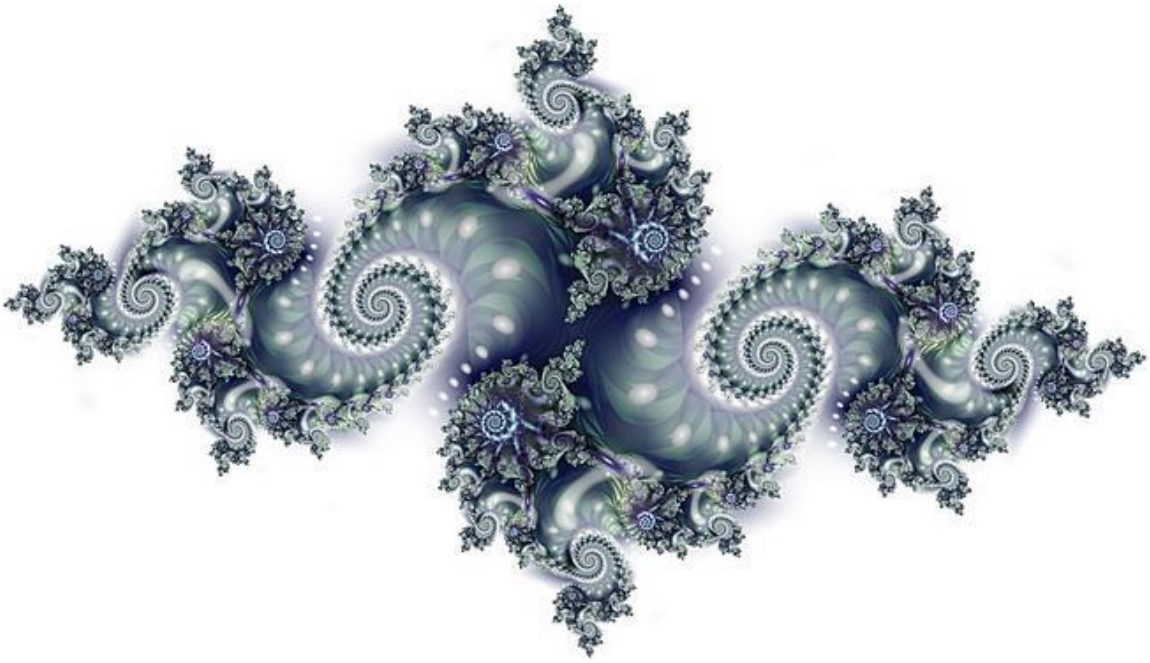

EUCLIDEAN GEOMETRY

MATHEMATICS GRADE 10

REVISION PACK

PAST PAPERS

JANUARY 1, 2018

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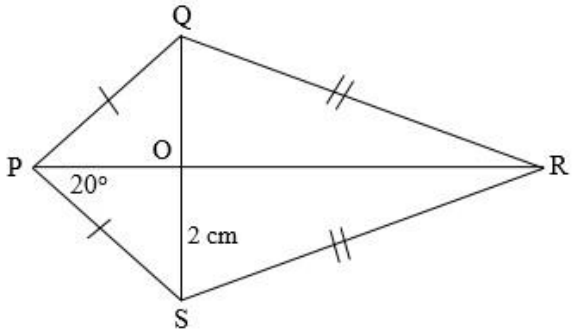
CELL NO: 074 994 7970

QUESTION 8 (EXEMPLAR 12)

PQRS is a kite such that the diagonals intersect in O.
OS = 2 cm and $\hat{OPS} = 20°$.



8.1 Write down the length of OQ. (2)

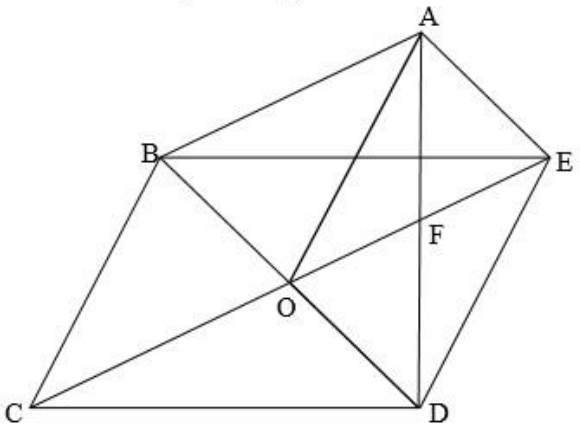
8.2 Write down the size of $\hat{POQ}$. (2)

8.3 Write down the size of $\hat{QPS}$. (2)

[6]

QUESTION 9 (EXEMPLAR 12)

In the diagram, BCDE and AODE are parallelograms.



9.1 Prove that OF || AB. (4)

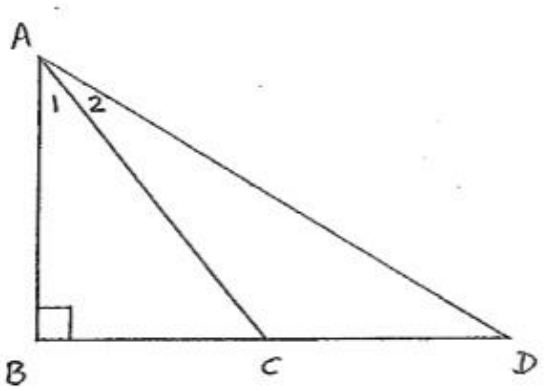
9.2 Prove that ABOE is a parallelogram. (4)

9.3 Prove that $\Delta ABO \equiv \Delta EOD$. (5)

[13]

QUESTION 5 (NOV 12 HUD)

5.1. In the diagram, AB = 9, AD = 13, BC = 7 and AB ⊥ BD :

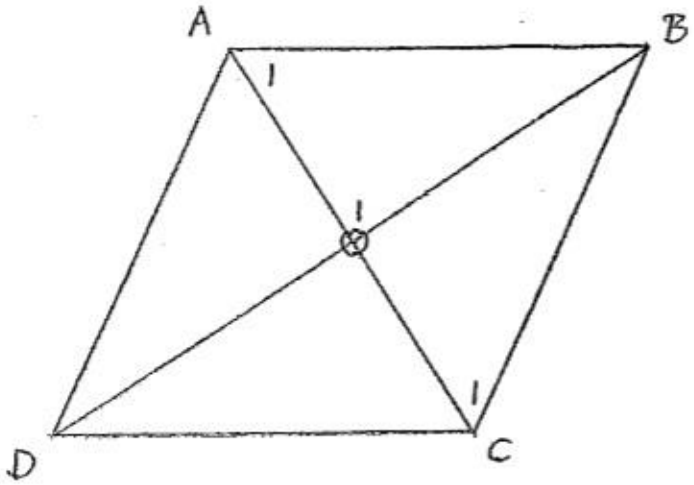


Calculate :

5.1.1. $\hat{A}_1$ 2

5.1.2. $\hat{A}_2$ 3 (5)

5.2. ABCD is a rhombus with AC = 24 and $\hat{A}_1 = 50°$:



5.2.1. Write down, without giving reasons, the sizes of :

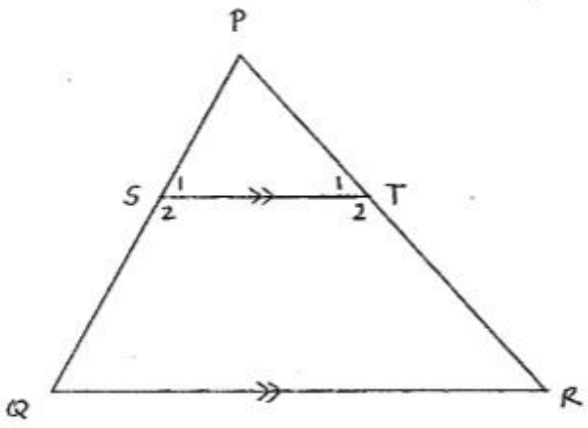
5.2.1.1. $\hat{C}_1$ 1

5.2.1.2. $\hat{O}_1$ 1 2

5.2.2. Calculate, giving reasons, the length of AB. 3 (5)

QUESTION 8 (NOV 12 HUD)

8. In the diagram below, ST // QR :



8.1. Complete : Δ PST /// Δ ..... (1)

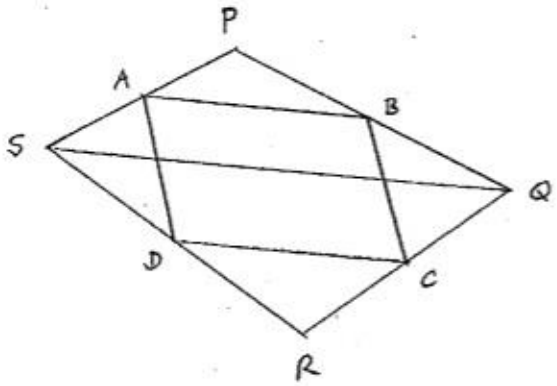
8.2. Prove the statement in (8.1.) (3)

8.3. Hence, if PS = 2, SQ = 10 and ST = 3, calculate QR. (2)

[6]

QUESTION 9 (NOV 12HUD)

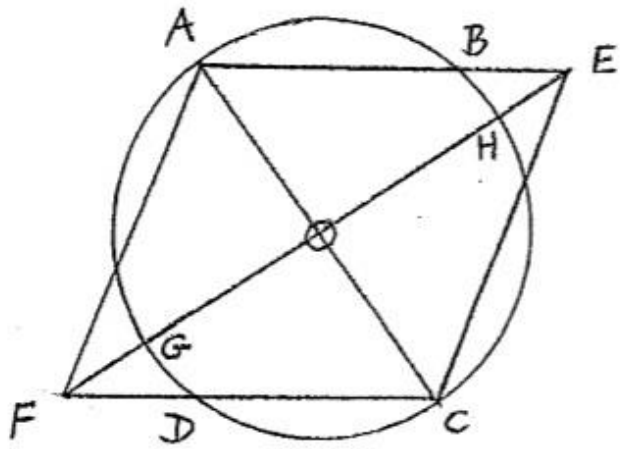
9. A, B, C and D are the midpoints of SP, PQ, QR and RS, respectively. SQ is drawn.



Prove that : AB // CD. (3)

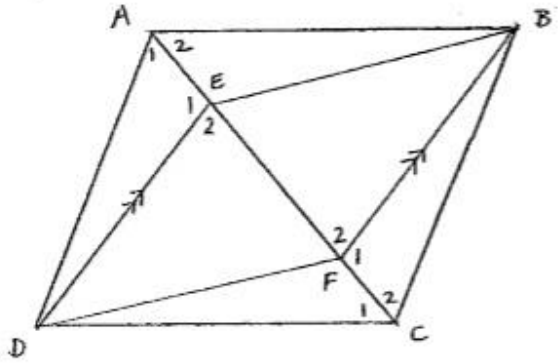
QUESTION 10 (NOV 12 HUD)

10.1. O is the centre of the circle and FG = HE.



Prove that AECF is a parallelogram. (3)

10.2. ABCD is a parallelogram. Let : $\hat{E}_1 = x$.



Prove that :

10.2.1. $\hat{E}_1 = \hat{F}_1$ 3

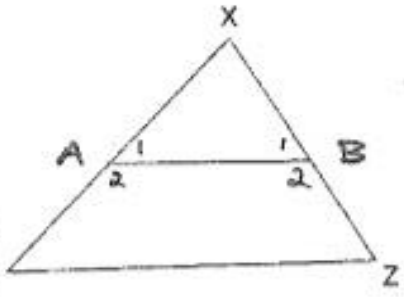
10.2.2. $\Delta AED \equiv \Delta CFB$ 4

10.2.3. DEBF is a parallelogram. 2 (9)

[12]

QUESTION 10 (NOV 13 HUD)

In the diagram below, $\hat{A}_1 = 50°$ and $\hat{Y} = 50°$



10.1 Prove AB ll YZ (1)

10.2 Show that ΔXAB lll ΔXYZ (3)

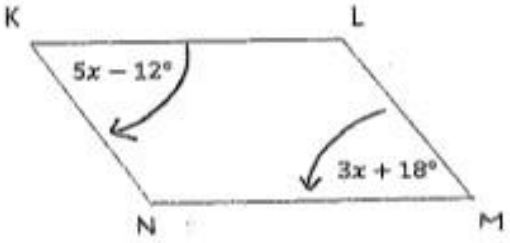
10.3 Hence, if XB = 2,5 ; XZ = 7,5 and YZ = 5,4 , calculate AB. (2)

[6]

Question 11 (16 marks)

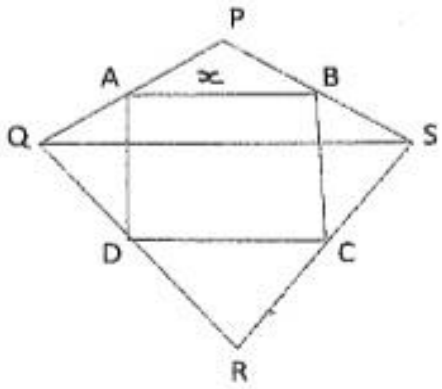
For each sub - question in this question, there is a separate diagram. Be careful to use the correct diagram for the question you are answering.

11.1 Determine the size of the interior angles in parallelogram KLMN with reasons. (3)

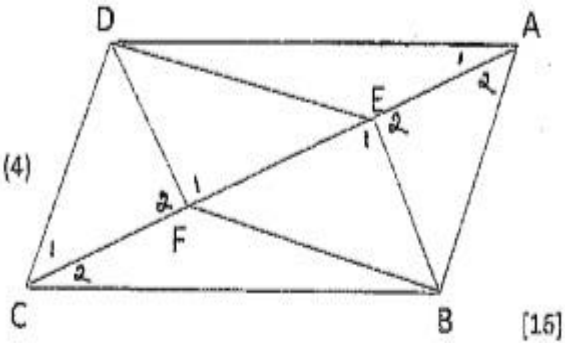


11.2 PQRS is a kite. A and B are the midpoints of PQ and PS respectively. QD = DR and SC = CR.

Let AB = x. Prove ABCD is a parallelogram. (5)



11.3 ABCD is a parallelogram. BE⊥AC and DF⊥AC.



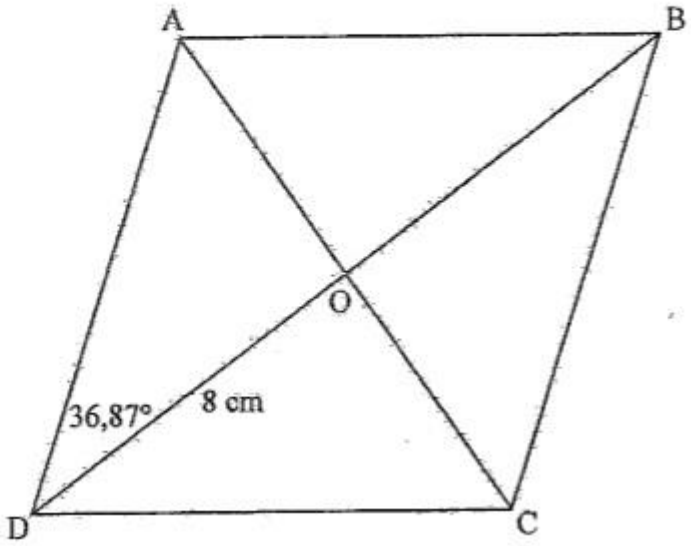
11.3.1 Prove Δ FDC ≡ Δ EBA (4)

11.3.2 Prove EBFD is a parallelogram. (4)

[16]

QUESTION 8 (NOV 15)

In the diagram, ABCD is a rhombus having diagonals AC and BD intersecting in O. $A\hat{D}O = 36{,}87°$ and DO = 8 cm.



8.1 Write down the sizes of the following angles:

8.1.1 $C\hat{D}O$ (1)

8.1.2 $A\hat{O}D$ (1)

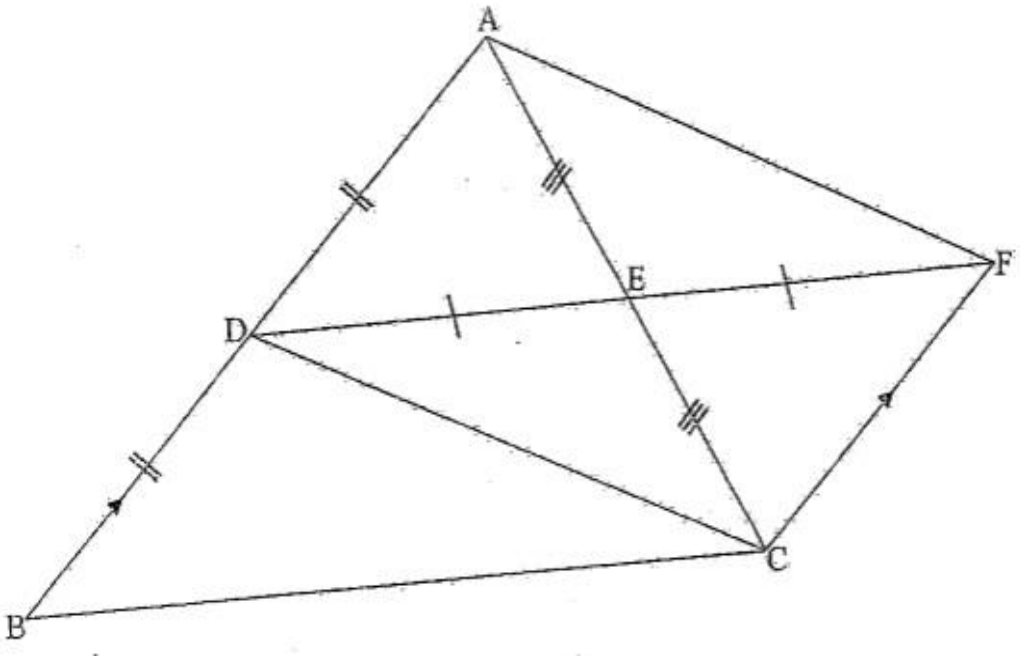
8.2 Calculate the length of AO. (2)

8.3 If E is a point on AB such that OE || DA, calculate the length of OE. (4)

[8]

QUESTION 9 (N0V 15)

9.1 In the diagram below, D is the midpoint of side AB of ΔABC. E is the midpoint of AC. DE is produced to F such that DE = EF. CF || BA.

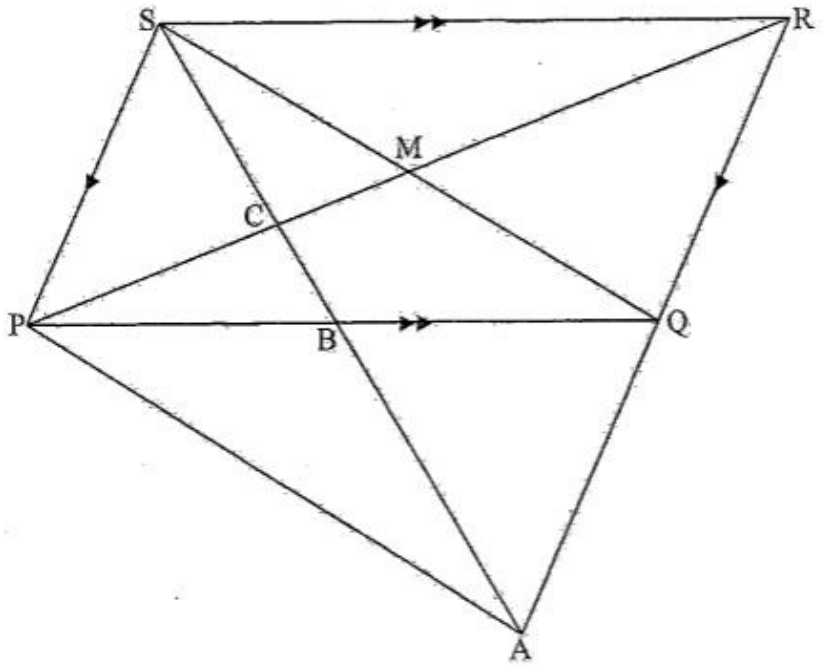


9.1.1 Write down a reason why $\Delta ADE \equiv \Delta CFE$. (1)

9.1.2 Write down a reason why DBCF is a parallelogram. (1)

9.1.3 Hence, prove the theorem which states that $DE = \frac{1}{2}BC$. (2)

9.2 In the diagram below, PQRS is a parallelogram having diagonals PR and QS intersecting in M. B is a point on PQ such that SBA and RQA are straight lines and SB = BA. SA cuts PR in C and PA is drawn.



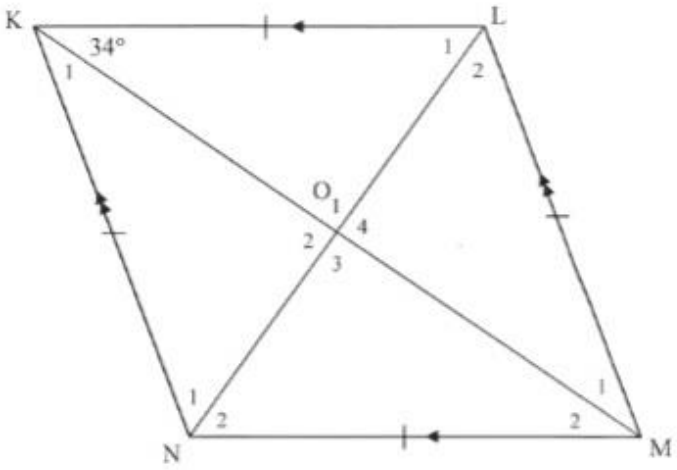
9.2.1 Prove that SP = QA. (4)

9.2.2 Prove that SPAQ is a parallelogram. (2)

9.2.3 Prove that AR = 4MB. (4)
[14]

QUESTION 8 (WT)

8.1 KLMN is a rhombus with diagonals intersecting at O. $L\hat{K}M = 34°$.

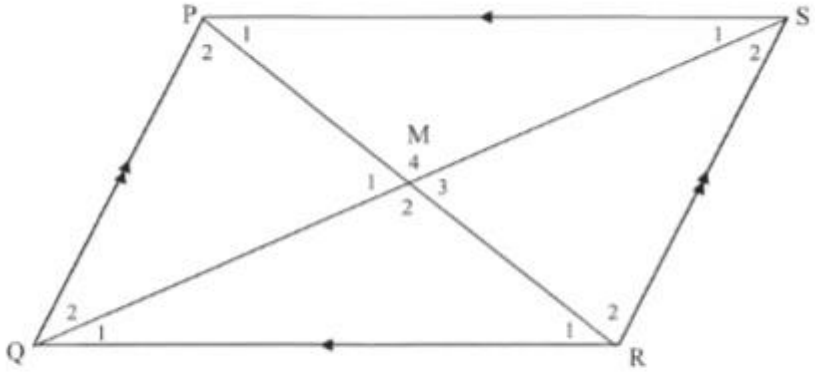


8.1.1 Write down the size of $\hat{O}_1$. (1)

8.1.2 Calculate the size of $\hat{L}_1$. (2)

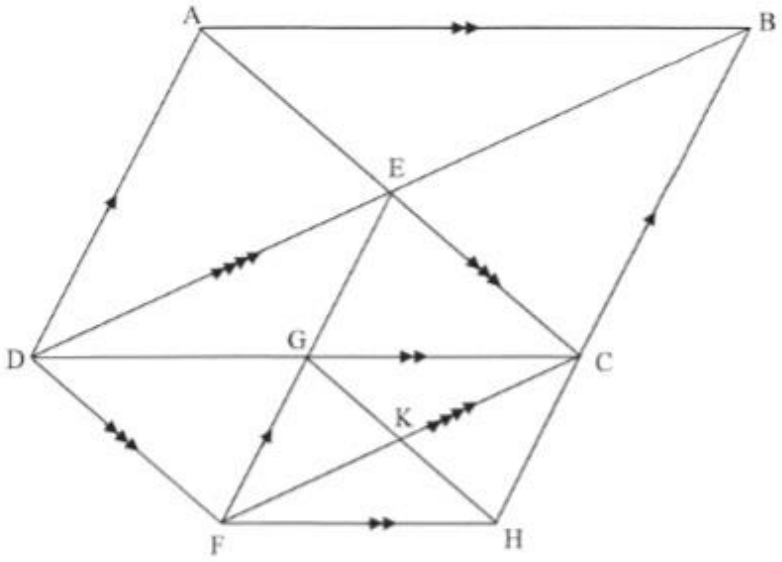
8.1.3 Calculate the size of $K\hat{N}M$. (2)

8.2 Given parallelogram PQRS with diagonals PR and QS intersecting at M.



Prove that the diagonals bisect each other. (4)

8.3 In the diagram, ABCD is a parallelogram with diagonals intersecting at E. The diagonals of parallelogram DECF intersect at G. The diagonals of parallelogram FGCH intersect at K.

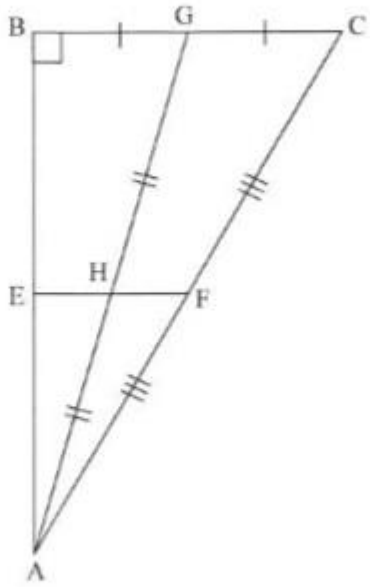


Prove that DB = 4KC. (4)

[13]

QUESTION 9

ΔABC is right-angled at B. F and G are the midpoints of AC and BC respectively. H is the midpoint of AG. E lies on AB such that FHE is a straight line.



9.1 Prove that E is the midpoint of AB. (3)

9.2 If EH = 3,5 cm and the area of $\Delta AEH = 9{,}5 cm^2$, calculate the length of AB. (3)

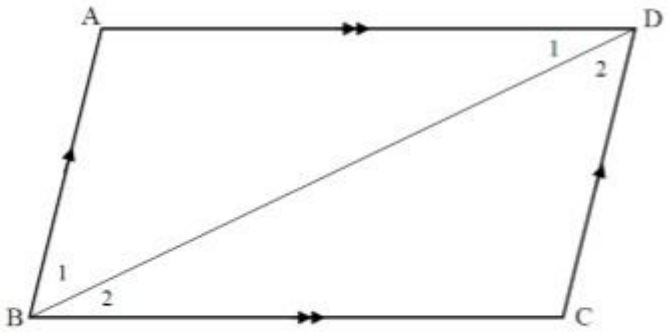
9.3 Hence, calculate the area of ΔABC. (3)
[9]

QUESTION 8

8.1 Complete the following statement:

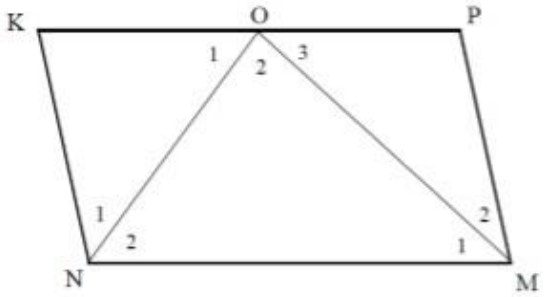
If the opposite angles of a quadrilateral are equal, then the quadrilateral ... (1)

8.2 Use the sketch below to prove that the opposite sides of a parallelogram are equal.



(6)

8.3 In the sketch below, KPMN is a parallelogram. ON bisects $\hat{KNM}$ and OM bisects $\hat{NMP}$.



8.3.1 Show that $N\hat{O}M = 90°$. (3)

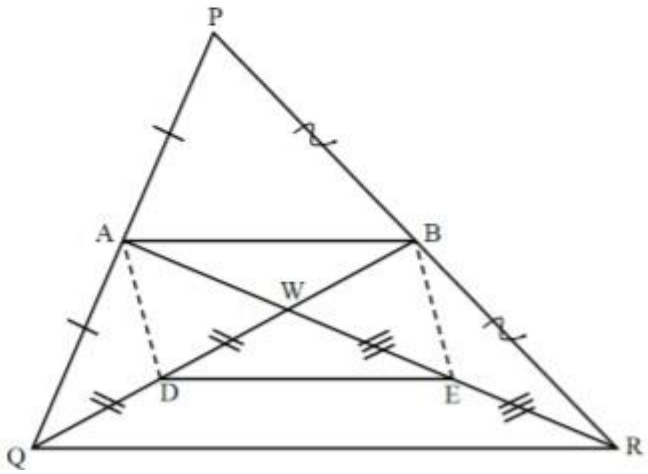
8.3.2 Prove that O is the midpoint of KP. (6)
[16]

QUESTION 9

9.1 Complete the following statement:

The line through the midpoint of two sides in a triangle is parallel to and ... the third side. (1)

9.2 In ΔPQR, A and B are the midpoints of sides PQ and PR respectively. AR and BQ intersect at W. D and E are points on WQ and WR respectively such that WD = DQ and WE = ER.



Prove that ADEB is a parallelogram. (5)
[6]

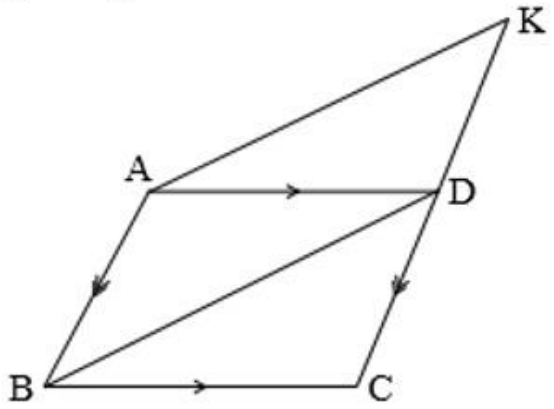
QUESTION 1 (AUGUST 17 WBH)

1.1. Give the definition of a
1.1.1. Rhombus [2]
1.1.2. Rectangle [2]

1.2. Answer TRUE or False for the following statements
1.2.1. A quadrilateral is a shape with all four sides equal [1]
1.2.2. An irregular polygon is a type of parallelogram [1]
[6]

Question 2

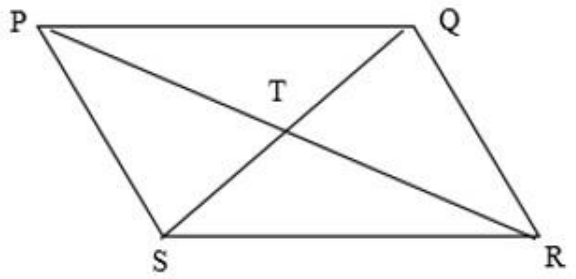
2.1. Give 3 ways of proving that a quadrilateral is a parallelogram [3]
2.2. In the diagram **ABCD** is a parallelogram, and **CD** is produced to **K** such that **CD = DK**
Prove that **BAKD** is a parallelogram. [3]



[6]

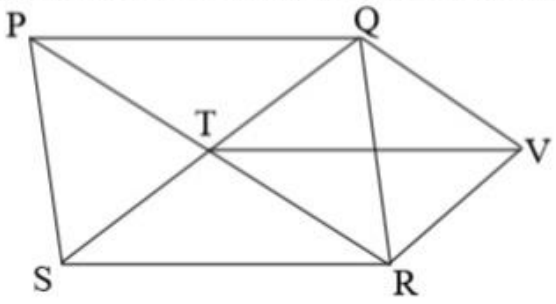
Question 3

3.1. Using the diagram, prove the theorem that the diagonals of the parallelogram **PQRS** bisect each other (i.e. **QT = TS** and **PT = TR**) [6]



*Hint: we already know that **PQRS** is a parallelogram so opposite sides are parallel and equal!!*

3.2. **PQRS** and **TSRV** are parallelograms. Prove that **TRVQ** is a parallelogram. [4]



[10]

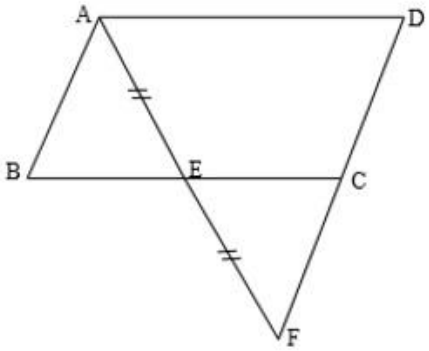
Question 4

4.1 **ABCD** is a parallelogram; **E** is a point on **BC** and **AE** is produced to meet **DC** at **F** so that **AE = EF**.

4.1.1. Midpoint theorem, what is it? [2]

4.1.2. Prove that Δ**ABE** $\equiv$ Δ**FCE** [4]

4.1.3. **ABFC** is a parallelogram [2]



[8]

THE END