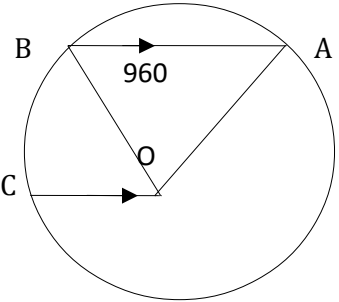


NAME _____ INDEX NUMBER _____

SCHOOL _____ DATE _____

ANGLE PROPERTIES OF A CIRCLE

<i>KCSE 1989 - 2012 Form 3 Mathematics</i>	Working Space
<p>1. 1989 Q5 P1</p> <p>In the figure below, O is the centre of the circle. Angle OAB = 30° and angle BAC = 23°. Find angle ACB.</p> <div style="text-align: center;"> </div> <p style="text-align: right;">(3 marks)</p>	
<p>2. 1989 Q19 P2</p> <p>In the figure below, O is the centre of the circle. PQ and PR are tangents. Angle PQS = 40° and angle PRS = 30°</p> <div style="text-align: center;"> </div>	

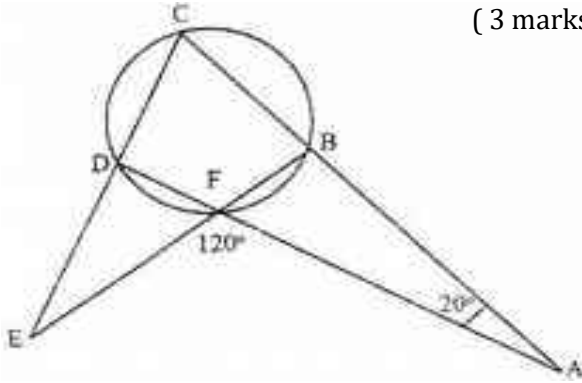
		Working Space
	(i) RTQ (3 marks) (ii) ORQ (2 marks) (iii) RPQ (3 marks)	
3.	<p>1990 Q7 P1</p> <p>In the figure below, O is the centre of the circle, CO is parallel to BA and $\angle AOB = 96^\circ$. Calculate $\angle CAO$.</p>  <p style="text-align: right;">(3 marks)</p>	
4.	<p>1990 Q14 P2</p> <p>In the figure below (not drawn accurately) PAQ is a tangent to the circle at A. Find the $\angle DAB$ and $\angle BAQ$.</p>	

(2 marks)

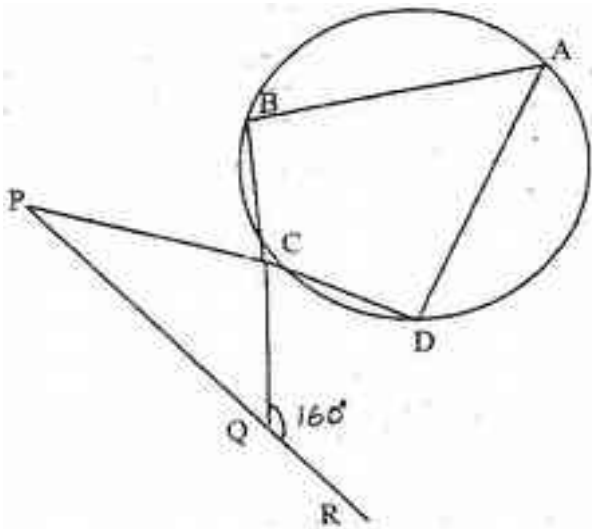
Working Space

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 $\angle BAD$.

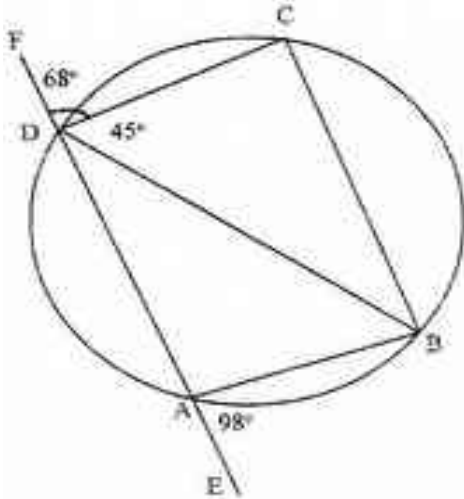


(2 marks)

Working Space

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) $\angle ABD$

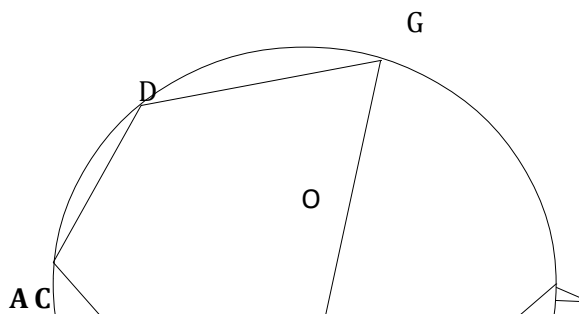
(2 marks)

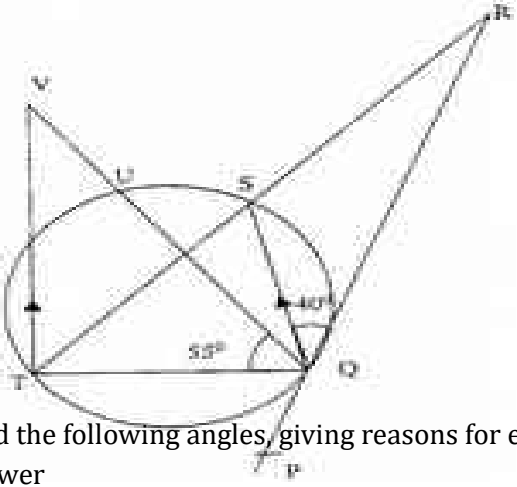
(b) $\angle CBD$

(2 marks)

8. **1996 Q 18 P2**

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.

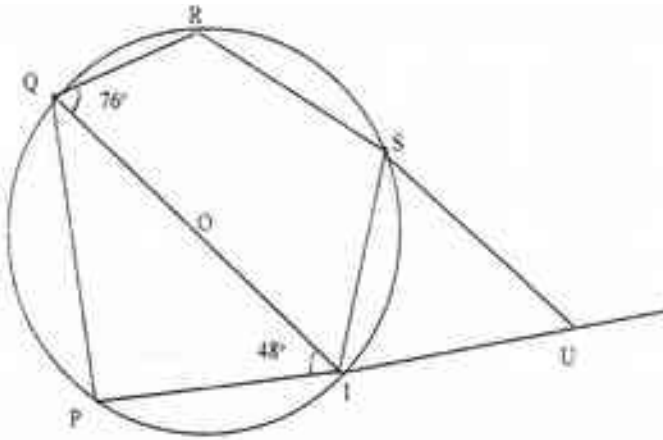


	E B F	Working Space
	(a) Calculate the size (i) $\angle BAD$ (ii) The obtuse $\angle BOD$ (iii) $\angle BGD$ (b) Show that $\angle ABE = \angle CDF$. Give reasons	
9	<p>1997 Q 20 P2</p> <p>In the figure below PQR is the tangent to circle at Q. TS is a diameter and TSR and QUV are straight lines. QS is parallel to TV. Angles $\angle SQR = 40^\circ$ and angle $\angle TQV = 55^\circ$</p>  <p>Find the following angles, giving reasons for each answer</p> <ol style="list-style-type: none"> QST QRS QVT UTV 	

Working Space

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) $\angle PST$

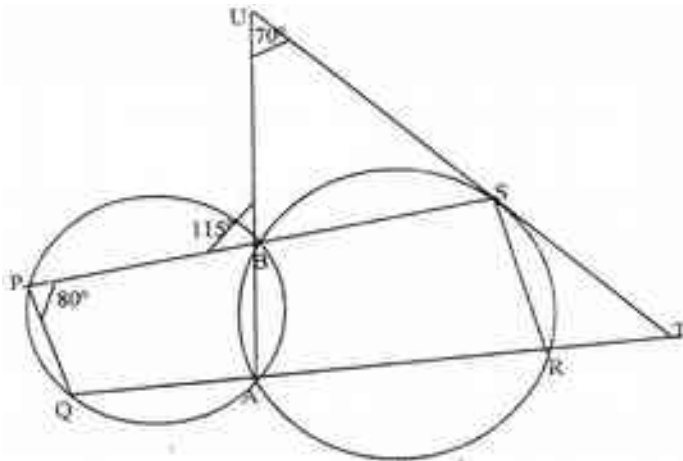
11 **1999 Q 12 P1**

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

Working Space

12 **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 $\angle BUS = 70^\circ$

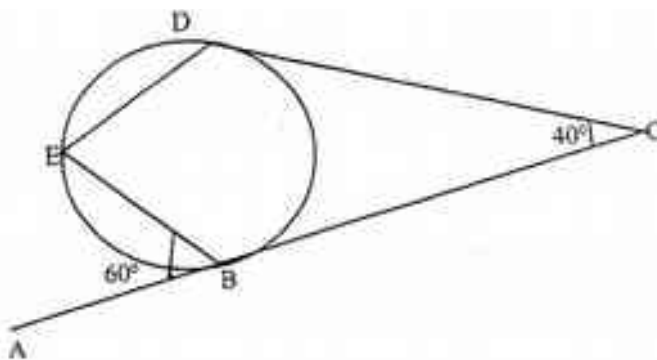


Find the values of the following angles, stating your reason in each case.

- (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 $\angle ABE = 60^\circ$



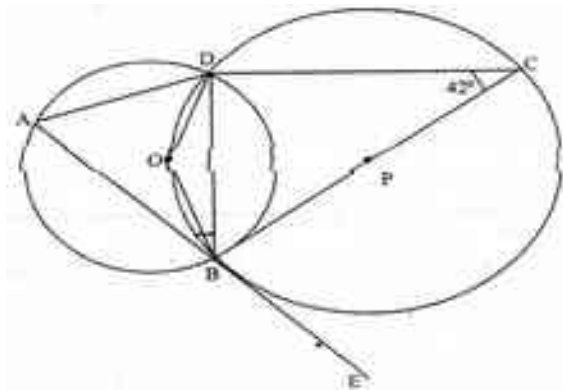
Giving reasons find the size of:

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

Working Space

14 **2001 Q 20 P1**

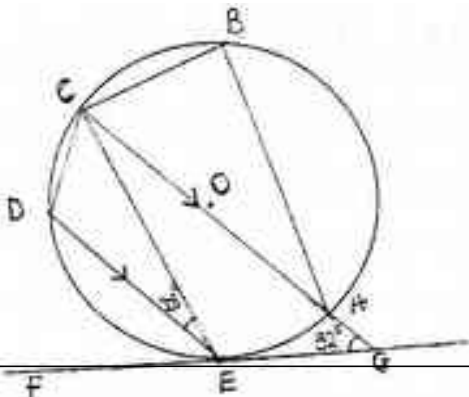
In the figure below, points O and P are centers of intersecting circles ABD and BCD respectively. Line ABE is a tangent to circle BCD at B. Angle $BCD = 42^\circ$



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

15 **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 $\angle AGE = 32^\circ$



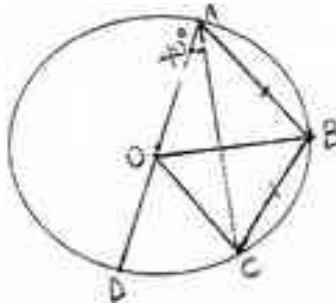
Calculate:

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

Working Space

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.

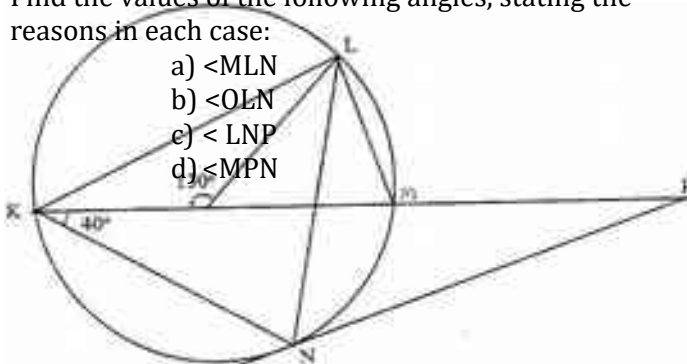
(3marks)

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° and angle MARKN = 40°

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

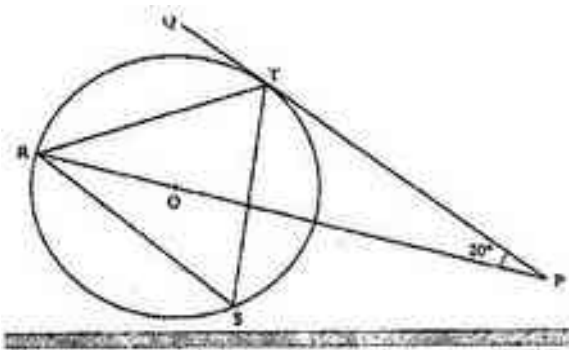
- a) $\angle MLN$
 b) $\angle OLN$
 c) $\angle LNP$
 d) $\angle MPN$



Working Space

18 **2006 Q 3 P2**

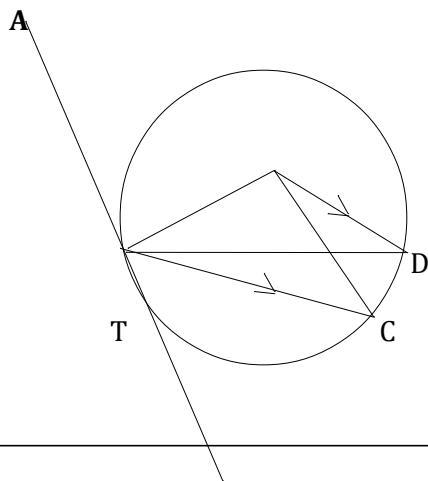
In the figure below R, T and S are points on a circle centre O. PQ is a Tangent to the circle at T. POR is a straight line and $\angle QPR = 20^\circ$



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 $\angle DOC = 36^\circ$



B

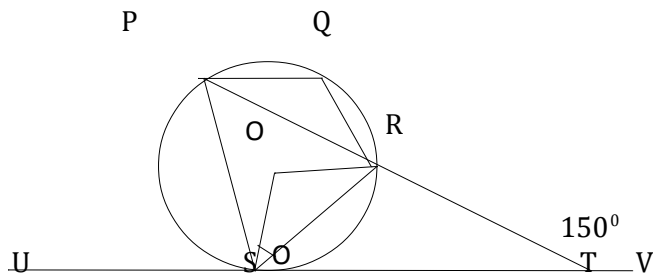
Calculate the size of angle CTB (3 marks)

Working Space

20

2010 Q 24 P2

In the figure below, P, Q, R and S are points on the circle. Line USTV is a Tangent to the circle at S, $\angle RST = 50^\circ$ and $\angle RTV = 150^\circ$. PRT and USTV are straight lines.

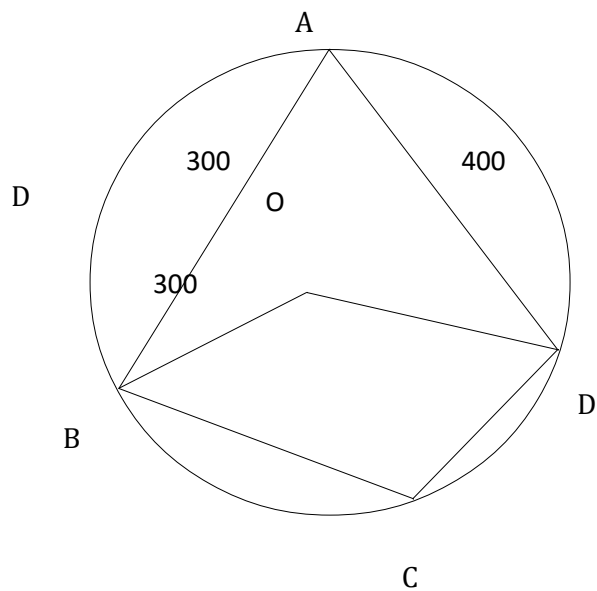


- a) Calculate the size of: 500
- i) $\angle ORS$; (2 marks)
 - ii) $\angle USP$; (1 mark)
 - iii) $\angle PQR$ (2 marks)
- b) Given that $RT = 7$ cm and $ST = 9$ calculate to 3 significant figures:
- i) The length of line PR; (2 marks)
 - ii) The radius of the circle. (3 marks)

Working Space

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 marks)

