C) coincident. (d) parallel line
	SECTION – C Case study based questions: Section C consists of 10 questions of 1 mark each. Any 8 questions are to be attempted.
	 The figure given alongside shows the path of a diver, when she takes a jump from the diving board. Clearly it is a parabola. Annie was standing on a diving board, 48 feet above the water level. She took a dive into the pool. Her height (in feet) above the water level at any time't' in seconds is given by the polynomial h(t) such that $h(t) = -16t^2 + 8t + k$.
Q.41	What is the value of k? (a) 0 (b) - 48 (c) 48 (d) 48/-16
Q.42	At what time will she touch the water in the pool? **(a) 30 seconds (b) 2 seconds (c) 1.5 seconds (d) 0.5 seconds**
Q.43	Rita's height (in feet) above the water level is given by another polynomial p(t) with zeroes -1 and 2. Then p(t) is given by- (a) $t^2 + t - 2$. (b) $t^2 + 2t - 1$ (c) $24t^2 - 24t + 48$. (d) $-24t^2 + 24t + 48$
Q.44	A polynomial q(t) with sum of zeroes as 1 and the product as -6 is modelling Anu's height in feet above the water at any time t(in seconds). Then q(t) is given by (a) $t^2 + t + 6$ (b) $t^2 + t - 6$ (c) $-8t^2 + 8t + 48$ (d) $8t^2 - 8t + 48$
Q.45	The zeroes of the polynomial $r(t) = -12t^2 + (k-3)t + 48$ are negative of each other.

	Then k is (a) 3 (b) 0 (c) -1.5 (d) -3
	CASE STUDY **Alpine Tents:** The camping alpine tent is usually made using high quality canvas and it is water proof. These tents are mostly used in hilly areas as the snow will not settle on the tent and make it damp. It is easy to lay out and one need not use a manual to set it up. One alpine tent is shown in figure given below, which has two triangular faces and three rectangular faces. Also the image of the canvas on the graph paper is shown in the adjacent figure.   Based on the above information, answer the following questions.
Q.46	Distance of the point Q from y-axis is (a) 9 units (b) 8 units (c) 4 units (d) 5 units
Q.47	What are the coordinates of U? (a) $(2,8)$ (b) $(8,2)$ (c) $(6,9)$ (d) $(9,6)$
Q.48	The distance between the points P and Q is (a) 4 units (b) 5 units (c) 6 units (d) 7 units
Q.49	If a point $A(x, y)$ is equidistant from R and T, then (a) $y-2=0$ (b) $y-3=0$ (c) $y-5=0$ (d) $y-6=0$
Q.50	Perimeter of image of a rectangular face is (a) 5 units (b) 8 units (c) 10 units (d) 14 units
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