Class : IX
Subject: Maths (unsolved sample paper)
Summative Assessment -II

Time: 3 hours **MM: 90 Marks**

General Instructions:

(i) All questions are compulsory.

(ii) The question paper consists of 34 questions divided into 4 sections. A, B, C and D. Section - A comprises of 8 questions of 1 mark each. Section - B comprises of 6 questions of 2 marks each. Section - C comprises of 10 questions of 3 marks each and Section - D comprises of 10 questions of 4 marks each.

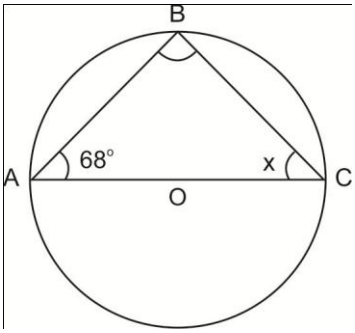
(iii) Question numbers 1 to 8 in section-A are multiple choice questions where you are to select one correct option out of the given four.

(iv) There is no overall choice. However, internal choice has been provided in 1 question of two marks. 3 questions of three marks each and 2 questions of four marks each. You have to attempt only of the alternatives in all such questions.

(v) Use of calculator is not permitted.

Section - A

Q.1 The value of x in the given figure is



(a) 22^0 (b) 33^0 (c) 44^0 (d) 68^0

Q.2 Three angle of a quadrilateral is 60^0, 110^0 and 86^0. The fourth angle of quadrilateral is

(a) 104^0 (b)124^0 (c)94^0 (d) 84^0

Q.3 Class mark of class interval 90-110 is

(a) 90 (b) 110 (c) 100 (d) None

Q.4 A die is thrown once. The probability of getting an even no. is

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

Q.5 Which one is solution of eq^n $x - 3y = 2$

(a) (4,1) (b) (6,2) (c) (5,1) (d) (0,2)

Q.6 If the lateral surface area of cube is 1600cm^2 then its edge is

(a) 15cm (b) 18cm (c) 25cm (d) 20cm

Q.7 If the slant height of a cone is 10 cm and its radius is 6cm, then height of cone is

(a) 9cm (b) 13cm (c) 16cm (d) 8cm

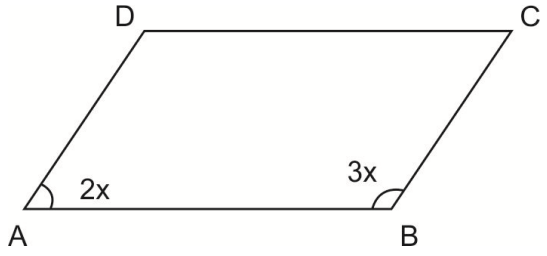
Q.8 If (2,-3) is solution of eq^n $3x - ky = 2$ then the value of K is

(a) -2 (b) $-\frac{2}{3}$ (c) -4 (d) $-\frac{4}{3}$

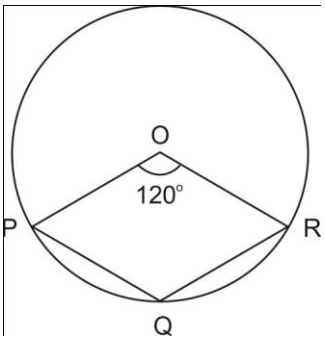
Section - B

Q.9 If the total surface area of a hemisphere is $27\pi\ cm^2$, then its diameter is equal to ……..

Q.10 In the given parallelogram the value of x will be



Q.11 In the given figure, if $\angle POR$ is 120^0, then the value of $\angle PQR$ is …….



Q.12 The arithmetic mean of first five odd natural no. is ……

Q.13 The probability of an event lies between……..., ……

Q.14 Write the relation between mean, median and mode……..

Section - C

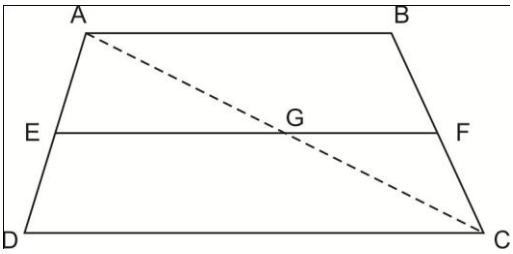
Q.15 Draw the graph of $2x + y = 6$ and find the point on x-axis where graph of this eq^n cut the x-axis.

Q.16 Find three solution of the linear equation $2x + 3y = 5$, and check whether (-3, 4) is a solution of the given equation.

Q.17 In a parallelogram, show that the angle bisectors of two adjacent angles intersect at right angle.

OR

In the given figure, E is the mid-point of side AD of a trapezium ABCD with AB||CD. A line through E parallel to AB meets BC in F show that F is the mid-point of BC.



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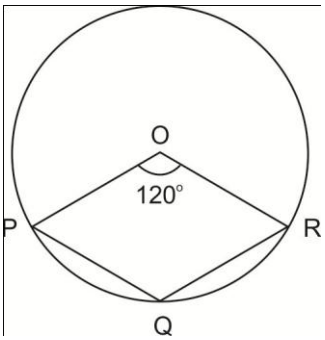

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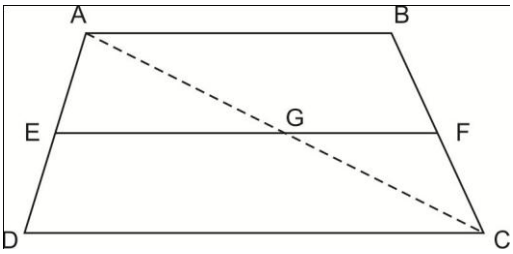


9.00	60
11.00	80
13.00	70
15.00	65
17.00	75
19.00	60
21.00	50

Draw a velocity time graph for the above data.

Q.24 A coin is tossed 15 times and observed that 11 times head comes up. Find the probability that a tail comes up.

Section - D

Q.25 The taxi fare in a city is as follow. For the first kilometer, the fare is Rs. 8 for the subsequent distance it is Rs. 5 per km. Taking the distance covered as x km. and total fare as Rs. y, write a linear equations for this information and draw its graph.

Q.26 If the points A (3,5) and B(1,4) lies on the line $ax + by = 7$ find the values of a and b.

OR

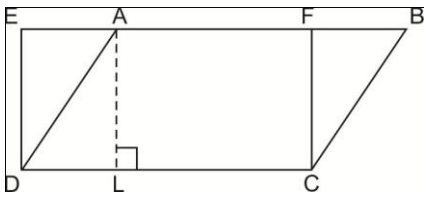
Draw the graph of the equation $-y = 1\ and\ 2x + y = 8$. Shade the area bounded by these two lines and y-axis. Also determine this area.

Q.27 ABCD is a parallelogram. AB produced to E so that BE=AB. Prove that ED bisects BC.

Q.28 In given figure, ABCD is a parallelogram and EFCD is a rectangle. Also $AL \perp DC$ Prove that

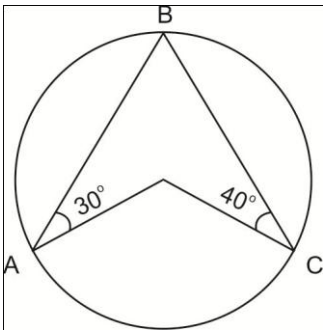
(i) $ar(ABCD) = ar(EFCD)$

(ii) $ar(ABCD) = DCXAL$



Q.29 Prove that the area of an equilateral triangle is equal to $\frac{\sqrt{3}}{4}\ a^2$ where a is the side of the triangle.

Q.30 In given figure, calculate the angle $\angle AOC$



Q.31 Construct a ΔABC in which BC=5.6cm, AC-AB=1.6cm and $\angle B = 45^0$

Q.32 The mean of the following distribution is 50.

x	frequency
10	17
30	5a+3
50	32
70	7a-11
90	19

Find the value of a and frequency of 30 and 70.

Q.33 How many planks each of which is 2m long, 2.5 cm broad and 4cm thick can be cut off from a wooden block 6m long, 15cm broad and 40cm thick?

Q.34 An iron pipe 20cm long has exterior diameter equal to 25cm. If the thickness of the pipe is 1 cm. Find the whole surface area of the pipe excluding ends of the pipe.

OR

The diameter of a sphere is decreased by 25% by what percent its curved surface area decreases.

Sample Paper SA -II

Marking Scheme

Section - A

Q.1 (a)

Q.2 (a)

Q.3 (c)

Q.4 (a)

Q.5 (c)

Q.6 (d)

Q.7 (d)

Q.8 (d)

Section - B

Q.9 6cm

Q.10 36cm

Q.11 120^0

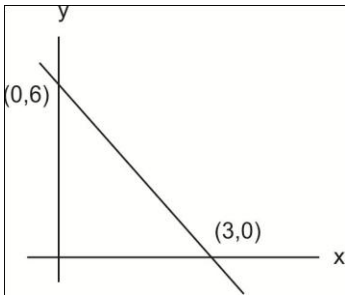
Q.12 5

Q.13 0 and 1, both no. are including.

Q.14 mode = 3 median - 2 mean

Section - C

Q.15



Point on x-axis is (3,0)

Q.16 $2x + 3y = 5$ ---------(1)

Put $x = 1, 2, 3, 0, -1, 2$ etc and get value of y.

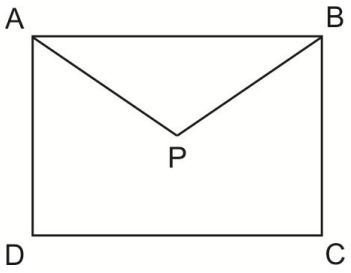
then $(x, y)\ is\ sol^n\ of\ this\ eq^n$

Put $x = -3$ and y = 4 in eq^n (1) we get

$$-\ 6 + 12 \neq 4$$

So (-3, 4) is not a solution.

Q.17



To prove $\angle APB = 90^0$

$\angle A + \angle B = 180^0$

$\frac{1}{2}\angle A + \frac{1}{2}\angle B = 90^0$

But $\frac{1}{2}\angle A + \frac{1}{2}\angle B + \angle APB = 180^0$

$90^0 + \angle APB = 180^0$

$\Longrightarrow\ \angle APB = 90^0$

OR

Construction : Join AC to intersect EF at G.

Proof EF||DE

EG || DE

since E is mid point of AD.

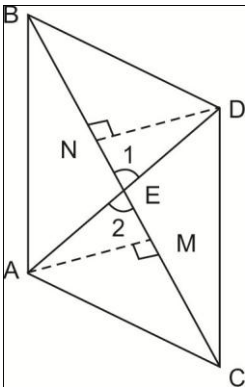
∴ G is mid point of AC (By converse of mid point theorem)

In $\Delta ABC\ FG||AB$.

G is mid point of AC

∴ F is mid point of BC.

Q.18



Construction : Join AD. Which intersect BC at E draw $DN \perp BC \quad AM \perp BC$

Proof :

AM=DN (Δ $on\ same$ base and equal in area so altitude is same)

Now in $\Delta AEM\ and\ DEN$

$\angle 1 = \angle 2$

$\angle AME = \angle DNE = 90^0$

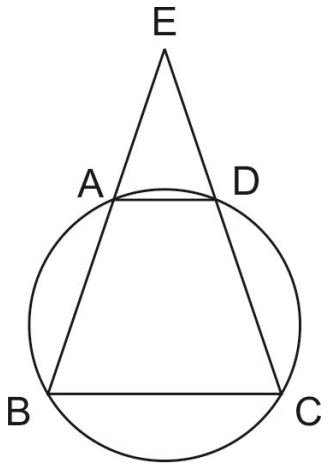
AM = DN

Δ AEM $\cong$ Δ DEN

So AE = DE

$\Rightarrow$ BC bisect AD

Q.19



Given ABCD is a cyclic quadrilateral BA and CD produced meet at E.

To prove ΔEBC and ΔEDA are equiangular.

Proof : ABCD is a cyclic quad.

$\therefore \quad \angle BAD + \angle BCD = 180^0$

But $\angle BAD + \angle EAD = 180^0$ (linear pair)

$\Longrightarrow \quad \angle BCD = \angle EAD$

Similarly $\angle ABC = \angle EDA$

and $\angle BEC = \angle AED$

Hence Δs EBC and EDA are equiangular

OR

$\angle BCD + \angle BAD = 180^0$ $(as\ ABCD\ is\ a\ cyclic\ quadrilateral)$

$\angle BCD + 70^0 = 180^0$

$\angle BCD = 110^0$ ------(1)

Also $\angle CBD + \angle BCD + \angle BDC = 180^0$

$30^0 + 110^0 + \angle BDG = 180^0$

$\angle BDC = 40^0$ Ans.

Since $\angle ADB$ is angle in semi-circle

$\angle ADB = 90^0$

In ΔABD

$\angle ABD + \angle ADB + BAD = 180^0$

$\angle ABD + 90^0 + 70^0 = 180^0$

$\angle ABD = 20^0$ Ans

Q.20 Steps of construction

(i) Draw a ray BX and cut off a line segment BC=4.5cm from it

(ii) Construct $\angle XBY = 45^0$

(iii) Cut off a line segment BD=2.5cm from BY

(iv) Join CD.

(v) Draw ⊥ bisector of CD cutting BY at a point A.

(vi) Join AC

So ΔABC is the required triangle.

Q.21 $l^2 = r^2 + h^2$

$l = 26m$

Curved surface area = πrl

Cost = 70 X πrl

= Rs. 137280

Q.22 Let r is radius then height of cone = sphere = cylinder = $2r$

So S_1 = curved surface of sphere = $4\pi r^2$

S_2 = curved surface of cylinder = $4\pi r^2$

S_3 = curved surface cone = $\sqrt{5}\,\pi r^2$

as $l = \sqrt{r^2 + h^2} = \sqrt{r^2 + 4r^2} = \sqrt{5}\,r$ ratio : 4 : 4 : $\sqrt{5}$

OR

volume S^3 = $5832m^3$

S = 18m

Painted area $6s^2$

= $1944m^2$

Cost = 1944 X 3.5

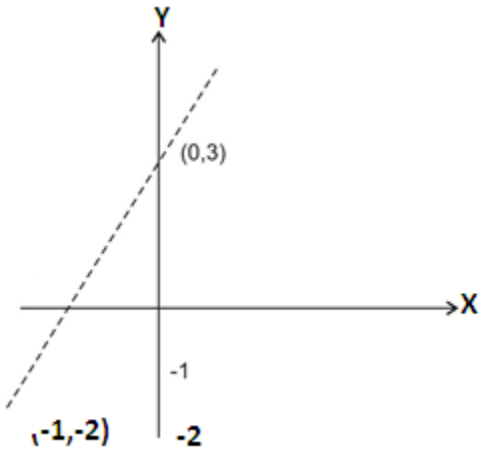
= Rs. 6804

Q.23 Check your graph with the help of your teacher/classmates

Q.24 Ans. $\frac{4}{15}$

Q.25 $y = 8 + 5 \times (x - 1)$

$\Rightarrow y = 5x + 3$

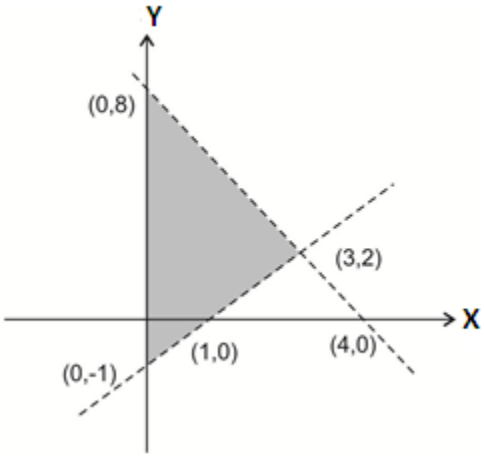


Q.26 $3a + 5b = 7$

$a + 4b = 7$

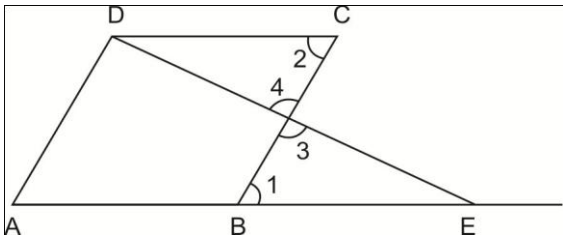
$a = -1,\ b = 2$

OR



Area = $\frac{1}{2} \times 9 \times 3 = 13.5\ sq\ units.$

Q.27



$AB||CD\ and\ BC$ transversal

So $\angle 1 = \angle 2$

$\angle 3 = \angle 4$

AB = CD = BE

So $\Delta BOE \cong \Delta COD$

$\Longrightarrow$ $BO = CO$, O is mid of BC

$\Rightarrow$ ED bisect BC

Q.28 Since parallelogram and rectangle are on same base DC and between same height AL

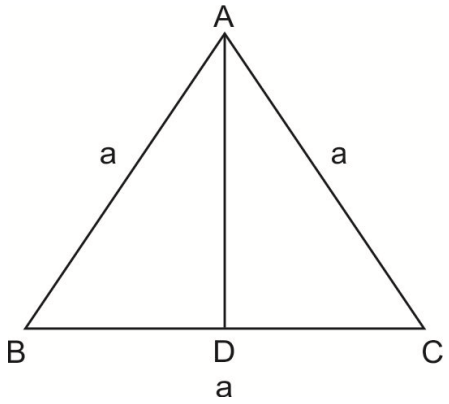
ar (ABCD) = ar(DEFE)

So ar (ABCD) = CD X FC

= CD X AL (AL = FC as ALCF is rectangle)

= DC X AL

Q.29



$\Delta ABD \cong \Delta ACD$

BD = DC = $\frac{a}{2}$

In $\Delta\, ADB$

$$AD^2 = a^2 = \frac{a^2}{4}$$

$$AD = \frac{\sqrt{3}}{4}\, a$$

$$ar\ \Delta ABC = \frac{1}{2} BC \times AD = \frac{\sqrt{3}}{4} a^2$$

Q.30 Join OB

the find $\angle ABO = 30^0$

and $\angle CBO = 40^0$

So $\angle ABC = 70^0$

So $\angle AOC = 140^0$

Q.31 Steps of const.

(i) Draw BC=5.6cm

(ii) At B make $\angle CBX = 45^0$

(iii) Produce XB to X^1 to form line XBX^1

(iv) From ray BX^1 cut off line segment BD = 1.6cm

(v) Join CD

(vi) Draw ⊥ bisector of CD which cut BX at A.

(vii) Join AC to obtain required ΔBAC

Q.32 $\Sigma fi = 12a + 60,\ \Sigma fixi = 640a + 2800$

$$\bar{x} = \frac{\Sigma fixi}{\Sigma fi}$$

$$50 = \frac{640a + 2800}{12a + 60}$$

a = 5 Ans.

Q.33 number of planks = $\frac{volume\ of\ wooden\ block}{volume\ of\ each\ plank} = \frac{600 \times 15 \times 40}{200 \times 2.5 \times 4} = 180$

Q.34 R = 12.5 (External radius)

r = internal radius = (external radius - 1cm) = 11.5cm

h = 20cm

Total surface area = External surface area + Internal surface area = $3168cm^2$

OR