ASSIGNMENT FOR THE SESSION 2013-2014

Class: VIII   **Subject : Mathematics**   **Assignment No. 15**

Quadrilateral

1. ABCD is a quadrilateral in which AB=AD and BC=DC. Prove that AC bisects ∠A and ∠C

2. If angles P,Q,R and S of the quadrilateral PQRS taken in order and in the ratio 3:7:6:4 then show that PQRS is a trapezium.

3. In a quadrilateral ABCD , the line segments bisecting∠ C and ∠D meet at E. Prove that ∠A+∠B =2∠CED

4. If bisectors of ∠A and ∠B of a quadrilateral ABCD intersect each other at P , of ∠B and ∠ C at Q, of ∠C and ∠D at R and ∠ D and ∠A at S, then show that PQRS is a quadrilateral whose opposite angles are supplementary.

5. In a quadrilateral ABCD, the bisectors of ∠A and ∠B meet in a point P. If ∠C = 100^0 and ∠D = 60^0, find the measure of ∠APB.

PARALLELOGRAM

1. Two adjacent angles of a parallelogram are as 2:3. Find the angles

2. Prove that the opposite sides of a parallelogram are equal.

3. Prove that in a parallelogram diagonals bisect each other.

4. ABCD is a parallelogram and line segments AE and CF bisect the angles A and C respectively. Show that AE // CF.

5. Two lines AC and BD, 5cm each bisect each other. If A,B,C,D are joined what type of quadrilateral is formed. Justify your answer.

6. ABCD is a parallelogram in which AB= 2AD and P is the midpoint of AB, then Find ∠CPD.

7. In a parallelogram ABCD, if AB= 2x+5, CD= y+1 AD=y+5 and BC=3x-4 , then find the ratio of AB:BC.

8. ABCD is a parallelogram whose diagonals intersect each other at O. A line segment EOF is drawn to meet AB at E and DC at F. Prove that OE = OF.

9. ABCD is a parallelogram in which AB is produced to E so that BE=AB. Prove that ED bisects BC.

10. PQRS is a rectangle. PR is a diagonal. QM & SN are perpendiculars drawn from Q & S on PR. Prove that QM = SN.

Construction of Quadrilaterals.

1. Construct a quadrilateral ABCD given that AB = 3.7cm, BC = 3.8 cm, CD = 4.3 cm, DA = 4.6 cm and ∠D =75^0

2. Construct a quadrilateral ABCD given that BC = 4.5 cm, AB = 4cm, ∠B = 75^0 , ∠A = 90 and ∠C = 120^0

3. Construct a quadrilateral ABCD in which AB = BC = 5.5cm, CD = 4cm, DA = 6.3cm and AC = 9.4cm. Measure BD.

4. Construct a quadrilateral ABCD, Where A = 65^0, B = 105^0, C = 75^0 , BC = 5.7cm and CD = 6.8cm.

5. Construct a quadrilateral PQRS in which PQ = 6cm, QR = 5.6cm, RS = 2.7cm, ∠Q = 45^0 and ∠R = 90^0.

6. Construct a parallelogram with diagonals 5.4 cm and 6.2 cm and the angle included by the two diagonals is 45^0

7. Construct a parallelogram ABCD using only ruler and compass, such that AB =6cm, BC =3cm and angle B = 45^0. Write the steps of construction in brief.

8. Construct a rhombus ABCD using only ruler and compass, such that the side of the rhombus is 4cm and one of its angles is 30^0. Write the steps of construction in brief.

9. Construct a trapezium ABCD in which AB = 6cm, BC = 4cm, CD =3.2cm $\angle B$ =75^0 and DC//AB.

10. Draw a trapezium ABCD in which AB//DC, AB = 7cm, BC = 5cm, AD = 6.5 cm and $\angle B = 60^0$

Trapezium

1. ABCD is a trapezium in which BC = 10cm,AB =5cm, DC = 11cm and AB parallel to DC . Find the area of the trapezium.

2. AB and DC are the parallel sides of a trapezium ABCD and $\angle ADC = 90^0$. Given that AB = 15cm, DC = 40cm and the diagonal AC = 41cm, Calculate the area of the trapezium.

3. The parallel sides of a trapezium are 12cm and 36cm respectively. Its non parallel sides are each equal to 15cm. Find the area of the trapezium.

AREA

1. Verify Euler's formula for a) Square pyramid b) Pentagonal prism c) tetrahedron

2. The area of a rhombus is equal to the area of a triangle whose base and the corresponding altitude are 24.8cm and 16.5cm respectively. If one of the diagonal of the rhombus is 22cm, find the length of the other diagonal.

3. The floor of a rectangular hall has a perimeter 250m. If the cost of paining the four walls at the rate of Rs.10 per m^2 is Rs.1500. Find the height of the hall.

4. A room is half as long again as it is broad. The cost of carpeting the room at Rs 3.25 per m^2 is Rs 175.50 and the cost of papering the walls at Rs.1.40 per m^2 is Rs.240.80. If 1 door and 2 windows occupy 8m^2, find the dimensions of the room.

5. A river 2m deep and 45m wide is flowing at the rate of 3 km per hour. Find the volume of water that runs into the sea per minute.

Volume and surface area.

1. A hollow cylindrical pipe is 21 dm long. Its outer and inner diameters are 10cm and 6cm respectively. Find the volume of copper used in making the pipe.

2. The height of a right circular cylinder is 10.5m. Three times the sum of the areas of its two circular faces is twice the area of the curved surface. Find the volume of the cylinder.

3. The volume of a metallic cylindrical pipe is 748cm^3. Its length is 14 cm and its external radius is 9cm. Find its thickness.

4. A well of inner diameter 14m is dug to a depth of 15m. Earth taken out of it has been evenly spread all around it to a width of 7m to form an embankment. Find the height of the embankment.

5. A cloth having an area of 165m^2 is shaped into a cylindrical tent of radius 5m. How many students can sit in the tent if a student occupies 5/7 m^2 ? Find the volume of air for each student.

6. The difference between inside and outside surfaces of cylindrical tube 14cm long is 88 sq.cm. If the volume of the tube is 176 cubic cm. find the inner and outer radii of the tube.

7. The area of three adjacent faces of a cuboidal box are 120cm^2, 72 cm^2 and 60cm^2 respectively. Find the volume of the box.

8. The total surface area of a hollow cylinder which is open from both sides is 4620cm^2, area of base ring is 115.5cm^2 and height 7cm. Find the thickness of the cylinder.

9. A closed cylinder has diameter 8cm and height 10cm. Find its total surface area and volume.

10. A cylindrical bucket, 28cm in diameter 72cm high is full of water. The water is emptied into

a rectangular tank, 66cm long and 28cm wide. Find the height of the water level in the tank.

11. A cylindrical tube, open at both ends, is made of metal. The internal diameter of the tube is 10.4cm and its length is 25cm. The thickness of the metal is 8mm everywhere. Calculate the volume of the metal.

RATIO AND PROPOTION

1. The extension in an elastic string varies directly as the weight hung on it. If a weight of 150g produces an extension of 2.8cm, what weight would produce an extension of 19.6cm?

2. A group of 120 men had provisions for 200 days. After 5 days, 30 men died due to an epidemic . How long will the remaining food lost?

3. 1200 soldiers in a fort had enough food for 28 days. After 4 days. Some soldiers were transferred to another fort and thus the food lasts for an extra 32 days. How many soldiers left the fort?

4. If 12 men or 15 woman can finish a piece of work in 66 days. How long will 2 men and 3 woman take to finish the work?

5. If 5 men or 7 women earn Rs.525 per day, how much would 7 men and 13 women earn per day?

6. In an army camp of 1400 men, there is enough food to last for 18 days if each man consumes 396g per day. How many men should leave the camp so that the same food may last for 21 days with each man having 432g per day.

Bar Graph

1. The following table shows that the favorite sports of 250 students of a school. Represent the data by a bar graph.

Sports	Cricket	Foot ball	Tennis	Badminton	Swimming
No of students	75	35	50	25	65

2. Given below is a table which shows the year wise strength of a school. Represent this data by a bar graph.

Year	2001-02	2002-03	2003-04	2004-05	2006-07
No of students	800	975	1100	1400	1625

3. The air distances of four cities from Delhi (in km) are given below. Represent the data by a bar graph.

City	Kolkata	Mumbai	Chennai	Hyderabad
Distance from Delhi in Km	1340	1100	1700	1220

4. The following is the distribution of weights in kg of 52 persons:

Weight in kg	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80
Persons	10	15	17	6	4

5. What is the lower limit of class 50 – 60?

6. Find the class mark of the classes 40 – 50, 50 – 60

7. What is the class size?

Pie Chart

1. The number of students in a school speaking different languages is given below. Present the data in a pie chart

Language	Hindi	English	Marathi	Bengali	Tamil
No of students	40	12	9	7	4

2. The number of hours spend by a school boy on various activities on a working day are given below.

Activity	School	Homework	Play	Sleep	Others
No of hours	8	4	3	7	2

3. Draw a pie chart for the following data of the investment pattern in a five year plan:

Agriculture	Irrigation	Small industries	Transport	Power	Social service
14%	16%	29%	17%	16%	8%

Probability

1. A coin is tossed 500 times and we get head;285times, tail;215 times, when a coin is tossed at random, what is the probability of getting i) a head ii) a tail?

2. Two coins are tossed 400 times and we get two heads ; 112 times, one head : 160 times, zero head : 128 times when two coins are tossed at random, what is the probability of getting i) 2 heads ii) 0ne head iii) 0 head.

3. Three coins are tossed 200 times and we get three heads: 39 times , two heads 58 times , one head; 67 times, 0 head ;36 times. When three coins are tossed at random what is the probability of getting i) 3 heads ii) 1 head iii) 0 head iv) 2 heads.

4. Two coins are tossed simultaneously 500 times, we get two heads 105 times, one head 275 times and no head 120 times. Find the probability of getting i) 2 tails ii) one tails iii) 2 heads.

5. All kings, jacks and diamonds have been removed from a pack of cards and the remaining cards are well shuffled. A card is drawn at random. Find the probability that it is (i) a red queen (ii) a face card (iii) a diamond (iv) a black card.

6. The shoppers who come to a departmental store are marked as : man(M), woman(W), boy (B)or girl (G). The following list gives the shoppers who came during the first hour in the morning:

   W W M W G W M W B W G M W M B G B W G W M G W M M W G M W B W M M W G W M W G M W B G W M W W W M W G W M W G W M W G W M W W . Make a frequency distribution table using tally marks.

7. A box contains 17 cards numbered 1,2,3,4,……17. A card is drawn at random from the box. Find the probability that the number on the card is i) odd ii) even iii) prime iv) divisible by 3 v) divisible by 2 and 3 both vi) divisible by 4 or 7 vii) divisible by 2 or 3.

8. Numbers 2 to 10 are written on separate slips(one number on one slip), kept in a box and mixed well. One slip is chosen from the box without looking onto it. What is the probability of. i) getting a number 6? ii) getting a prime number iii) getting a number greater than 5?

Graph

1. Plot the following points on the graph paper and name the quadrant or axis in which it lies

   (4, -2) (-1 ,3) (0, -1) (5, -2) (2, 1) (-5, -3) and (-2, 0)

2. Draw the graph of the following equations.
   i) 3x +2y =5   ii) y − 3x =2

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