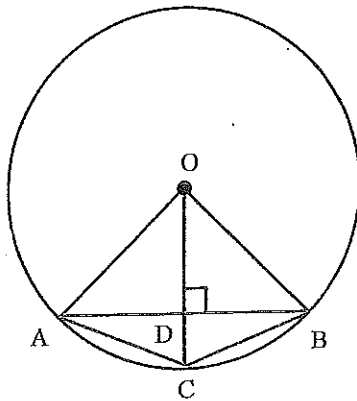


GET AHEAD COLLEGE
GRADE 11 MATHEMATICS
ASSIGNMENT TERM 3 : EUCLIDEAN GEOMETRY
DUE DATE 15/09/2014

1

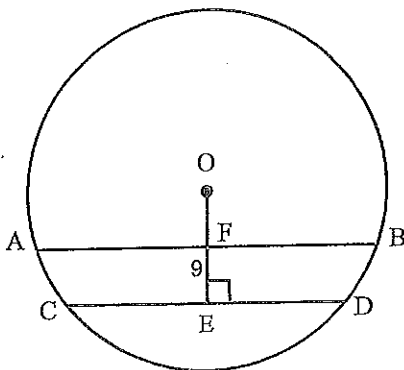


O is the centre of the circle.

- 1.1 If $AB = 54$ units and $DC = 3$ units, determine with reasons, the length of the radius. (5)
- 1.2 What type of quadrilateral is OBCA? Fully justify your answer. (3)
- 1.3 If $\hat{ABC} = x$, determine with reasons, the size of \hat{AOB} in terms of x . (4)

[12]

2



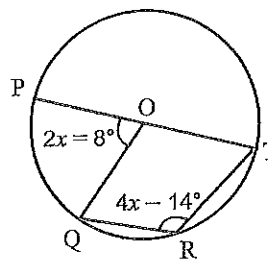
AB and CD are parallel chords of a circle with centre O. AB is 40 units, CD is 14 units and the distance between AB and CD is 9 units. If OF is x units, determine, with reasons:

- 2.1 \hat{OFA} (2)
- 2.2 an expression, in terms of x ,
 2.2.1 for the radius OA. (2)
 2.2.2 for the radius OC. (2)
- 2.3 Use the results from 2.2 to determine the length of the radius. (5)

[11]

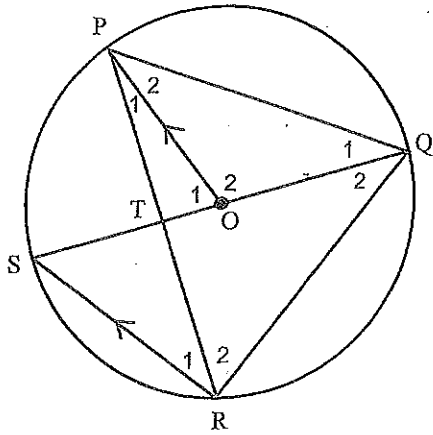
- 3 O is the centre of the circle, Q, R, T and P lie on the circle and TOP is a straight line. $\hat{POQ} = 2x + 8^\circ$ and $\hat{R} = 4x - 14^\circ$.

Determine, with reasons, the value of x .



[4]

4

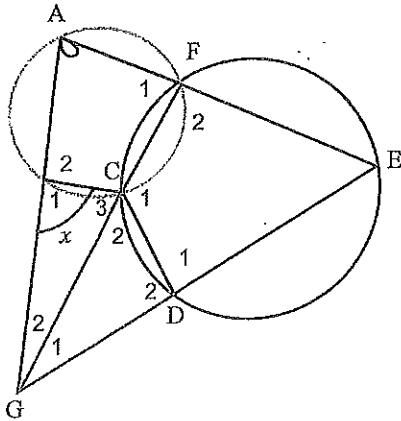


P, Q, R and S are points on the circumference of the circle with centre O. SOQ and PTR are straight lines. $PO \parallel SR$ and $\hat{OPR} = 24^\circ$. Determine, with reasons:

- 4.1 \hat{R}_1 (2)
- 4.2 \hat{R}_2 (2)
- 4.3 \hat{O}_2 (2)
- 4.4 \hat{P}_2 (2)
- 4.5 \hat{S} (2)
- 4.6 \hat{Q}_2 (2)

[12]

5

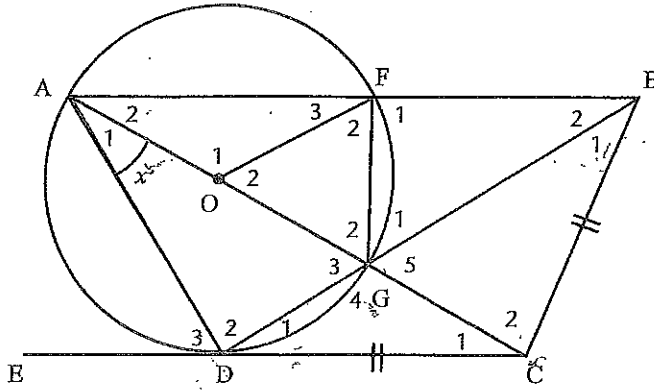


A and B lie on the smaller circle, D and E lie on the bigger circle and C and F are the points of intersection of the two circles. ABG, FCG, EDG and AFE are straight lines. $\hat{B}_1 = x$.

- 5.1 Determine, with reasons, two other angles equal to x . (4)
- 5.2 Prove that BCDG is a cyclic quadrilateral. (2)
- 5.3 Join BD and then prove that
 - 5.3.1 $\hat{GBD} = \hat{E}$. (4)
 - 5.3.2 $\hat{BDG} = \hat{A}$. (4)
 - 5.3.3 What type of quadrilateral is ABDE? Justify your answer. (2)

[16]

6

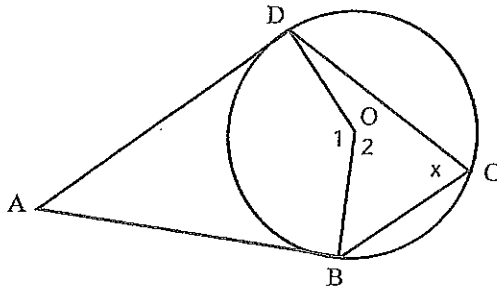


The diameter AG is produced to C. EC is a tangent to the circle at D. A, D, G and F lie on the circle and DC = BC. AFB is a straight line and $\hat{A}_1 = x$.

- 6.1 Prove that ADCB is a cyclic quadrilateral. (4)
- 6.2 Prove that AC bisects $\hat{B}AD$. (2)
- 6.3 Prove that $DG = FG$. (2)
- 6.4 Determine, with reasons, the size of \hat{C}_2 . (3)
- 6.5 Prove that $\hat{G}_1 = \hat{O}_2$. (6)
- 6.6 Prove that FBCG is a cyclic quadrilateral. (3)
- 6.7 For what value of x will DC be a tangent to the circle through E, B, C and G? (3)

[23]

7



AB and AD are tangents to the circle from A. O is the centre of the circle which passes through B, C and D. $\hat{C} = x$. Prove that $\hat{O}_2 - \hat{A} = 180^\circ$.

[8]