Circle Theorems Past Paper Questions Edexcel – None Calculator

1.

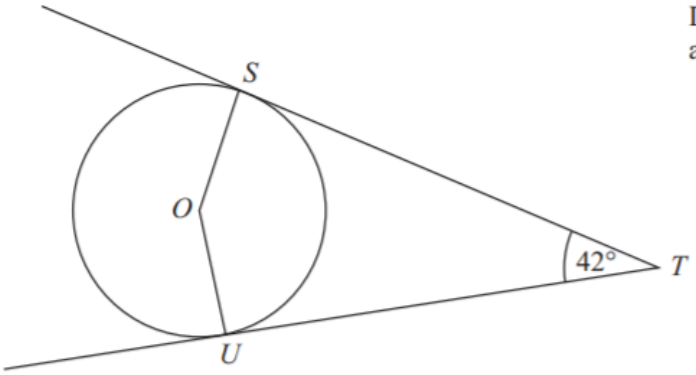


Diagram **NOT** accurately drawn

S and *U* are points on the circumference of a circle, centre *O*.
ST and *UT* are tangents to the circle.
Angle *STU* = 42°

Work out the size of angle *SOU*.
Give reasons for your answer.

2.

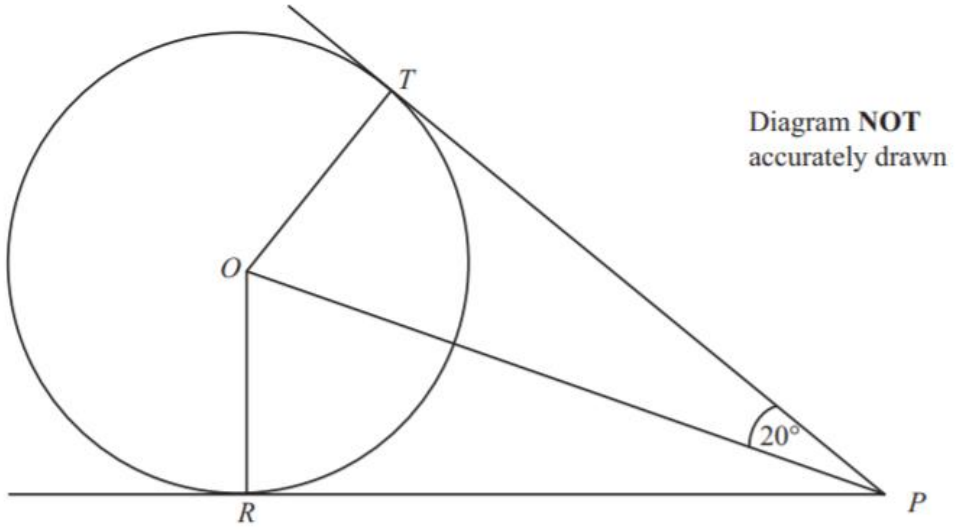


Diagram **NOT** accurately drawn

T and *R* are two points on a circle centre *O*.

PT and *PR* are the tangents to the circle from *P*.

Angle *TPO* = 20°.

Work out the size of angle *TOR*.
You must give reasons for each stage of your working.

3.

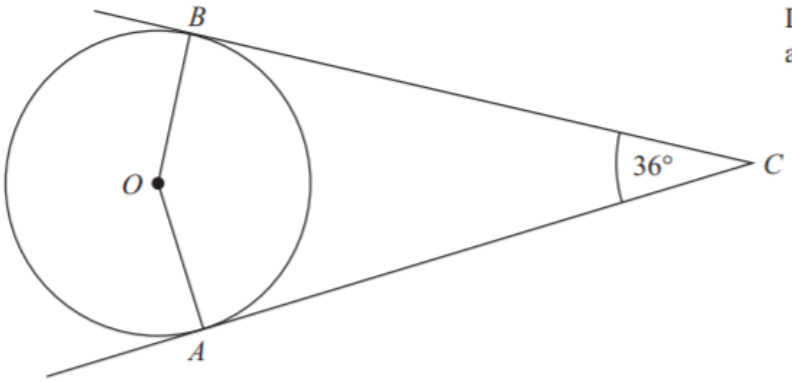


Diagram **NOT** accurately drawn

A and *B* are points on the circumference of a circle, centre *O*.
AC and *BC* are tangents to the circle.

Angle *ACB* = 36°.

Find the size of angle *OBA*.
Give reasons for your answer.

4.

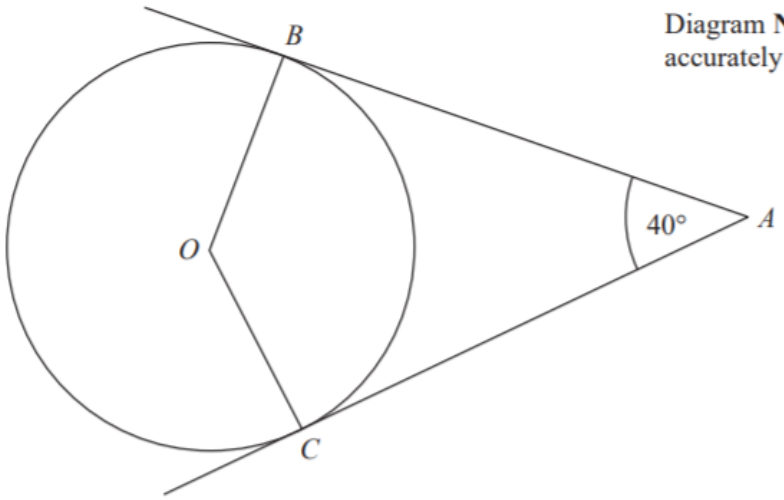


Diagram **NOT** accurately drawn

B and *C* are points on the circumference of a circle, centre *O*.
AB and *AC* are tangents to the circle.
Angle *BAC* = 40°.

Find the size of angle *BCO*.

5.

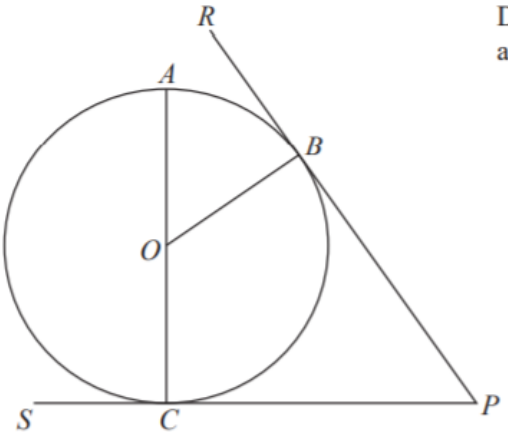


Diagram **NOT** accurately drawn

A, *B* and *C* are points on a circle, centre *O*.

RBP is the tangent to the circle at *B*.
SCP is the tangent to the circle at *C*.
AOC is a diameter of the circle.

Prove that angle *AOB* is equal to angle *CPB*.
You must give reasons at each stage.

6.

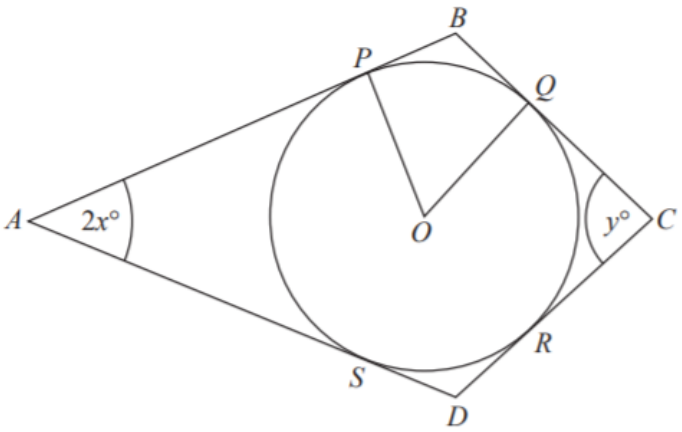


Diagram **NOT** accurately drawn

P, Q, R and S are points on the circumference of a circle, centre O.
APB, BQC, CRD and DSA are tangents to the circle.
$ABCD$ is a kite.

Angle $PAS = 2x°$
Angle $QCR = y°$

Find an expression in terms of x and y for the size, in degrees, of the angle POQ.
Give your expression in its simplest form.
Give reasons for your answer.

7.

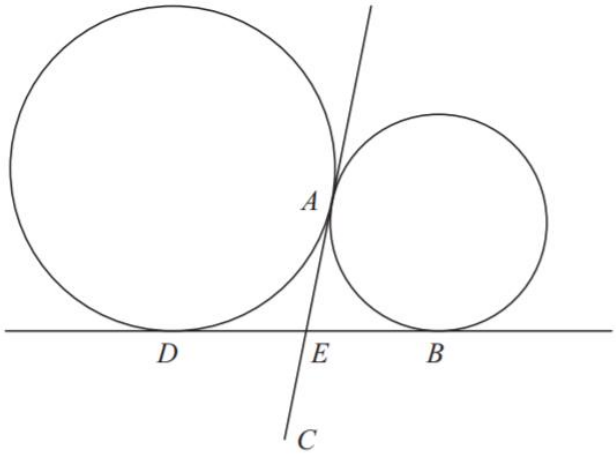


Diagram **NOT** accurately drawn.

A and *D* are two points on the circumference of a circle.
A and *B* are two points on the circumference of a smaller circle.
DB and *AC* are tangents to both circles.
E is the intersection of *DB* and *AC*.
E is the midpoint of *AC*.

Prove that *ABCD* is a rectangle.

8.

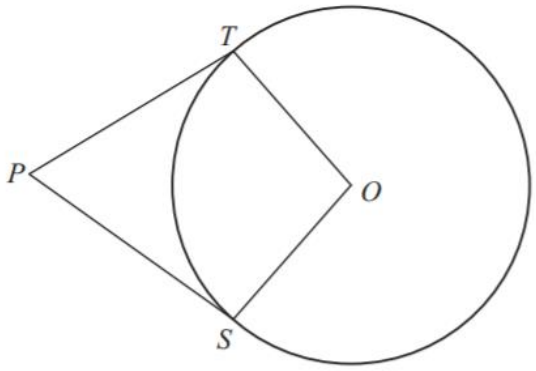


Diagram **NOT** accurately drawn

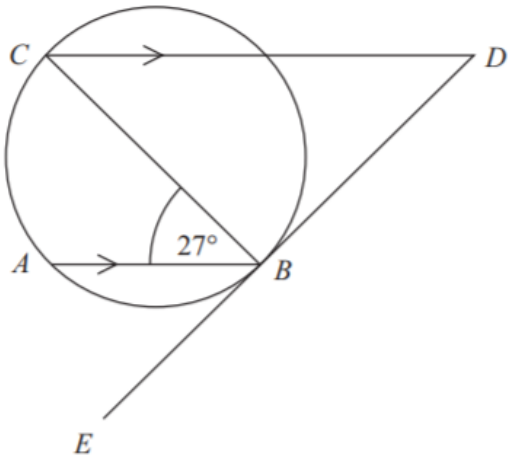
S and *T* are points on the circumference of a circle, centre *O*.
PT and *PS* are tangents.
Angle *TPO* = 24°.

Work out the size of angle *SOT*.

.....°

9.

Diagram **NOT** accurately drawn



A, *B* and *C* are three points on a circle.
DBE is a tangent to the circle.
AB is parallel to *CD*.
BC is a diameter.
Angle *ABC* = 27°.

Find the size of angle *CDB*.
Give reasons for your answer.

10.

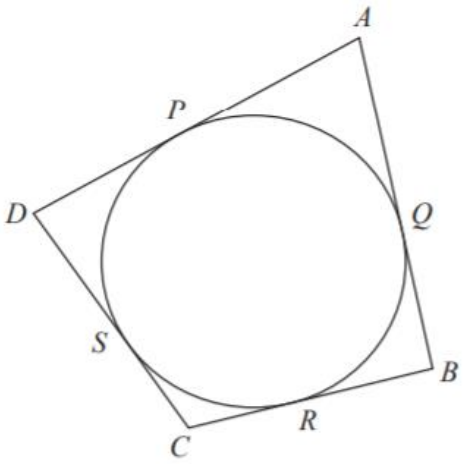


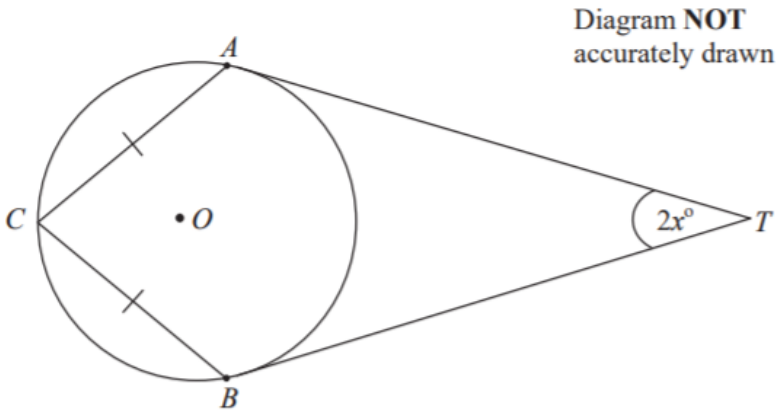
Diagram **NOT** accurately drawn

ABCD is a quadrilateral.
AB, *AD*, *BC* and *CD* are tangents to a circle.
The tangents touch the circle at *Q*, *P*, *R* and *S* respectively.
AC goes through the centre of the circle.

AP : *PD* is in the ratio 3 : 2
AQ : *QB* is in the ratio 3 : 2

Prove that *ABCD* is a kite.

11.



A, *B* and *C* are points on the circumference of the circle, centre *O*.
TA and *TB* are tangents to the circle.
CA = *CB*.
Angle *ATB* = 2*x*°.

Prove that angle *ACB* = (90 – *x*)°.

12.

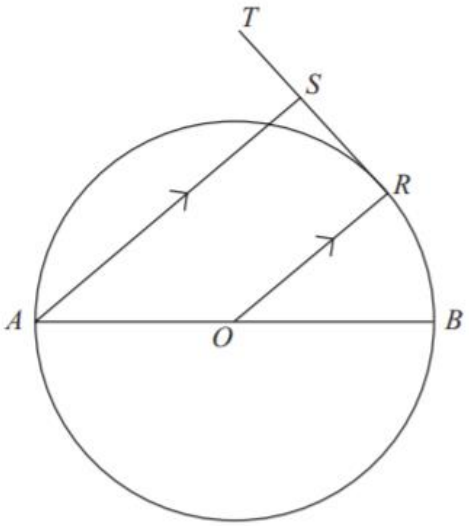


Diagram **NOT** accurately drawn

AB is a diameter of a circle centre *O*.
The point *R* is on the circumference of the circle.
RST is the tangent to the circle at *R*.
AS is parallel to *OR*.

Prove that the size of angle *AST* is 90°.

13.

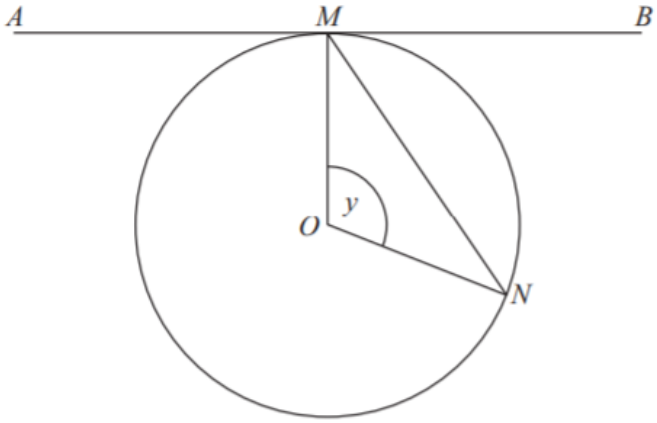


Diagram **NOT** accurately drawn

M and *N* are two points on the circumference of a circle centre *O*.
The straight line *AMB* is the tangent to the circle at *M*.

Angle $MON = y$

Prove that angle $BMN = \frac{1}{2}y$

14.

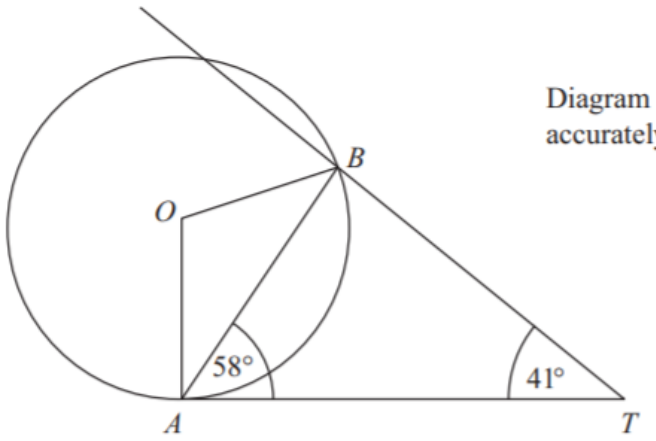


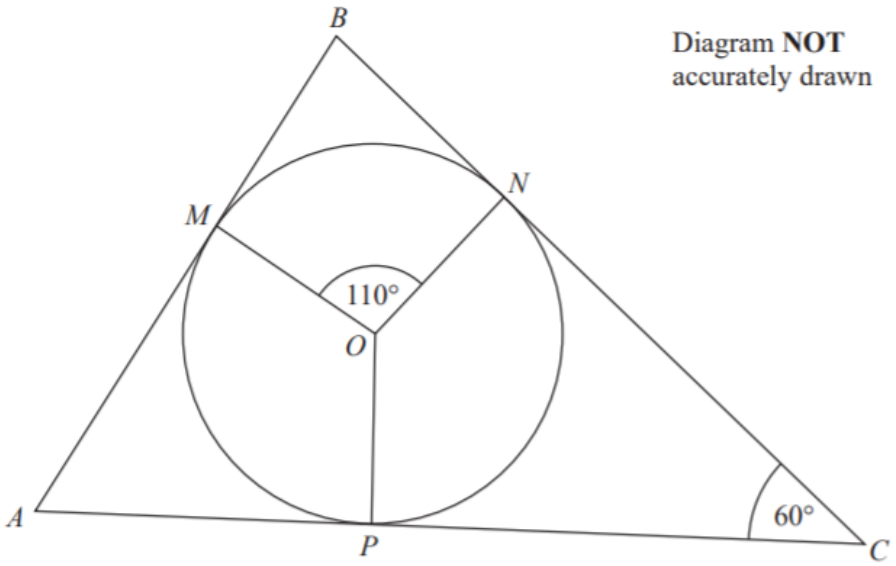
Diagram **NOT** accurately drawn

A and *B* are points on the circumference of a circle, centre *O*.

AT is a tangent to the circle.
Angle *TAB* = 58°.
Angle *BTA* = 41°.

Calculate the size of angle *OBT*.
You must give reasons at each stage of your working.

15.

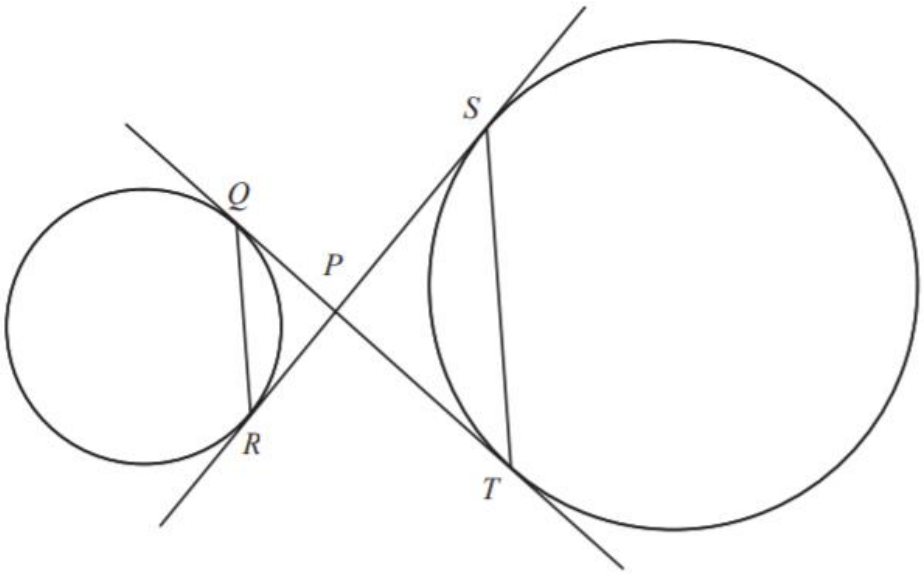


M, *N* and *P* are points on the circumference of a circle, centre *O*.
AMB, *BNC*, and *CPA* are tangents to the circle.

Angle *MON* = 110°
Angle *BCA* = 60°

Work out the size of angle *BAC*.
Give reasons for each stage of your working.

16.



Q and R are two points on the circumference of a circle.
S and T are two points on the circumference of another circle.

QT and SR are tangents to both circles.
P is the point of intersection of the two tangents.

Prove that QR is parallel to ST.