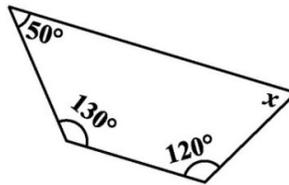


**SAINIK SCHOOL GOPALGANJ**  
**SUB: MATHEMATICS**  
**CLASS-VIII**

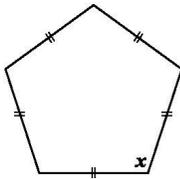
**ASSIGNMENT -3**

**UNDERSTANDING QUADRILATERALS**

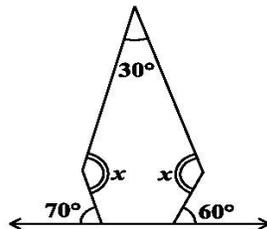
1. How many diagonals does each of the following have?  
(a) A convex quadrilateral (b) A regular hexagon (c) A triangle
2. What is the sum of the measures of the angles of a convex quadrilateral?  
Will this property hold if the quadrilateral is not convex? (Make a non-convex quadrilateral and try!)
3. What is a regular polygon? State the name of a regular polygon of (i) 3 sides (ii) 4 sides (iii) 6 sides
4. Find the angle measure  $x$  in the figures.



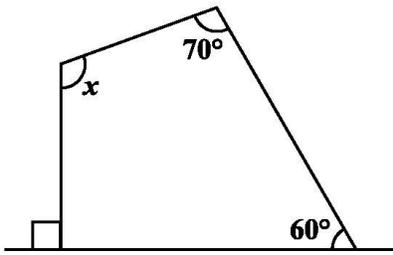
5. Find the angle measure  $x$  in the figures.



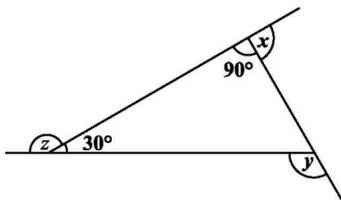
6. Find the angle measure  $x$  in the figures.



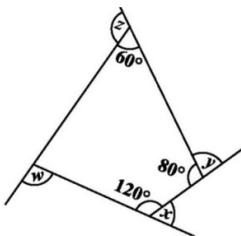
7. Find the angle measure  $x$  in the figures.



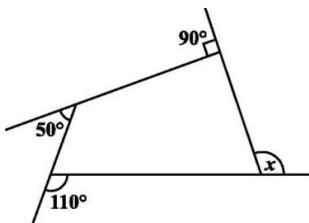
8. Find the angle measure  $x$  in the figures.



9. Find the angle measure  $x$  in the figures.

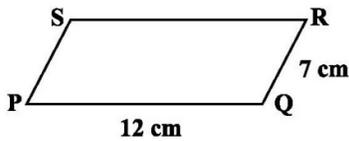


10. Find the angle measure  $x$  in the figure:

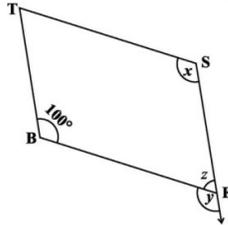


11. Find the number of sides of a regular polygon whose each exterior angle has a measure of  $45^\circ$ .
12. Find the measure of each exterior angle of a regular polygon of (i) 9 sides  
(ii) 15 sides
13. How many sides does a regular polygon have if the measure of an exterior angle is  $24^\circ$ ?

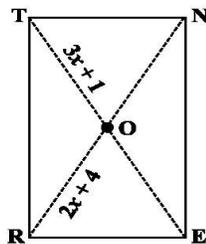
14. How many sides does a regular polygon have if each of its interior angles is  $165^\circ$ ?
15. Find the perimeter of the parallelogram PQRS



16. In Fig, BEST is a parallelogram. Find the values  $x$ ,  $y$  and  $z$ .



17. RENT is a rectangle. Its diagonals meet at O. Find  $x$ , if  $OR = 2x + 4$  and  $OT = 3x + 1$ .



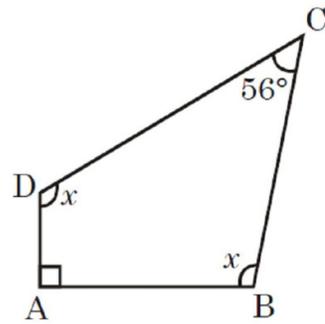
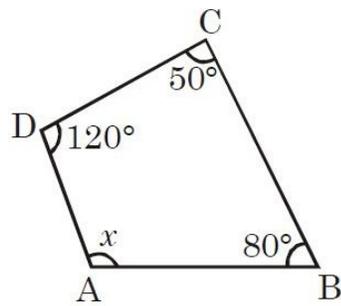
18. Find the number of sides of a regular polygon whose each exterior angle has a measure of  $15^\circ$ .

### ASSIGNMENT QUESTIONS No.2

- Two adjacent angles of a parallelogram are as 2: 3. Find the measure of each of its angles.
- ABCD is a parallelogram in which  $\angle A = 75^\circ$ . Find the measure of each of the angles  $\angle B$ ,  $\angle C$  and  $\angle D$ . The external angle of a regular polygon is  $20^\circ$ . How many sides does it have? What is the measure of each interior angle? What is the total measure of its angles?
- Is it possible to have a regular polygon with measure of each exterior angle as  $580^\circ$ ? Why? Can it be an interior angle of a regular polygon?
- Find the measure of each exterior angle of a (i) Regular octagon (ii) Regular Decagon
- Find the perimeter of a parallelogram with sides 9cm and 5cm.

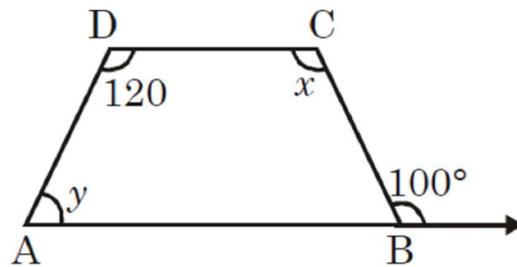
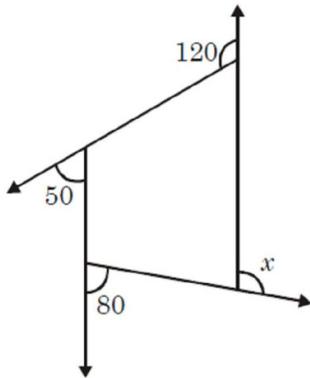
6. Find the perimeter of a rhombus whose diagonals are 16cm and 12cm
7. The adjacent angles of a parallelogram are in the ratio 5:4. Find all the angles.
8. If one of the angles of a parallelogram is a right angle, prove that it is a rectangle.
9. If all the angles of a parallelogram are equal. Prove that it is a rectangle.
10. Find the length of the diagonal of a rectangle whose length is 15cm and breadth is 8cm.
11. The measure of two adjacent angles of a quadrilateral are  $110^\circ$  and  $50^\circ$  and the other two acute angles are equal. Find the measure of each angle.
12. The five angles of a pentagon are in the ratio 5: 6: 7: 8:10. Find all the angles.
13. GOAL is a quadrilateral in which  $GO \parallel AL$ . If  $\angle G = \angle O = 40^\circ$ . What are the measures of  $\angle A$  and  $\angle L$ .
14. ABCD is a rhombus whose diagonals AC and BD intersect at a point O. If side  $AB = 10\text{cm}$  and diagonal  $BD = 16\text{ cm}$ , find the length of diagonal AC.
15. One of the diagonals of a rhombus is equal to one of its sides. Find the angles of the rhombus.
16. The diagonals of a rhombus ABCD intersect at O. If  $\angle ADC = 120^\circ$  and  $OD = 6\text{ cm}$ , find (i)  $\angle OAD$  (ii) side AB (iii) perimeter of the rhombus ABCD.
17. ABCD is a trapezium where AB parallel to CD. Measure of  $\angle A = \angle B = 45^\circ$ . Prove that  $AD=BC$ .
18. Three angles of a quadrilateral are in the ratio 3:4:5. The difference of the least and the greatest of these angles is 45. Find all the four angles of the quadrilateral.

19. In the below figure, ABCD is a quadrilateral. Find  $x$ .



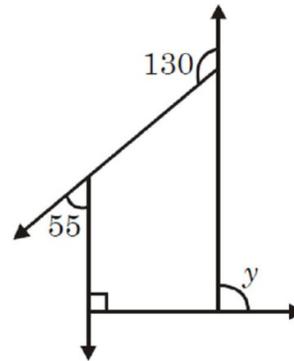
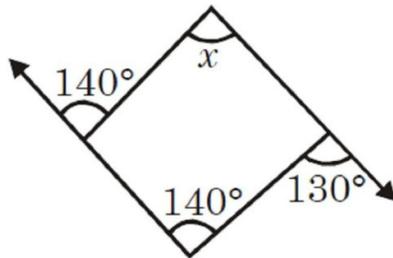
20. In the above right sided figure, ABCD is a quadrilateral. Find  $x$ .

21. In the below figure. Find  $x$ .



22. In the above right sided figure, ABCD is a quadrilateral in which  $AB \parallel CD$ . Find  $x$  and  $y$ .

23. In the below figure, find  $x$



24. In the above right sided figure, find the value of  $y$ .

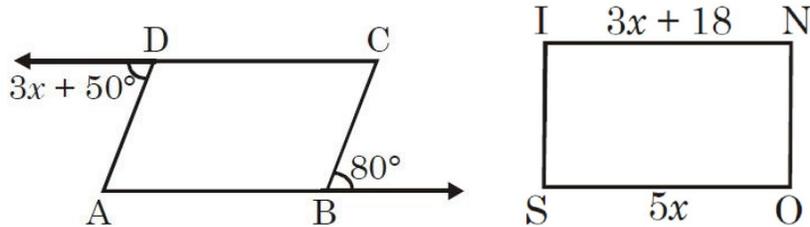
25. What is the measure of each exterior angle of a regular polygon of 10 sides?

26. How many sides does a regular polygon has if each of its interior angle is  $160^\circ$ ?

27. If the total angle sum of a polygon is  $108^\circ$  then how many sides does polygon has?

28.  $ABCD$  is a parallelogram. The perimeter is 144 cm and  $BC = 20$  cm then find  $AB$ .
29. The ratio of two adjacent sides of a parallelogram is 5:4. Its perimeter is 18 cm then, what is the length of the adjacent sides.
30.  $PQRS$  is a parallelogram and diagonals  $PR$  and  $SQ$  bisect at  $O$ . If  $PO = 3.5$  cm and  $OQ = 4.1$  cm. What is the length of the diagonals?

31. In the below figure,  $ABCD$  is a parallelogram. What is the value of  $x$ ?



32. In the above right figure,  $SONI$  is a rectangle. What is the length of  $IN$ ?
33. In a parallelogram  $ABCD$ ,  $\angle B = \angle C$ . What is the degree measure of  $\angle B$  and  $\angle C$ ?
34. In a parallelogram  $ABCD$  the point of intersection of both diagonals  $AC$  and  $BD$  is  $O$ . If  $AC = 16$  cm and  $BD = 12$  cm then what is  $OA$  and  $OD$ .
35.  $ABCD$  is a rhombus. If  $AB = 4$  cm then what is the perimeter of  $ABCD$ ?
36.  $PQRS$  is a rhombus. If  $PO = 4$  cm and  $OQ = 3$  cm then what is  $PR + SQ$ ?
37.  $PQRS$  is a rhombus with  $PQ = 10$  cm. If  $OQ = 6$  cm then what is the length of the diagonal  $PR$ ?
38. In a rhombus  $RSTU$  if  $\angle R = 120^\circ$ , then what is the measure of  $S$ .
39.  $ABCD$  is a rhombus in which  $AO = 4$  cm and  $OB = 3$  cm. What is the length of the side of the rhombus?

1. State whether True or False
- All rectangles are squares.
  - All rhombuses are parallelograms.
  - All square are rhombuses and also rectangles.
  - All squares are not parallelograms.
  - All kites are rhombuses.
  - All rhombuses are kites.
  - All parallelograms are trapeziums.

- (h) All squares are trapeziums.
- PQRS is a parallelogram such that  $m \angle R = 110^\circ$ , then find  $m \angle P$  and  $\angle S$ .
  - Two opposite angles of a parallelogram are  $(5x - 8)^\circ$  and  $(2x + 82)^\circ$ . Find the measures of each angle of the parallelogram.
  - JKLM is a parallelogram. If  $m \angle J = 70^\circ$ , then find all other angles.
  - The exterior angle of a regular polygon is one-fifth of its interior angle. How many sides the polygon has? (4 Marks)

## PRACTICAL GEOMETRY

- Construct a rhombus whose diagonals are 4.5cm and 6.2 cm.
- Draw a parallelogram whose adjacent sides are 2.8 cm and 4.8 cm.
- Draw a rectangle whose adjacent sides are 3 cm and 5 cm.
- Construct a quadrilateral ABCD, where  $AB = 4.3$  cm,  $BC = 5.2$  cm,  $CD = 6.5$  cm,  $\angle B = 105^\circ$  and  $\angle C = 60^\circ$ .
- Construct a quadrilateral PQRS where,  $PQ = 5.4$  cm,  $\angle P = 6^\circ$ ,  $\angle Q = 105^\circ$ ,  $\angle R = 75^\circ$  and  $\angle S = 120^\circ$
- Construct a quadrilateral ABCD in which  $AB = 5$  cm,  $BC = 6.5$  cm, angle  $A = 75^\circ$ , angle  $B = 105^\circ$  and angle  $C = 120^\circ$ .
- Draw a line segment of length 10 cm and divide it into 4 equal parts.
- Construct a quadrilateral WXYZ when  $WX = 3.3$  cm,  $XY = 4$  cm,  $YZ = 4.1$  cm,  $WZ = 3.6$  cm and  $XZ = 5.5$  cm.
- Construct a rhombus whose diagonals are 6.2 cm and 8.4 cm.
- Construct a quadrilateral BEST, given  $ES = 4.5$  cm,  $BT = 5.5$  cm,  $St = 5$  cm, the diagonal  $BS = 5.5$  cm and diagonal  $ET = 7$  cm. Find Angle E, Angle T and RE.
- Construct a parallelogram BEAT,  $BE = 5$  cm,  $EA = 6$  cm and Angle  $R = 85^\circ$ .
- Construct the following quadrilaterals:
  - Quadrilateral ABCD  
 $AB = 4.5$  cm    $BC = 5.5$  cm    $AD = 4$  cm    $AD = 6$  cm    $AC = 7$  cm
  - Quadrilateral JUMP  
 $JU = 3.5$  cm    $UM = 4$  cm    $MP = 5$  cm    $PJ = 4.5$  cm  
 $PU = 6.5$  cm
  - Parallelogram MORE  
 $OR = 6$  cm    $RE = 4.5$  cm    $EO = 7.5$  cm
  - Rhombus BEST  
 $BE = 4.5$  cm  
 $ET = 6$  cm

## PRACTICAL GEOMETRY

- Construct a quadrilateral PQRS where  $PQ = 4$  cm,  $QR = 6$  cm,  $RS = 5$  cm,  $PS = 5.5$  cm and  $PR = 7$  cm.
- Construct the Quadrilateral ABCD where  $AB = 4.5$  cm,  $BC = 5.5$  cm,  $CD = 4$  cm,  $AD = 6$  cm and  $AC = 7$  cm.

3. Construct Quadrilateral JUMP where  $JU = 3.5$  cm,  $UM = 4$  cm,  $MP = 5$  cm,  $PJ = 4.5$  cm and  $PU = 6.5$  cm
4. Construct Parallelogram MORE where  $OR = 6$  cm,  $RE = 4.5$  cm and  $EO = 7.5$  cm
5. Construct Rhombus BEST where  $BE = 4.5$  cm and  $ET = 6$  cm
6. Construct a quadrilateral ABCD, given that  $BC = 4.5$  cm,  $AD = 5.5$  cm,  $CD = 5$  cm the diagonal  $AC = 5.5$  cm and diagonal  $BD = 7$  cm.
7. Construct quadrilateral LIFT where  $LI = 4$  cm,  $IF = 3$  cm,  $TL = 2.5$  cm,  $LF = 4.5$  cm and  $IT = 4$  cm
8. Construct Rhombus BEND where  $BN = 5.6$  cm and  $DE = 6.5$  cm
9. Construct a quadrilateral MIST where  $MI = 3.5$  cm,  $IS = 6.5$  cm,  $\angle M = 75^\circ$ ,  $\angle I = 105^\circ$  and  $\angle S = 120^\circ$ .
10. Construct Quadrilateral PLAN where  $PL = 4$  cm,  $LA = 6.5$  cm,  $\angle P = 90^\circ$ ,  $\angle A = 110^\circ$  and  $\angle N = 85^\circ$
11. Construct Parallelogram HEAR where  $HE = 5$  cm,  $EA = 6$  cm and  $\angle R = 85^\circ$
12. Construct a quadrilateral ABCD, where  $AB = 4$  cm,  $BC = 5$  cm,  $CD = 6.5$  cm and  $\angle B = 105^\circ$  and  $\angle C = 80^\circ$ .
13. Draw a square of side 4.5 cm.
14. Construct the kite EASY if  $AY = 8$  cm,  $EY = 4$  cm and  $SY = 6$  cm. Which properties of the kite did you use in the process?
15. Construct a rhombus whose diagonals are 5.2 cm and 6.4 cm long.
16. Construct a rectangle with adjacent sides of lengths 5 cm and 4 cm.
17. Construct a square READ with  $RE = 5.1$  cm.
18. Construct a parallelogram OKAY where  $OK = 5.5$  cm and  $KA = 4.2$  cm.
19. Is it possible to construct a rhombus ABCD where  $AC = 6$  cm and  $BD = 7$  cm? Justify your answer.
20. Construct Quadrilateral TRUE where  $TR = 3.5$  cm,  $RU = 3$  cm,  $UE = 4$  cm,  $\angle R = 75^\circ$  and  $\angle U = 120^\circ$

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