

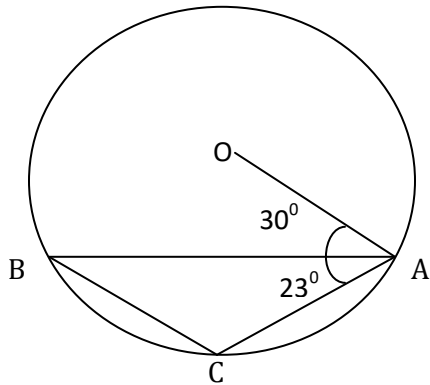
ANGLE PROPERTIES OF A CIRCLE

KCSE 1989 – 2012 Form 3 Mathematics

1.

1989 Q5 P1

In the figure below, O is the centre of the circle. Angle OAB = 30° and angle BAC = 23° . Find angle ACB.

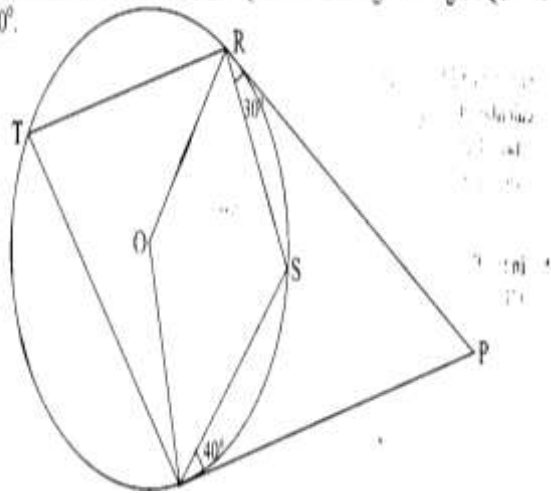


(3 marks)

2.

1989 Q19 P2

In the figure below, O is the centre of the circle. PQ and PR are tangents. Angle PQS = 40° and angle PRS = 30° .



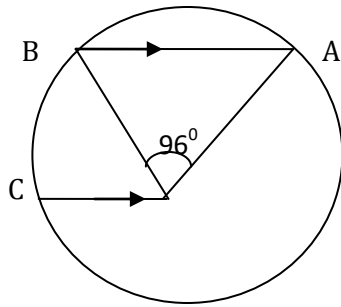
Find angle

- (i) RTQ (3 marks)
- (ii) ORQ (2 marks)
- (iii) RPQ (3 marks)

3.

1990 Q7 P1

In the figure below, O is the centre of the circle, CO is parallel to BA and $\angle AOB = 96^\circ$. Calculate $\angle CAO$.

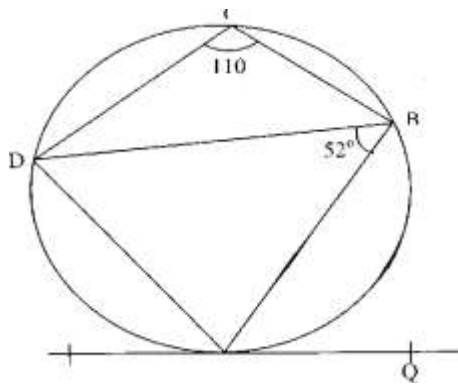


(3 marks)

4.

1990 Q14 P2

In the figure below (not drawn accurately) PAQ is a tangent to the circle at A . Find the $\angle DAB$ and $\angle BAQ$.



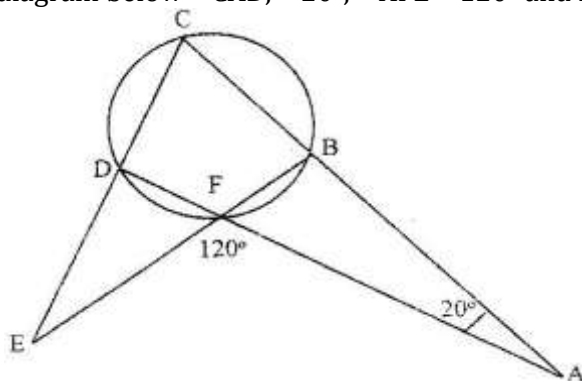
(2 marks)

5.

1995 Q 14 P1

In the diagram below $\angle CAD = 20^\circ$, $\angle AFE = 120^\circ$ and $BCDF$ is a cyclic quadrilateral. Find $\angle FED$.

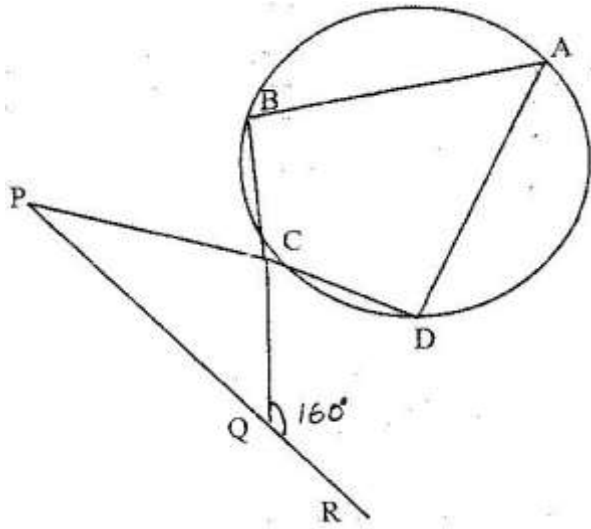
(3 marks)



6.

1995 Q 11 P2

In the figure below $CP = CQ$ and $\angle CQP = 160^\circ$. If $ABCD$ is a cyclic quadrilateral, find $\angle BAD$.

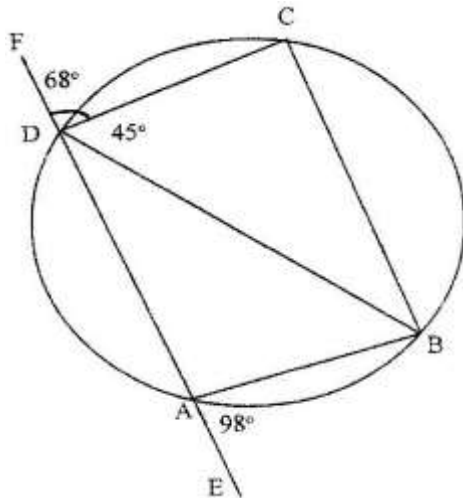


(2 marks)

7.

1996 Q 5 P1

In the figure below, $ABCD$ is a cyclic quadrilateral and BD is a diagonal. $EADF$ is a straight line. $\angle CDF = 68^\circ$, $\angle BDC = 45^\circ$ and $\angle BAE = 98^\circ$.



Calculate the size of

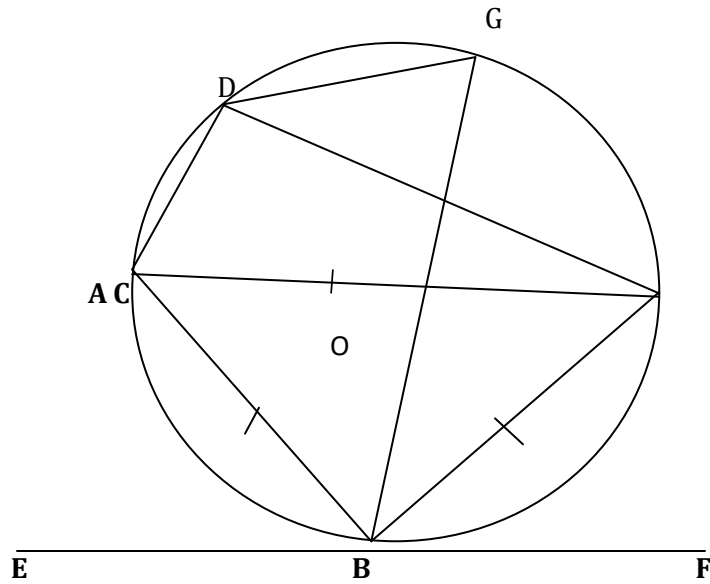
(a) $\angle ABD$ (2 marks)

(b) $\angle CBD$ (2 marks)

1996 Q 18 P2

8.

In the figure below AOC is a diameter of the circle centre O, AB=BC and $\angle ACD = 25^\circ$, EBF is a tangent to the circle at B. G is a point on the minor arc CD.

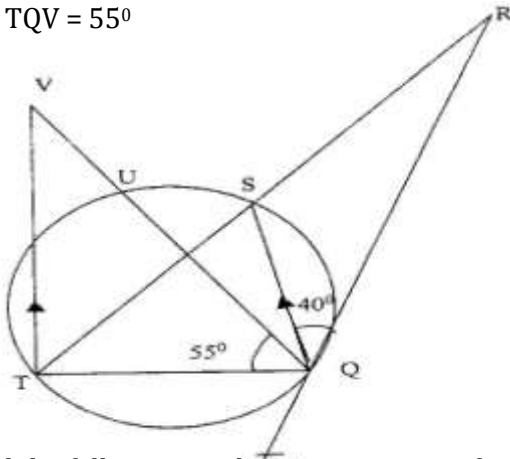


- (a) Calculate the size
 (i) $\angle BAD$
 (ii) The obtuse $\angle BOD$
 (iii) $\angle BGD$
 (b) Show that $\angle ABE = \angle CDF$. Give reasons

1997 Q 20 P2

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In the figure below PQR is the tangent to circle at Q. TS is a diameter and TSR and QUV are straight lines. QS is parallel to TV. Angles $\angle SQR = 40^\circ$ and angle $\angle TQV = 55^\circ$



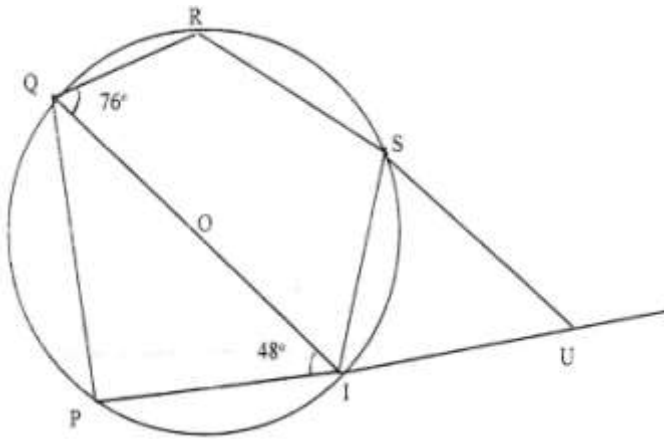
Find the following angles, giving reasons for each answer

- QST
- QRS
- QVT
- UTV

10

1998 Q 19 P2

In the figure below, QOT is a diameter. $\angle QTR = 48^\circ$, $\angle TQR = 76^\circ$ and $\angle SRT = 37^\circ$



Calculate

- (a) $\angle RST$
- (b) $\angle SUT$
- (c) Obtuse $\angle RUT$
- (d) $\angle PST$

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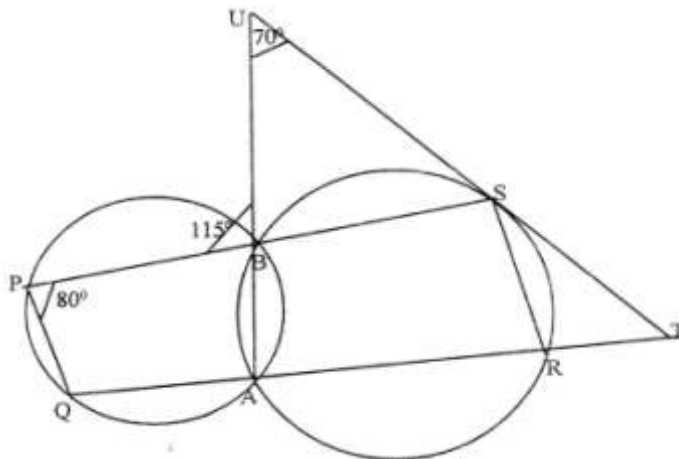
1999 Q 12 P1

ABCD is a cyclic quadrilateral and AB is a diameter. Angle $\angle ADC = 117^\circ$. Giving reason for each step, calculate $\angle BAC$

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1999 Q 19 P1

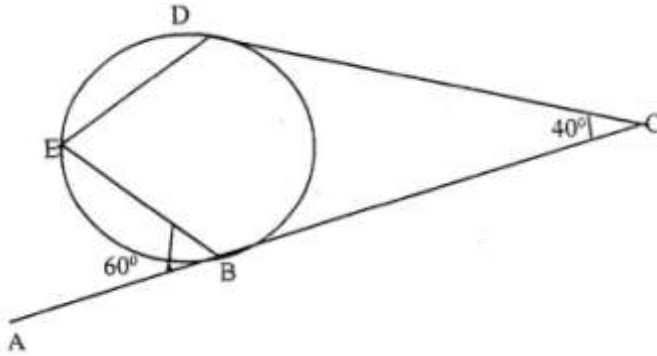
The figure below shows two circles ABPQ and ABSR intersecting at A and B. PBS, QART and ABU are straight lines. The line UST is a tangent to a circle ABSR at S. $\angle BPQ = 80^\circ$, $\angle PBU = 115^\circ$ and $\angle BUS = 70^\circ$



Find the values of the following angles, stating your reason in each case.

- (a) $\angle BAR$
- (b) $\angle STR$
- (c) $\angle BSU$

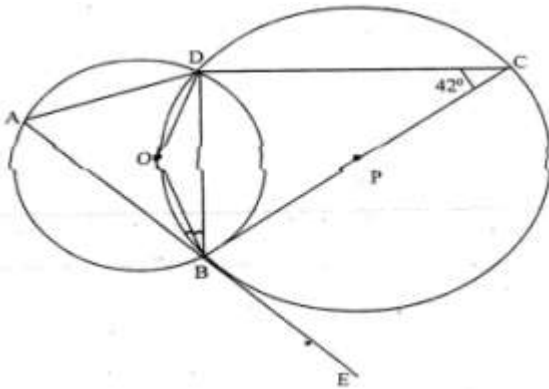
- 13 **2000 Q 13 P1**
 On The figure below lines ABC and DC are tangents to the circle at B and D respectively $\angle ACD = 40^\circ$ and $\angle ABE = 60^\circ$



Giving reasons find the size of:

- (a) $\angle CBD$
- (b) $\angle CDE$

- 14 **2001 Q 20 P1**
 In the figure below, points O and P are centers of intersecting circles ABD and BCD respectively. Line ABE is a tangent to circle BCD at B. Angle BCD = 42°

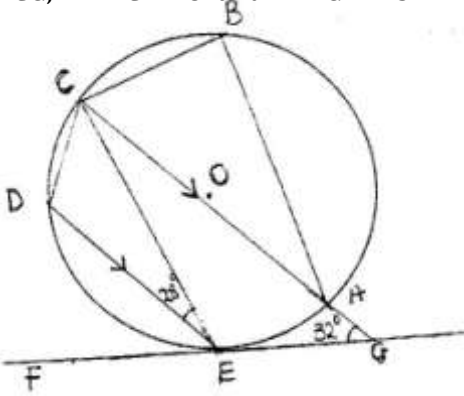


- (a) Stating reasons, determine the size of
- (i) $\angle GBD$
 - (ii) Reflex $\angle BOD$
 - (c) Show that ΔABD is isosceles

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2002 Q 13 P2

The diagram below shows a circle ABCDE. The line FEG is a tangent to the circle at point E. Line DE is parallel to CG, $\angle DEC = 28^\circ$ and $\angle AGE = 32^\circ$



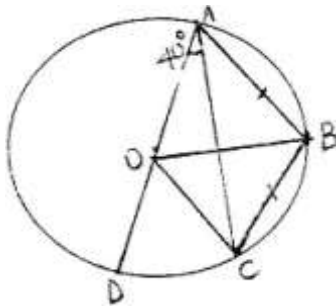
Calculate:

- (a) $\angle AEG$
 (b) $\angle ABC$

16

2003 Q 5 P1

In the figure below is the center of the circle ABCD and AOD in a straight line.

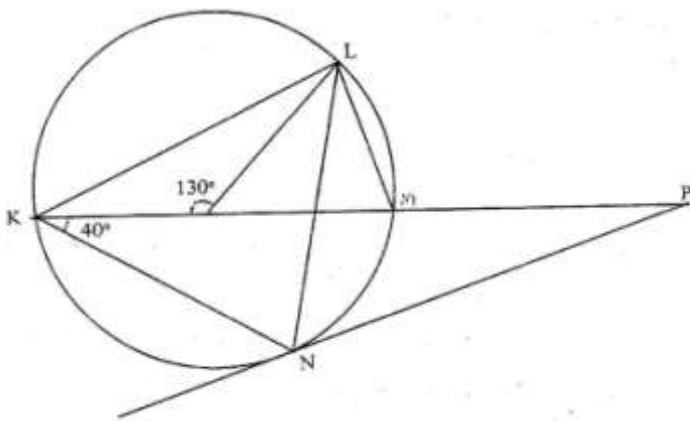


If $AB = BC$ and $\angle DAC = 40^\circ$, Calculate angle BAC. (3mks)

17

2004 Q 22 P1

In the figure below, K M and N are points on the circumference of a circle centre O. The points K, O, M and P are on a straight line. PN is a tangent to the circle at N. $\angle KOL = 130^\circ$ and $\angle MKN = 40^\circ$



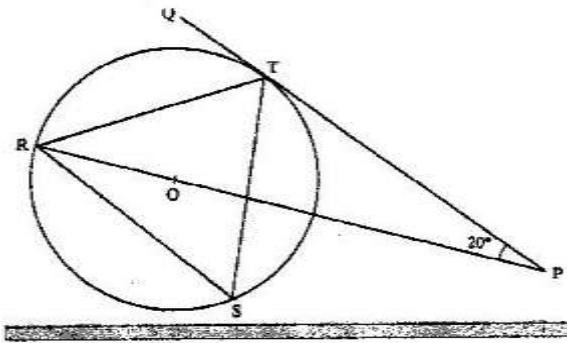
Find the values of the following angles, stating the reasons in each case:

- a) $\angle MLN$
- b) $\angle OLN$
- c) $\angle LNP$
- d) $\angle MPN$

18

2006 Q 3 P2

In the figure below R, T and S are points on a circle centre O. PQ is a Tangent to the circle at T. POR is a straight line and $\angle QPR = 20^\circ$



Find the size of $\angle RST$ (2 marks)

19

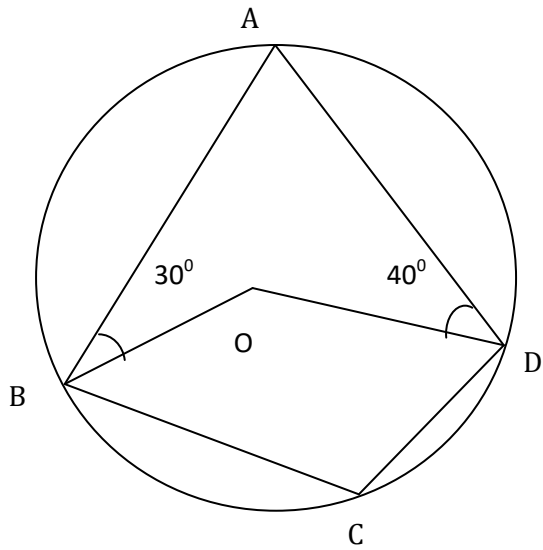
2010 Q 3 P2

In the figure below, O is the center of the circle which passes through the point T, C and D. line TC is parallel to OD and line ATB is a tangent to the angle $\angle DOC = 36^\circ$

21

2011 Q 5 P2

In the figure below, ABCD is a cyclic quadrilateral. Point O is the centre of the circle. Angle $ABO = 30^\circ$ and angle $ADO = 40^\circ$



Calculate the size of angle BCD.

(2 mks)