International Indian School ---Riyadh

Work Sheet -- S A 2

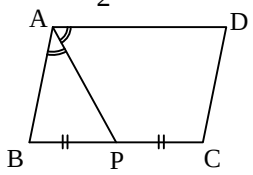
Sub : Mathematics Class: IX

1) Perimeter of rectangle is 42 cm.Express this information in the form of a linear equation in 2 variables.

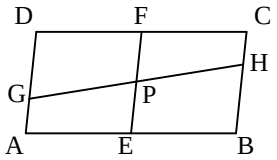
2) Find the value of 'a' so that 5x+2ay = 3a has a solution (-4,1)

3) Draw the graph of 2 (x+1) = 3 (y+1) . From the graph find the value of y when x = $-\frac{3}{2}$

4) P is the mid point of the side BC of ||ABCD such that ∠ BAP = ∠ DAP. Prove that AD = 2AB

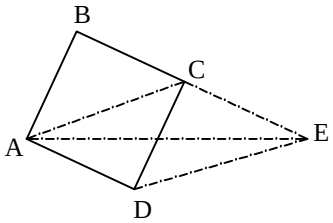


5) In trapezium ABCD,AB || DC.E is the midpoint of AD and EF ||AB where F lies on BC. Prove that AB + CD = 2 EF



6) In the figure ABCD is a parallelogram in which E&F are the midpoints of AB & CD.If GH is a line segment that cuts AD,EF and BC at G,P & H respectively, Prove that GP = PH.

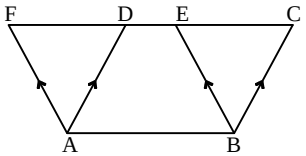
7) In a || PQRS , SM ⊥ PQ and QT ⊥ SP. If ar (||PQRS) = 48 cm^2, PQ = 8 cm and PS = 3 cm , find SM and QT.



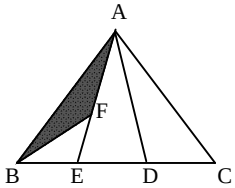
8) In quadrilateral ABCD , a line through D parallel to AC meets BC produced at E. Prove that ar (△ ABE) = ar.(quad.ABCD)

9) Given ar (||ABCD) = 90 cm^2 . Find ,

i) ar (||ABEF) ii) ar (△ ABD) iii) ar (△ BEF)

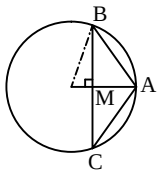


10) In the figure D , E & F are respectively the midpoints of BC , BD and AE of △ ABC. Prove that ar. (△ABF) = $\frac{1}{8}$ar. (△ABC)

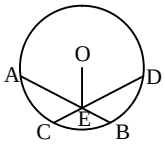


11) Given three non collinear points A , B & C. Prove that there is one and only one circle passes through A , B & C.

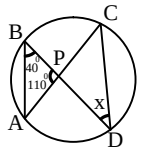
12) In a circle of radius 5 cm . A B & AC are two chords such that AB = AC = 6 cm. Find the length of the chord BC.

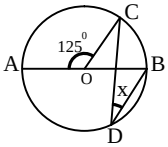


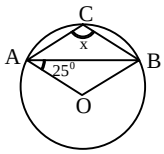
13) Two chords AB & CD of a circle with center O intersect at E . If ∠OEA = ∠OED .Prove that AB = CD.

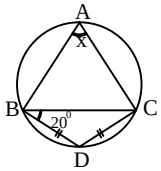


14) Find the value x from the following figures.

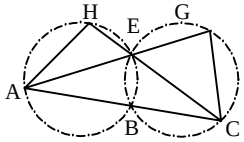
i) 

ii) 

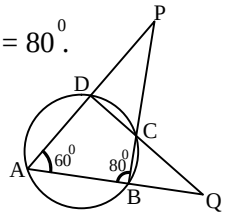
iii) 

iv) 

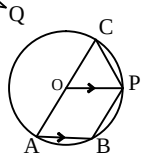
15) In the figure ABC , AEG and HEC are straight lines. Prove that ∠ AHE and ∠ EGC are supplementary.



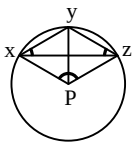
16) In the figure ∠A = 60^0 and ∠ ABC = 80^0. Find ∠ DPC and ∠ BQC .



17) In the figure , O is the center of the circle and AB || OP. Prove that PC = PB.



18) In the figure P is the center of the circle. Prove that ∠XPZ = 2 (∠xzy + ∠ yxz)



19) Construct a triangle with base length 5 cm , sum of the other two sides 7.8 cm and one base angle of 60^0.

20) Construct a triangle with base length 7.5 cm , the difference of the other two sides 2.5 cm and one base angle is 45^0 .

21) Construct △ ABC with perimeter 8 cm and the angles in the ratio 3: 4 : 5 .

22) Construct △ ABC , in which BC = 5 cm, ∠ C = 30^0 and AB - AC = 2 cm.

23) A swimming pool is 30 m in length 15 m in breadth and 4 m in deep. Find the cost of cementing its floor and walls at the rate of ₹ 12 per m^2.

24) The cost of papering the four walls of a room at 90 paise / m^2 is ₹ 202.50. The height of the room is 5 m. Find the length and breadth of the room if they are in the ratio 4:1.

25) Water in a canal , 30 dm wide and 12 dm deep , is flowing at a speed of 20 km / hr. How much area will it irrigate in 30 minutes , if 9 cm of standing water is desired ?

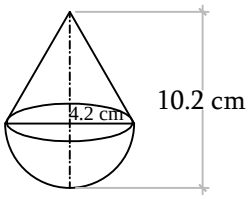
26) The ratio of the C S A and T S A of cylinder is 1: 2. If the TSA is 616 cm^2 find the volume of the cylinder.

27) The difference between the outer surface area and inner surface area of a cylindrical metallic pipe 14 cm long is 44 cm^2 . If the pipe is made of 99 cm^3 of metal , find the outer and inner radii of the pipe.

28) A piece of paper having the form of a quadrant of a circle of diameter 28 cm is rolled up so as to form a cone . Find the i) radius of the base ii) curved surface area and iii) volume of the cone .

29) Three solid spheres of iron whose diameters are 2 cm , 12 cm and 16 cm respectively are melted into a single solid sphere. Find the T.S.A. of the new sphere

30) A solid wooden toy is in the shape of a right circular cone mounted on a hemisphere . If the radius of the hemisphere is 4.2 cm and the total height of the toy is 10.2 cm , find the volume of the wooden toy.



31) The daily maximum temperature (in degree Celsius) recorded in a certain city during the month of November are as follows.

25.8 , 20.9 , 24.5 , 23.1 , 25.6 , 22.4 , 20.7 ,21.5 , 21.8 , 22.7 , 20.7 , 22.8 , 20.6 , 22 , 20.9 , 23.9 , 22.3 , 24.7 , 22.7 , 23.1 , 23.8 , 22.8 , 24.6 , 22.9 , 23.4 , 21.7 , 21.1 , 21.3 , 20.5 , 22.7

Represent this information in the form of a Frequency distribution table with class size 1^0c . Also draw a histogram for the same.

32) Following is the distribution of ages (in years) of two groups of teachers in a school.

age (in years)		55 - 60	50 - 55	45 - 50	40 - 45	35 - 40	30 - 35	25 - 30	20 - 25
No. of teachers	group A	1	5	7	12	11	8	10	4
	group B	2	7	9	11	10	8	6	5

Represent the above data by means of a frequency polygon for each group on the same axes .

33) Draw a histogram to represent the following frequency distribution

daily wages (in Riyals)	10 - 15	15 - 20	20 - 25	25 - 30	30 - 40	40 - 60	60 - 80
No. of workers	7	10	27	15	12	12	8

34) Find the missing frequency 'k' of the following data if its mean is 16 .

x	5	10	15	20	25
f	2	8	k	10	5

35) The mean of 5 nos. is 28. If one of the nos. is excluded , the mean gets reduced by 2 . Find the excluded number .

36) The weight of 10 students (in Kg.) are 55 , 51 , 60 , 52 , 42 , 38 , 49 , 63 , 47 and 35 . Find the median weight . If the weight 63 Kg. is replaced by 36 Kg. , find the new median weight .

37) For what value of p , the mode of the following data is 5 ?

1 , 2 , 5 , 7 , 5 , 2 , 7 , 5 , 9 , 2 , 3 , p , 11

38) Arrange the following nos. in a frequency distribution table and then find the mean , median and mode of the data .

7 , 4 , 3 , 5 , 6 , 3 , 3 , 2 , 4 , 3 , 4 , 3 , 3 , 4 , 4 , 3 , 2 , 2 , 4 , 3 , 5 , 4 , 3 , 4 , 3 , 4 , 3 , 1 , 2 , 3

39) A bag contains cards numbered from 1 to 100 . A card is drawn at random from the bag. Find the probability that the card bears a number which is a

i) multiple of 5 ii) multiple of 6 iii) multiple of both 5 & 6

40) Three coins are tossed simultaneously 200 times and the outcomes are shown below.

Out come	3 heads	2 heads	1 heads	no head
Frequency	23	72	77	28

Find the probability of getting ,

(i) exactly 2 heads (ii) at least one head (iii) at most one head

41) M C Q :

1) Length of the longest rod that can be kept in a cuboidal room of dimensions 10 m x 10 m x 5 m is

[A) 5 m B) 10 m C) 15 m D) 12 m]

2) Volume of a cube is 1000 cm^3. Its surface area is

[A) 400 cm^2 B) 100 cm^2 C) 600 cm^2 D) 6000 cm^2]

3) Volume of a hemisphere is 88 $\sqrt{21}$ cm^3. Its radius is

[A) 21 cm B) $7\sqrt{3}$ cm C) $3\sqrt{7}$ cm D) $\sqrt{21}$ cm]

4) Which of the following is not true for a parallelogram ?

[A) opposite sides are equal B) opposite angles are equal
C) opposite angles are bisected by diagonals D) diagonals bisect each other]

5) The ratio of the angles a quadrilateral is 3 : 7 : 6 : 4 , then the quadrilateral is a

[A) Trapezium B) Parallelogram C) Rhombus D) Kite]

6) O is the center of the circum circle of $\triangle ABC$ and $\angle OAB = 40^0$ then $\angle ACB$ =

[A) 40^0 B) 20^0 C) 100^0 D) 50^0]

7) AD is the diameter of a circle of radius 17 cm and AB is a chord of the same circle of length 30cm.
Then distance of AB from the center of the circle is

[A) 17 cm B) 15 cm C) 4 cm D) 8 cm]

8) Graph of the linear equation ax + by + c = 0 is a straight line passing through the origin if

[A) a = b = c B) a = b C) a = b = 0 D) c = 0]

9) If a linear equation has (-3 , 3) , (0 , 0) and (1, - 1) as three of its infinite solutions.
Then it is of the form

[A) -3x + y = 0 B) x + y = 0 C) y - x = 0 D) x + y + 3 = 0]

10) The mean of 3 consecutive nos. is 3 , their median is

[A) 3 B) 4 C) 5 D) 6]

11) If the class mark and class size of a class are 9 and 4 respectively , then the lower limit of the class is

[A) 5 B)7 C) 4.5 D) 11]

12) A coin is tossed twice. The probability of getting at least one head is

[A) $\frac{1}{2}$ B) $\frac{3}{4}$ C) $\frac{1}{4}$ D) $\frac{3}{8}$]

Answers/ Hints

1) x + y - 21 = 0 . 2) - 20 3) 0

4) Hint : Prove $\angle BPA = \frac{1}{2}\angle A$ and AB = BP $\Rightarrow$ AD = 2 AB

5) Hint : Prove F is the mid point of BC by using mid point theorem . Find the length of EF.

6) Hint : Prove AD || EF || BC and use equal intercept theorem.

7) 6 cm , 16 cm 8) Hint : ar. ($\triangle$ACE) = ar. ($\triangle$ ACD) add ar. ($\triangle$ABC) on both sides

9) i) 90 cm^2 ii) 45 cm^2 iii) 45 cm^2

10) Hint : Use the result , median divides a triangle into two triangles of equal area.

12) 9.6 cm 13) Hint : Draw OP $\perp$ AB & OQ $\perp$ CD and prove $\triangle$ OPE $\cong$ $\triangle$OQE .

14) i) 30^0 ii) $27\frac{1}{2}^0$ iii) 115^0 iv) 40^0

15) Hint : Join BE , BG & BH and prove $\angle EGC + \angle AHE = 180^0$

16) 40^0 , 20^0

17) Hint : Join OB. Prove $\angle COP = \angle BOP$ and $\triangle COP \cong \triangle BOP$

18) Hint : Show $2\angle xzy = \angle xpy$ and $2\angle yxz = \angle ypz$ and add the two equations.

23) ₹ 9720. 24) 18 m, 4.5 m 25) 400000 m^2 26) 1078 cm^3

27) 2.5 cm , 2 cm 28) 3.5 cm , 154 cm^2 , 175.2 cm^3 29) 1018.28 cm^2 30) 266.11 cm^3

34) 15 35) 36 36) 50 Kg. , 48 Kg. 37) 5

38) 3.47 , 3 , 3

39) $\frac{1}{5}$, $\frac{4}{25}$, $\frac{3}{100}$ 40) $\frac{9}{25}$, $\frac{43}{50}$, $\frac{21}{40}$

41) M C Q :

1) C 2) C 3) D 4) C 5) A 6) D

7) D 8) D 9) B 10) A 11) B 12) A

prepared by : Mrs.Sheeja James
IX - X Girls Section