



B.K. KUMAR'S ACADEMY

Subject : Maths - I (Algebra)

UNIT TEST-1

Total Marks : 30

Class : X

Chapter 1 to 3

Time : 1 Hour

Q.1 : A] Choose the correct alternative **02**

i) To Solve $x + y = 3$, $3x - 2y - 4 = 0$ by determinant method find D.

- a) 5 b) 1 c) -5 d) -1

ii) 15, 10, 5, ----- in this AP sum of first 10 terms is

- a) -75 b) -125 c) 75 d) 125

: B] Solve the following question. **02**

1) Check the following sequence is AP or not if AP then find the common difference
0, -4, -8, -12.

2) Find the value of discriminant $\sqrt{2}x^2 + 4x + 2\sqrt{2} = 0$.

Q.2 : A] Complete the following activity (Any one) **02**

i) Solve by using crammers rule.

$$6x - 3y = -10$$

$$3x + 5y - 8 = 0$$

compare with $a_1x + b_1y = c_1$ & $a_2x + b_2y = c_2$

We get

$$a_1 = 6 \quad b_1 = -3 \quad c_1 = -10$$

$$a_2 = 3 \quad b_2 = 5 \quad c_2 = 8$$

$$D = \begin{vmatrix} 6 & -3 \\ 3 & 5 \end{vmatrix}$$

$$= \left[\boxed{} \times 5 \right] - \left[3 \times \boxed{} \right]$$

$$= 30 + 9$$

$$= 39$$

$$Dx = \begin{vmatrix} -10 & -3 \\ 8 & 5 \end{vmatrix}$$

$$= [-10 \times \boxed{}] - [-3 \times \boxed{}]$$

$$= -50 + 24 = -26$$

$$Dy = \begin{vmatrix} 6 & -10 \\ 3 & 8 \end{vmatrix}$$

$$= 6 \times 8 - 3 \times (-10)$$

$$= 48 + 30$$

$$= 78$$

$$\frac{Dx}{D} = \frac{-26}{39}$$

$$y = \frac{Dy}{D} = \frac{78}{39}$$

$$x = \frac{-2}{3} \quad y = 2$$

$\left(\frac{-2}{3}, 2\right)$ is the solution of the equation.

- ii) One of the roots of the equation $5m^2 + 2m + k = 0$ is $\frac{-7}{5}$ complete the following activity to find the value of k

$\frac{-7}{5}$ is a root of quadratic equation .

$$5m^2 + 2m + k = 0$$

$\therefore$ Put $m = \frac{-7}{5}$ in the equation.

$$5 \times \boxed{}^2 + 2 \times \boxed{} + k = 0$$

$$\boxed{} - \frac{14}{5} + k = 0$$

$$7 + k = 0$$

$$k = \boxed{}$$

Q.2 : B] Solve the following question. (Any two)

04

- i) Find how many three digit natural numbers are divisible 5?

ii) Solve the following simultaneous equation.

$$5x + 2y = -3, \quad x + 5y = 4.$$

iii) Find the sum of first 123 even natural numbers.

iv) Solve the following equation by formula method.

$$25x^2 + 30x + 9 = 0$$

Q.3 : A] Complete the following activity (Any one)

03

i) If the 9th term of an AP is zero then show that the 29th term is twice the 19th term

$$t_n = a + (n - 1)d$$

$$n = 9 \quad t_9 = 0$$

$$t_9 = a + (9 - 1)d$$

$$0 = a + 8d$$

$$\boxed{} \text{-----}(1)$$

$$t_{29} = a + (29 - 1)d$$

$$= a + 28d$$

$$\text{Put } a = \boxed{}$$

$$t_{29} = -8d + 28d$$

$$t_{29} = \boxed{}$$

$$t_{19} = \boxed{}$$

$$= a + 18d$$

$$= -8d + 18d$$

$$t_{19} = \boxed{}$$

$$t_{29} = \boxed{}$$

$$t_{29} = 2 \times 10d$$

$$t_{29} = 20d$$

ii) Find m if $(m - 12)x^2 + 2(m - 12)x + 2 = 0$ has real and equal roots.

$$(m - 12)x^2 + 2(m - 12)x + 2 = 0 \quad (\text{As roots are real and equal})$$

$$\text{compare with } ax^2 + bx + c = 0$$

$$a = m - 12 \quad b = \boxed{} \quad c = 2$$

$$b^2 - 4ac = 0$$

$$[2(m-12)]^2 - 4 \times (m-12) \times 2 = 0$$

$$\boxed{} - \boxed{}(m-12) = 0$$

$$4(m-12)^2 = 8(m-12)$$

$$4(m-12)(m/12) = 8(m/12)$$

$$\boxed{} = 8$$

$$m-12 = \frac{8}{4}$$

$$m-12 = \boxed{}$$

$$m = 2 + 12$$

$$m = \boxed{}$$

Q.3 : B] Solve the following question. (Any two)

06

- i) $\frac{2}{x} + \frac{2}{3y} = \frac{1}{6}, \frac{3}{x} + \frac{2}{y} = 0$.
- ii) The AP in which 4th term is -15 and 9th term is -30. Find the sum of the first 10 numbers.
- iii) Sum of the roots of a quadratic equation is double their product. Find K if equation is $x^2 - 4kx + k + 3 = 0$.

Q.4 : A] Solve the following question. (Any two)

08

- i) If m times the mth term of an AP is equal to n times nth term then show. that the (m + n)th term of the AP is zero.
- ii) Mr. Kasam runs a small business of making earthen pots. He makes certain number of pots on daily basis. Production cost of each pot is ₹ 40 more than 10 times total number of pots, he makes in one day. If production cost of all pots per day is ₹ 600. Find production cost of one pot and number of pots he makes per day.
- iii) Out of 1900 km Vishal travelled some distance by bus and some by aeroplane. Bus travels with average speed 60km/hr. and the average speed of aeroplane is 700km/hr. It takes 5 hours to complete the journey. Find the distance Vishal travelled by bus.

Q.5 : A] Solve the following question. (any one)

03

- i) Solve the following simultaneous equation graphically.
 $3x + y = 10 \quad x - y = 2$
- ii) If 460 is divided by a natural number quotient is 6 more than five times the divisor and remainder is 1. Find the quotient and divisor.

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B.KUMAR'S ACADEMY

Subject : Maths - I

UNIT TEST-2

Total Marks : 30

Class : X

Chapter 4 to 6

Time : 1 Hour

Q.1 : A] Choose the correct alternative

02

i) To find the cost of one share at the time of buying the amount of brokerage and GST is to be _____ the MV of share.

- a) added to b) subtracted by c) Multiplied with d) divided by

ii) If $n(A) = 2$ $P(A) = \frac{1}{5}$ then $n(S) = ?$

- a) 10 b) $\frac{5}{2}$ c) $\frac{2}{5}$ d) $\frac{1}{3}$

: B] Solve the following question.

02

1)	Distance covered / litre	12 – 14	14 – 16	16 – 18	18 – 20
	No. of cars	11	12	20	7

In which group median is shown.

2) If NAV of one unit is ₹ 25 then how many units will be allotted for the investment of ₹ 10,000?

Q.2 : A] Complete the following activity (Any one)

02

i) The following frequency table shows the demand for a sweet and the number of customers. Find the mode of demand of sweet.

Weight of Sweet	0 - 25	250 - 500	500 - 750	750 - 1000	1000 - 1250
No. of customers	10	60	25	20	15

Weight of sweet	No. of customers
0 – 250	10
250 – 500	60
500 – 750	25
750 – 1000	20
1000 – 1250	15

Modal class = 250 – 500 – f_1

$f_0 = 10$

$h = 250$

$f_1 = 60$

$f_2 = 25$

$L = 250$

$$\begin{aligned}\text{Mode} &= L + \left[\frac{\square - \square}{2f_1 - f_0 - f_2} \right] \times h \\ &= 250 + \left[\frac{60 - 10}{2 \times 60 - 10 - 25} \right] \times 250 = 250 + \left[\frac{50}{120 - 35} \right] \times 250 \\ &= 250 + \frac{10}{\cancel{50}} \times \frac{14.7}{\cancel{250}} = 250 + \square = \square\end{aligned}$$

- ii) Joseph kept 26 cards in a cap bearing one English alphabet on each card. One card is drawn at random. What is the probability that the card drawn is a vowel card?

$$n(S) = 26$$

Event A - Card drawn is a vowel

$$n(A) = \{ \square, e, \square, o, \square \}$$

$$n(A) = 5$$

$$P(A) = \frac{\square}{26} \quad P(A) = \frac{5}{26}$$

Q.2 : B] Solve the following questions. (Any two)

04

- i) The loan sanctioned by a bank for conservation of farm ponds are shown in the following table. Find the mean of the loans.

Loan (Thousand Rupees)	40 – 50	50 – 60	60 – 70	70 – 80	80 – 90
No. of farm ponds	13	20	24	36	7

- ii) Bashir Khan purchased 100 shares of MV ₹ 40 Brokerage paid at the rate of 0.5% and rate of GST on brokerage is 18%. Find the total amount he paid for the share purchase.
 iii) A two digit number is formed with digits 2, 3, 5, 7, 9 without repetition what is the probability that the number formed is (a) an odd number?

Q.3 : A] Complete the following activity. (Any one)

03

- i) Complete the following table.

Sr. No.	Random experiment	Sample Space	No. of Sample Points in S
1)	One coin is tossed	$S = \{H, T\}$	$n(s) = \square$
2)	Two coins are tossed	$S = \left\{ \square, HT \right\}$ $\left\{ TH, TT \right\}$	$n(s) = \square$
3)	Three coins are tossed	$S = \left\{ HHH, HHT, HTH, THH \right\}$ $\left\{ THT, TTH, TTT, HTT \right\}$	$n(s) = \square$
4)	A die is thrown	$S = \{ \square \}$	$n(s) = \square$

- ii) Roshan spends 80% of the money that he receives every month and saves Rs. 2500. How much money does he get monthly?

Let the total money be x

Then, amount spend = $\frac{80x}{100}$ amount saved = ₹ 2500

$$\text{Now, } \frac{\square}{100} + \square = x$$

$$x - \frac{\square}{100} = \square$$

$$\frac{\square}{100} = \square$$

$$x = \frac{2500 \times 100}{20}$$

$$x = 12500.$$

Q.3 : B] Solve the following question. (Any two)

06

- A hand bag contained fifty ten rupees note, thirty five fifty rupees note and fifteen hundred rupees note one note is drawn from a hand bag. What is the probability of getting ten rupees notes?
- The taxable value of a wall clock is ₹ 1092 rate pf GST is 18% find the price of wall clock for the customer.
- The following table shows the daily supply of electricity to different places in a town. Show the information by a pie diagram.

Places	Factories	Houses	Roads	Shops	Offices	Others
Supply of electricity	24	14	7	5	6	4

Q.4 : A] Solve the following question. (Any two)

08

- Smt. Aruna Thakkar purchased 100 Shares of FV 100 When the MV is ₹ 1200 She paid brokerage at the rate of 0.3% and 18% GST on brokerage. Find the following.
 - Net amount paid for 100 shares
 - Brokerage paid on sum invested
 - GST paid on brokerage
 - Total amount paid for 100 shares.
- The time required for students to do a science experiment and the number of students is shown in the following grouped frequency distribution table show the information by a histogram and also by a frequency polygon.

Time required for experiment (min)	No. of Students
20 - 22	8
22 - 24	16
24 - 26	22
26 - 28	18
28 - 30	14
30 - 32	12

iii) An electric company producing electric bulb has packed bulbs in each box. Some bulbs from 16 such boxes are tested defective. The information of number of defective bulbs in 16 boxes is given below .

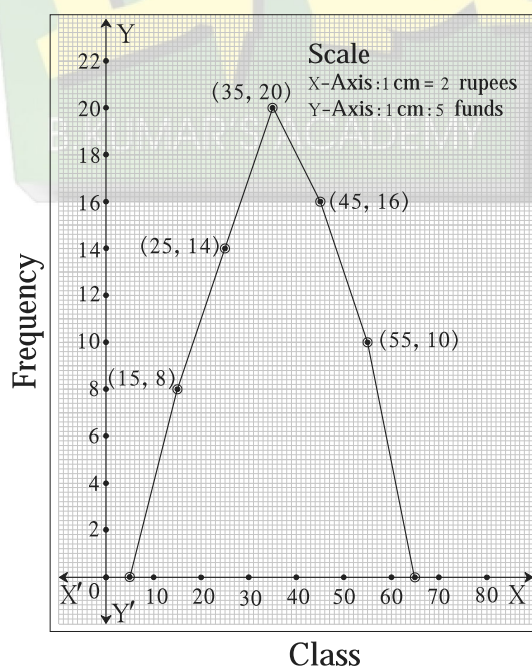
No. of defective bulbs	No. of boxes
0 - 2	3
2 - 4	4
4 - 6	5
6 - 8	3
8 - 10	1

- 1) How many boxes contains maximum number of defective bulbs?
- 2) The box is selected at random. What is the probability that it will contain average 2 to 4 defective bulbs.
- 3) Find the probability of getting highest number of defective bulbs.

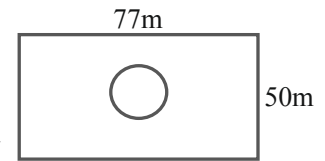
Q.5 : Solve the following question. (Any one)

03

- 1) Answer the following questions based on the frequency polygon given in the adjacent figure.



- i) State the class whose class mark is 55?
- ii) Write frequency of the class 50-60?
- iii) Write the class whose frequencies are zero.
- 2) Length and breadth of rectangular garden are 77m and 50 m. There is a circular lake in the garden having diameter 14 m. Due to wind a towel from a terrace on a nearby building fell into the garden. Then find the probability of the event that it fell in the lake?



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B.KUMAR'S ACADEMY

Subject : Maths - II

UNIT TEST-3

Total Marks : 30

Class : X

Chapter 1 to 3

Time : 1 Hour

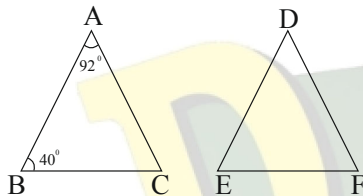
Q.1 : A] Choose the correct alternative

02

i) If chords AB & CD of a circle intersect inside the circle at point E. If AE = 4, EB = 10, CE = 8 then Find ED.

- a) 7 b) 5 c) 8 d) 9

ii) If $\triangle ABC \sim \triangle DEF$ such that $\angle A = 92^\circ$ and $\angle B = 40^\circ$ then $\angle F = ?$



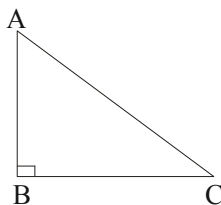
- a) 52° b) 92° c) 40° d) 48°

: B] Solve the following question.

02

1) If $\triangle ABC \sim \triangle PQR$ $\frac{A(\triangle ABC)}{A(\triangle PQR)} = \frac{16}{36}$ then find AB = PQ.

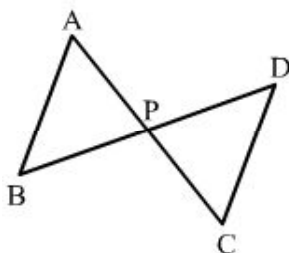
2) In $\triangle ABC$, $\angle ABC = 90^\circ$ $\angle BAC = \angle BCA = 45^\circ$ If $AC = 9\sqrt{2}$ then find the value of AB.



Q.2 : A] Complete the following activity (any one)

02

1) In the above figure seg AC and seg BD intersect each other in point P. If $\frac{AP}{CP} = \frac{BP}{DP}$ then complete the following activity to prove $\triangle ABP \sim \triangle CDP$.



Activity In $\triangle ABP$ and $\triangle CDP$

$$\frac{AP}{CP} = \frac{BP}{DP} = \boxed{}$$

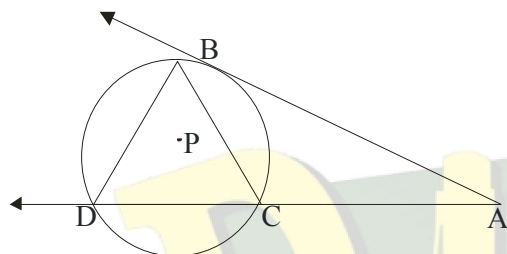
$\therefore \angle APB \cong \boxed{}$ Vertically opposite angles.

$\boxed{} \sim \triangle CDP$ _____ $\boxed{}$ test of similarity.

- 2) Given : In the figure point A is in the exterior of the circle with centre P. AB is the tangent segment & secant through A intersects the circle in C & D.

To Prove - $AB^2 = AC \times AD$

Construction - Draw segments BC & BD write the proof by completing the activity.



Proof - In $\triangle ABC$ & $\triangle ADB$

$\angle BAC \cong \angle DAB$ ----- [because the $\boxed{}$]

$\boxed{} \cong \boxed{}$ ----- Theorem of tangent secant

$\therefore \triangle ABC \sim \triangle ADB$ ----- by $\boxed{}$ test

$$\therefore \frac{AB}{AD} = \frac{AC}{AB} \text{ CSST}$$

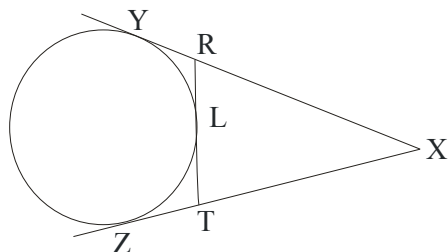
$$\therefore AB^2 = AC \times AD$$

Proved

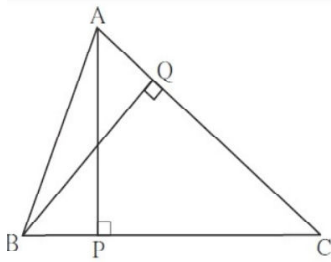
: **B] Solve the following question (any two)**

04

- 1) In the following figure $xy = 10\text{cm}$ and $LT = 4\text{cm}$. Find the length of XT.



- 2) In $\triangle ABC$ $AP \perp BC$, $BQ \perp AC$ if $AP = 7$ $BQ = 8$ and $BC = 12$ then find AC.

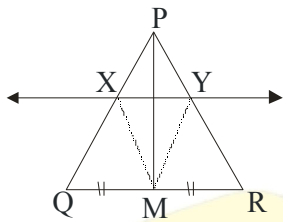


3) Find the diagonal of a rectangle whose length is 35cm and breadth is 12cm.

Q.3 : A] Solve the following question.

03

- 1) In $\triangle PQR$ Seg PM is a median. Angle bisectors of $\angle PMQ$ and $\angle PMR$ intersect side PQ and side PR in Point X & Y respectively prove that $XY \parallel QR$. Complete the proof by filling in the boxes solution.



In $\triangle PMQ$

Ray MX is the bisector of $\angle PMQ$

$$\therefore \frac{MP}{MQ} = \frac{\boxed{}}{\boxed{}} \text{----- (1) Theorem of angle bisector}$$

Similarity in $\triangle PMR$ Ray MY is the bisector of $\angle PMR$

$$\therefore \frac{MP}{MR} = \frac{\boxed{}}{\boxed{}} \text{----- (2) Theorem of angle bisector}$$

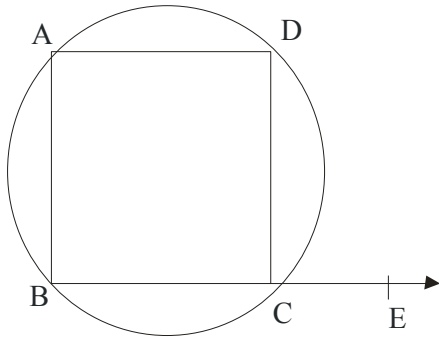
$$\text{But } \frac{MP}{MQ} = \frac{MP}{MR} \text{----- (3) As M is the midpoint of QR}$$

Hence $MQ=MR$

$$\therefore \frac{PX}{\boxed{}} = \frac{\boxed{}}{YR} \text{-----from, (1) (2) \& (3)}$$

$\therefore XY \parallel QR$ ----- converse of basic proportionality theorem.

- 2) An exterior angle of XY cyclic quadrilateral is congruent to the angle opposite to its adjacent interior angle to prove the theorem complete the activity.



Given $\square ABCD$ is cyclic

is the exterior angle of $\square ABCD$

To prove - $\angle DCE \cong \angle BAD$

Proof = + $\angle BCD =$ ----- (Angles in linear pair) (1)

$\square ABCD$ is cyclic

+ $\angle BAD =$ Theorem of cyclic quadrilateral (2)

By (1) & (2)

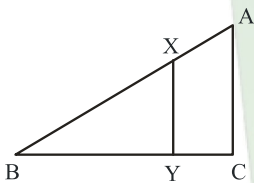
$\angle DCE + \angle BCD =$ + $\angle BAD$

$\angle DCE \cong \angle BAD$

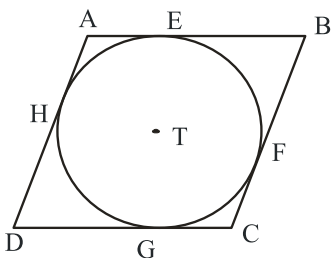
Q. 3 : B] Solve the following question (any two)

06

- 1) In $\triangle ABC$ seg $XY \parallel$ side AC is $2AX = 3BX$ and $XY = 9$, then find the value of AC .



- 2) In fig $\square ABCD$ is a parallelogram. It circumscribes the circle with centre T. Point E, F, G, H are touching points. If $AE = 4.5$, $EB = 5.5$. Find AD .



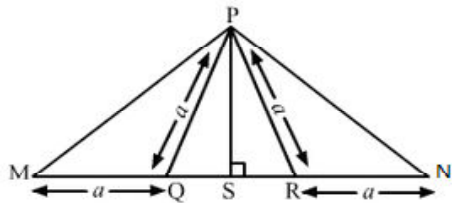
- 3) Pranali and Prasad started walking to the East and to the North respectively from the

same point and at the same speed. After 2 hours distance between them was $15\sqrt{2}$ km. Find their speed per hour.

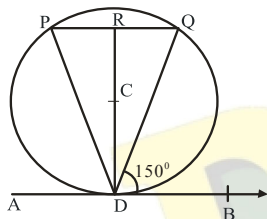
Q. 4 : Solve the following question (any two)

08

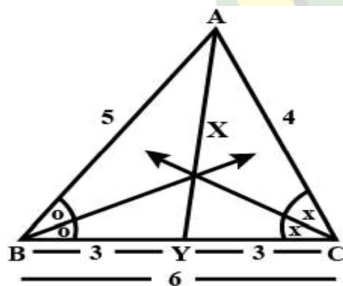
- 1) From the information given in the figure prove that $PM = PN = \sqrt{3} \times a$



- 2) A tangent ADB is drawn to a circle at D whose centre is C. Also PQ is a chord parallel to AB and $\angle QPB = 50^\circ$. Find the value of $\angle PDQ$.



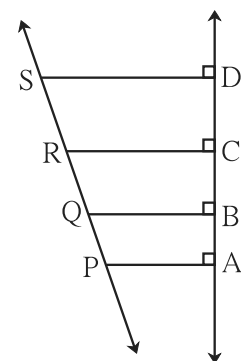
- 3) In fig bisectors of $\angle B$ & $\angle C$ of $\triangle ABC$ intersect each other in point X. Line AX intersects side BC in point Y. $AB = 5$, $AC = 4$, $BC = 6$ then Find $\frac{AX}{XY}$.



Q. 5 : Solve the following question (any one)

03

- 1) Circles with centres A, B and C touch each other externally. If $AB = 3\text{cm}$, $BC = 3\text{cm}$, $CA = 4\text{cm}$, then find the radii of each circle.
- 2) In the figure seg PA, Seg QB, Seg RC and Seg SD are perpendicular to line AD.
- $AB = 60$, $BC = 70$, $CD = 80$, $PS = 280$ then Find PQ, QR and RS.



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B.KUMAR'S ACADEMY

Subject : Maths - II

UNIT TEST-4

Total Marks : 30

Class : X

Chapter 4 to 7

Time : 1 Hour

Q.1 : A] Choose the correct alternative

02

- i) The radius of the base of the cone is 7cm and height is 24cm then find its slant height.
a) 23cm b) 26cm c) 31cm d) 25cm

- ii) If $\sec \theta = \frac{1}{2}$ what will be the value of $\cos \theta$.

- a) 2 b) 1 c) 3 d) 5

: B] Solve the following question.

02

- 1) Find the distance between the points O(0, 0) and P(3, 4).
2) What will be the value of $\cos 90^\circ + \sin 90^\circ$?

Q.2 : A] Complete the following activity (Any one)

02

- i) From the top of building AB a point C is observed on the ground whose angle of depression is 60° and which is at a distance of 40 m from the base of the building complete the following activity.

From figure

BC = 40 m

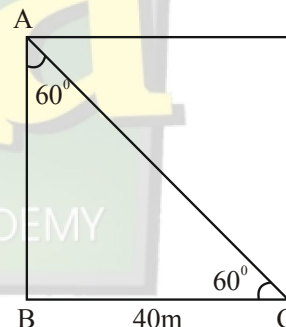
In $\triangle ACB$

$$\tan 60^\circ = \frac{\boxed{}}{BC}$$

$$\boxed{} = \frac{\boxed{}}{\boxed{}}$$

$$AB = 40\sqrt{3}$$

Hence the height of the building AB is $\boxed{}$ m



- 2) If the length of the diagonal of a cube is $5\sqrt{3}$ cm. Find the total surface area.

Length of the diagonal of the cube = $5\sqrt{3}$

$$\text{So side} \times \sqrt{3} = 5\sqrt{3}$$

$$\text{Side} = 5$$

$$\text{Total surface area of cube} = \boxed{}$$

$$= \square \times \square \times \square$$

$$= 150 \text{ cm}^2$$

Hence the total surface area is 150 cm^2 .

Q.2 : B] Solve the following questions. (Any two)

04

- Draw a circle of suitable radius. Take point T on it. Draw a tangent through point T.
- If the length of the circular arc is 10cm and the radius 3.5 cm. Find the area of the sector of the circle.
- Show that points A(-1, -1) B(0, 1) C(1, 3) are collinear.

Q.3 : A] Solve the following questions. (Any one)

03

- If $\tan \theta = \frac{7}{24}$ then to find value of $\cos \theta$ complete the activity given below.

$$\sec^2 \theta = 1 + \square \text{ Fundamental trigonometric identity}$$

$$\sec^2 \theta = 1 + \square^2$$

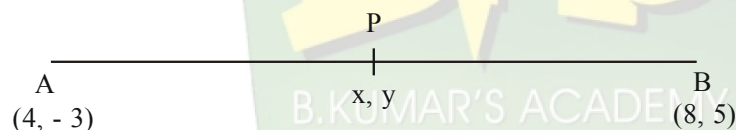
$$\sec^2 \theta = 1 + \frac{\square}{576}$$

$$\sec^2 \theta = \frac{\square}{576}$$

$$\sec \theta = \square$$

$$\cos \theta = \square \left(\cos = \frac{1}{\sec \theta} \right)$$

- Complete the following activity to find the coordinates of point P which divides seg AB in the 3 : 1 where A(4, -3) and B(8, 5).



By section formula

$$x = \frac{mx_2 + nx_1}{\square}$$

$$x = \frac{3 \times 8 + 1 \times 4}{3 + 1}$$

$$= \frac{\square + 4}{4}$$

$$x = \square$$

$$y = \frac{\boxed{}}{m+n}$$

$$y = \frac{3 \times 5 + 1 \times (-3)}{3+1}$$

$$= \frac{\boxed{} - 3}{4}$$

$$y = \boxed{}$$

Q.3 : B] Solve the following questions. (Any two)

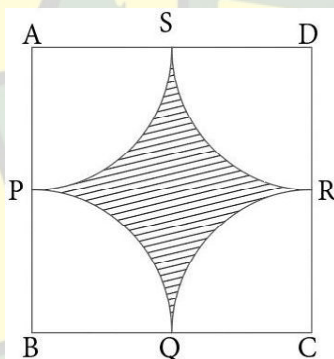
06

- i) Some plastic balls of radius 1 cm were melted and cast into a tube. The thickness length and outer radius of the tube were 2cm, 90cm and 30cm respectively How many balls were melted to make the tube?
- ii) Draw $\Delta RSP \sim \Delta TQP$ in ΔTQP , $TP = 5\text{cm}$, $\angle P = 50^\circ$, $PQ = 4.5$ and $\frac{RS}{TQ} = \frac{2}{3}$.
- iii) Find the coordinates of the points of trisection of the line segment AB with A(2, 7) and B(-4, -8).

Q.4 : A] Solve the following questions. (Any two)

08

- i) In the given figure $\square ABCD$ is a square of side 50m. points P, Q, R, S are midpoints of side AB, side BC side CD side AD respectively. Find area of shaded region.



- ii) Show that.

$$\frac{\tan A}{(1 + \tan^2 A)^2} + \frac{\cot A}{(1 + \cot^2 A)^2} = \sin A \times \cos A.$$

- iii) Find the coordinates of centroid of a triangle if points D(-7, 6) E(8, 5) and F(2, -2) are the mid points of the sides of that triangle.

Q.5 : Solve the following questions. (Any one)

03

- i) Eliminate θ if $x = r \cos \theta$ and $y = r \sin \theta$.
- ii) Construct two concentric circles with centre O with radii 3cm and 5cm construct a tangent to a smaller circle from any point A on the large circle.

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