1 90° MADE FROM CENTRE ON A CHORD CUTS THE CHORD IN TWO EQUAL HALVES.
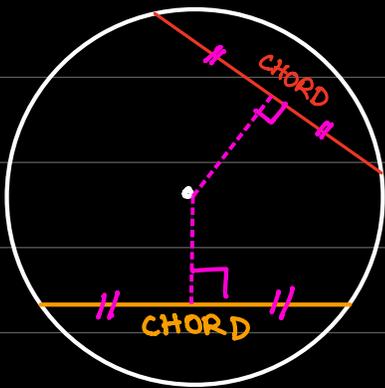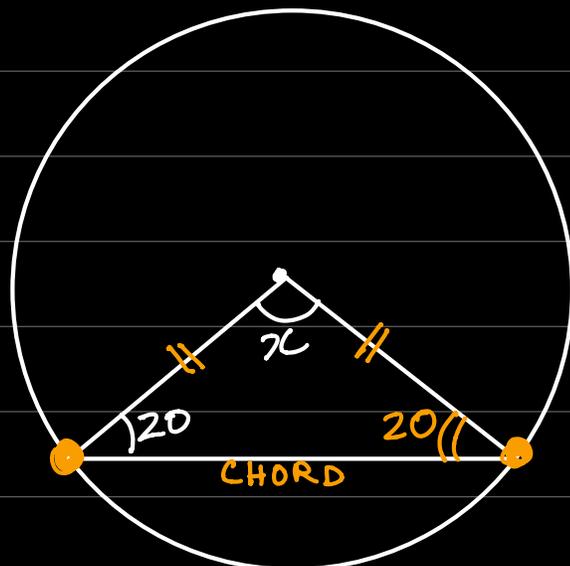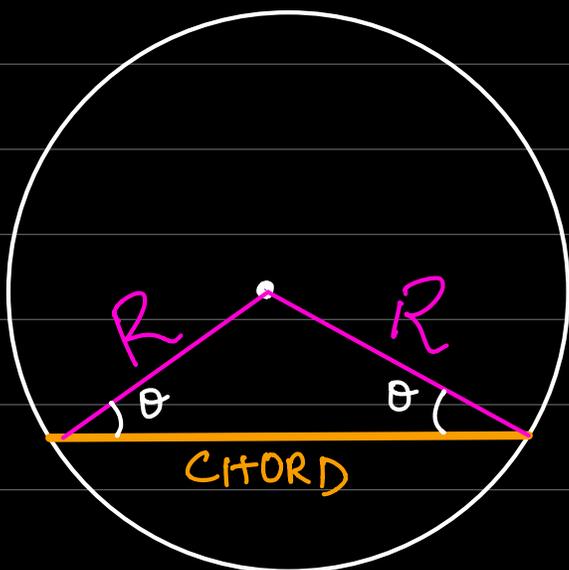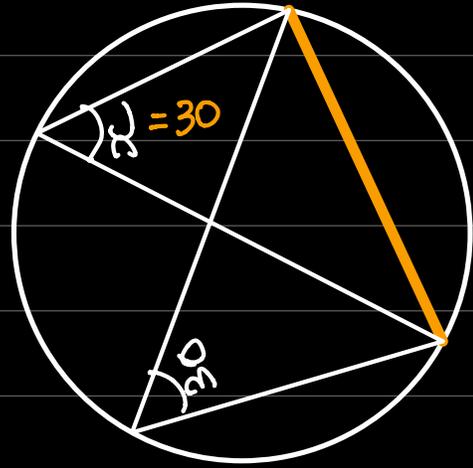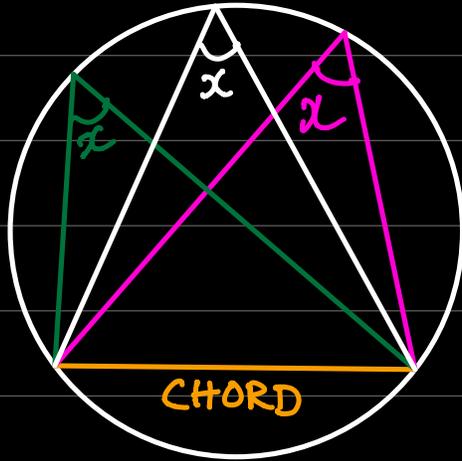

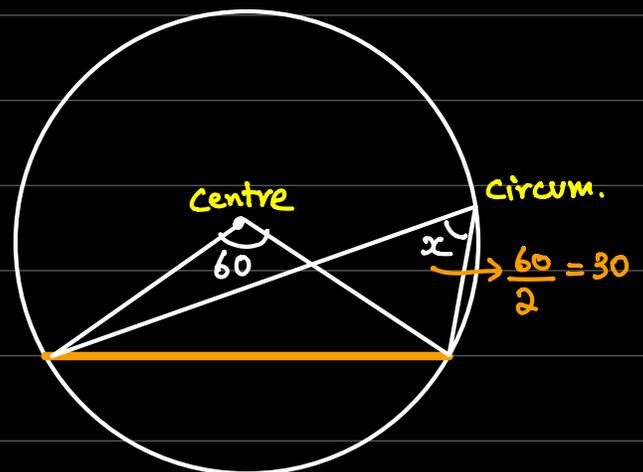**2** IF WE JOIN ENDS OF A CHORD TO CENTRE, IT MAKES AN ISOSCELES
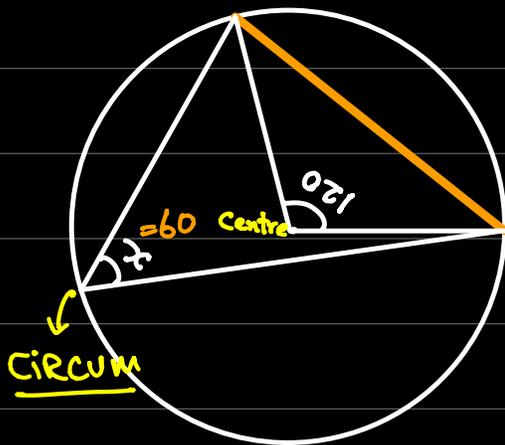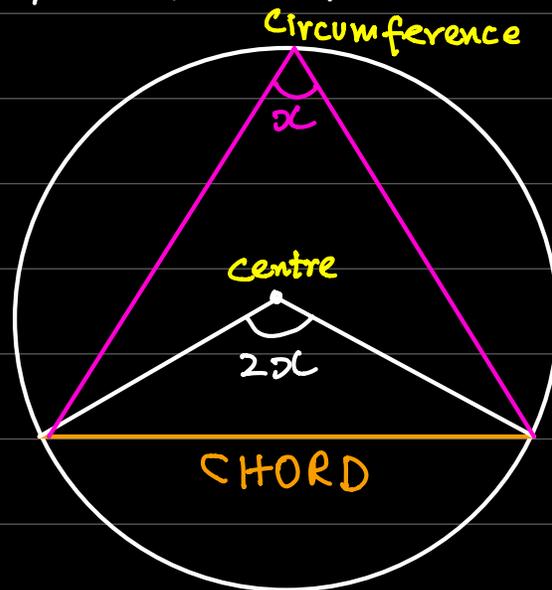

$$x + 20 + 20 = 180$$

$$x = 140$$

3 ANGLE MADE ON CIRCUMFERENCE FROM ENDS OF SAME CHORD ARE ALWAYS EQUAL.

CHORD

$\} = 30$

4 ANGLE MADE ON CENTRE IS DOUBLE THE ANGLE MADE ON CIRCUMFERENCE IF THEY START FROM SAME CHORD.

Circumference

x

centre

$2x$

CHORD

$= 60$ Centre

120

Circum

Centre   Circum.

60

$\frac{60}{2} = 30$

5 ANGLE MADE AT CIRCUMFERENCE STARTING FROM ENDS OF DIAMETER IS ALWAYS 90°.
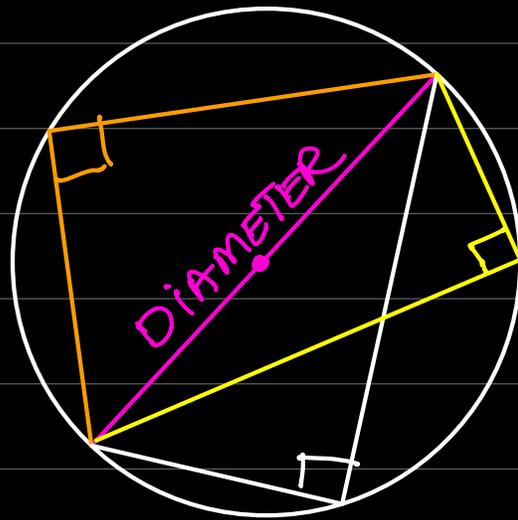
DIAMETER

IMP.:
Not a diameter until centre is marked or mentioned in Question.

6 CYCLIC QUADRILATORAL.
(4 sided shape)

Sum of opp angles = 180.

A

B

D

C

$A + C = 180$
$B + D = 180$

7 ANGLE BETWEEN RADIUS & TANGENT. IS ALWAYS 90°

Tangent

radius

8 TANGENT KITE

A
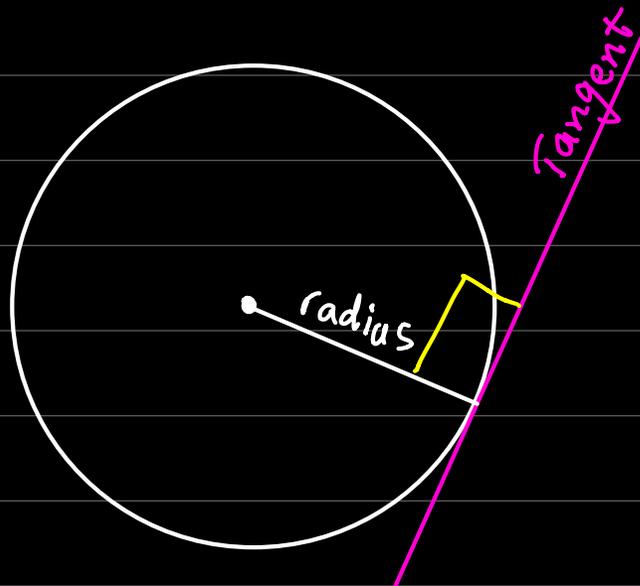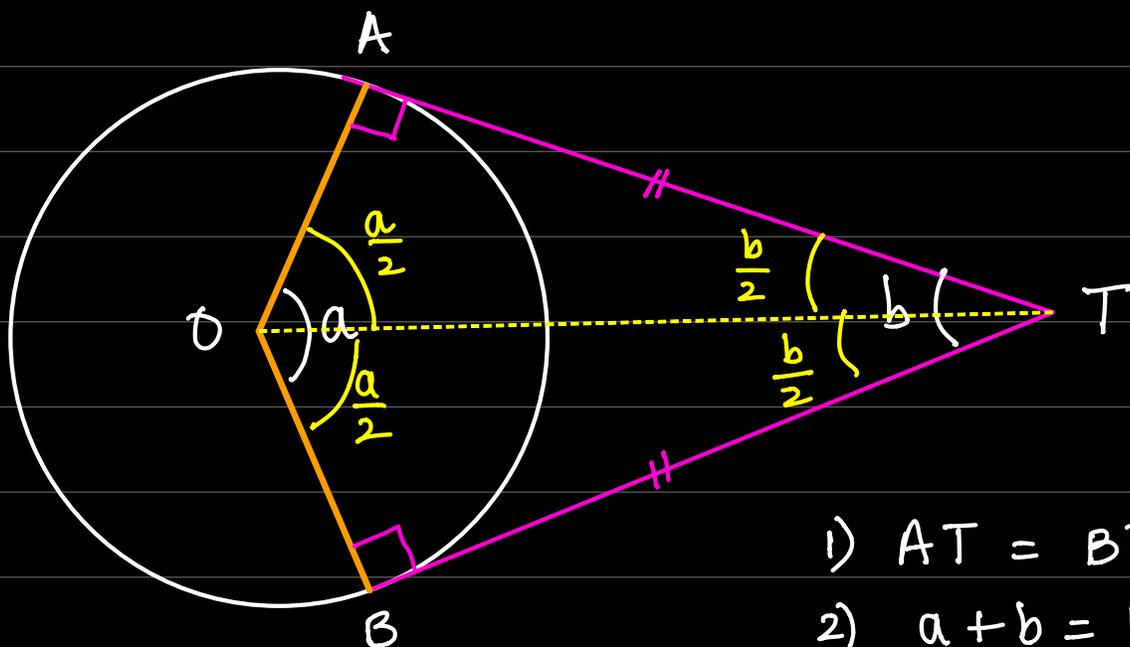
1) $AT = BT$

2) $a + b = 180$

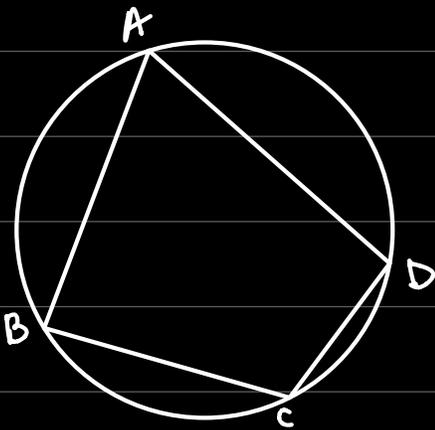3) If we cut the kite in half angles are halved as well.

DO NOT READ THE REQUIRED ANGLES IN QUESTION.

COMPLSORY STEPS.

1- MARK ALL RADIUS (ISOSCELES)

2- 90° made by DIAMETER

3- 90° made by RADIUS & TANGENT.

4- CHORD PROPERTIES

5- CYCLIC QUADRILATORAL.

6

ΔABC
90+42+C=180
C = 48
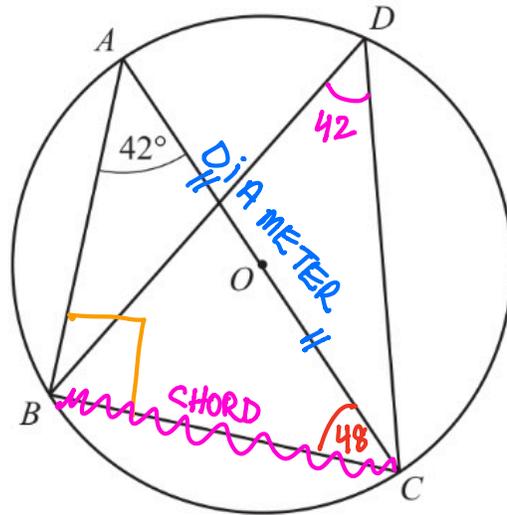
The diagram shows a circle, centre O, passing through A, B, C and D.
AOC is a straight line and $B\hat{A}C = 42°$.

Find

(a) $B\hat{D}C$, $= 42$

(b) $A\hat{B}C$, $= 90$

(c) $A\hat{C}B$. $= 48$

Answer (a) $B\hat{D}C =$ ....[1]

(b) $A\hat{B}C =$ ....[1]

(c) $A\hat{C}B =$ ....[1]

10 In the diagram, A, B, C, D, E and F
lie on the circle, centre O.
AD and FC are diameters, and $F\hat{C}D = 57°$.

$\triangle OCD$

$O + 57 + 57 = 180$

$O = 66$

Cyclic
CDEF

$C + E = 180$

$57 + E = 180$

$E = 123$

90
-57

33
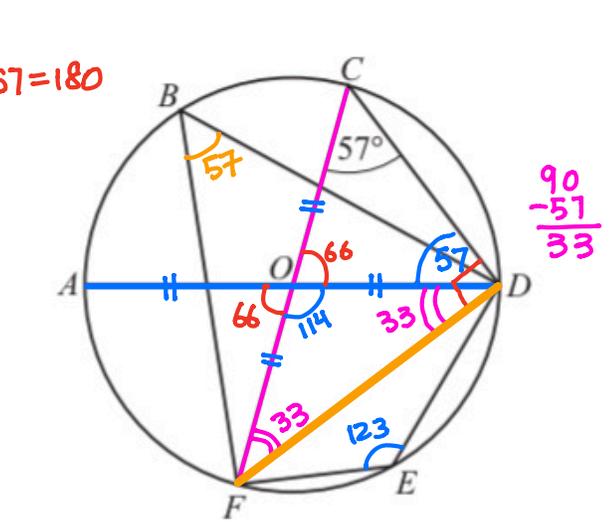
Find

(a) $D\hat{E}F$,

Answer (a) $D\hat{E}F =$ ....123........[1]

(b) $F\hat{B}D$,

Answer (b) $F\hat{B}D =$ ....57........[1]

(c) $C\hat{F}D$,

Answer (c) $C\hat{F}D =$ ....33........[1]

(d) $A\hat{O}F$.

Answer (d) $A\hat{O}F =$ ....66........[1]

12 In the diagram, the points A, B, C and D lie on the circle, centre O.

$B\hat{A}D = 47°$.

Isosceles

$$\begin{array}{r} 180 \\ -94 \\ \hline 86 \\ \div 2 \\ \hline 43 \end{array}$$

double → 94 43

Cyclic
$47 + C = 180$
$C = 133$

133
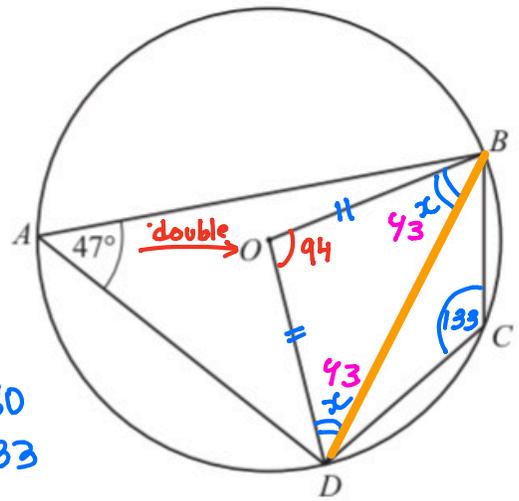
Find

(a) $B\hat{O}D$,

Answer $B\hat{O}D =$ ......**94**...... [1]

(b) $B\hat{C}D$,

Answer $B\hat{C}D =$ ......**133**...... [1]

(c) $O\hat{B}D$.

Answer $O\hat{B}D =$ ......**43**...... [1]

22

Handwritten working (blue ink):

$\triangle TOB$
$90 + 68 + z = 180$
$z = 22$

$t + 69 + 34 = 180$
$t = 77$

$\triangle ACD$
$90 + 43 + x = 180$
$x = 47$

Diagram labels: B, C, $t°$, $34 = y°$, 69, $69 =$, $180 - 43 - 68$, CHORD, $z° = 22$, $43°$, $68°$, 47, $x°$, T, A, O, D
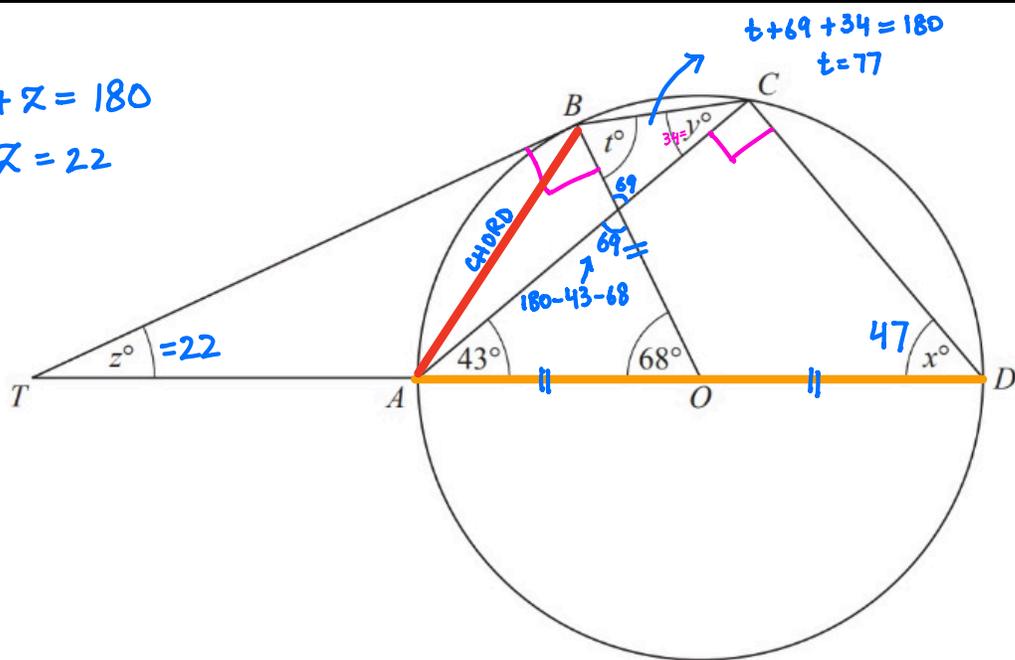
In the diagram, A, B, C and D lie on the circle, centre O.
AD is a diameter.
The tangent to the circle at B meets the line DA produced at T.

$A\hat{O}B = 68°$ and $C\hat{A}O = 43°$.

(a) Find x.

Answer $x =$ ....**47**.............. [1]

(b) Find y.

Answer $y =$ ....**34**.............. [1]

(c) Find z.

Answer $z =$ ....**22**.............. [1]

(d) Find t.

Answer $t =$ ....**77**.............. [1]
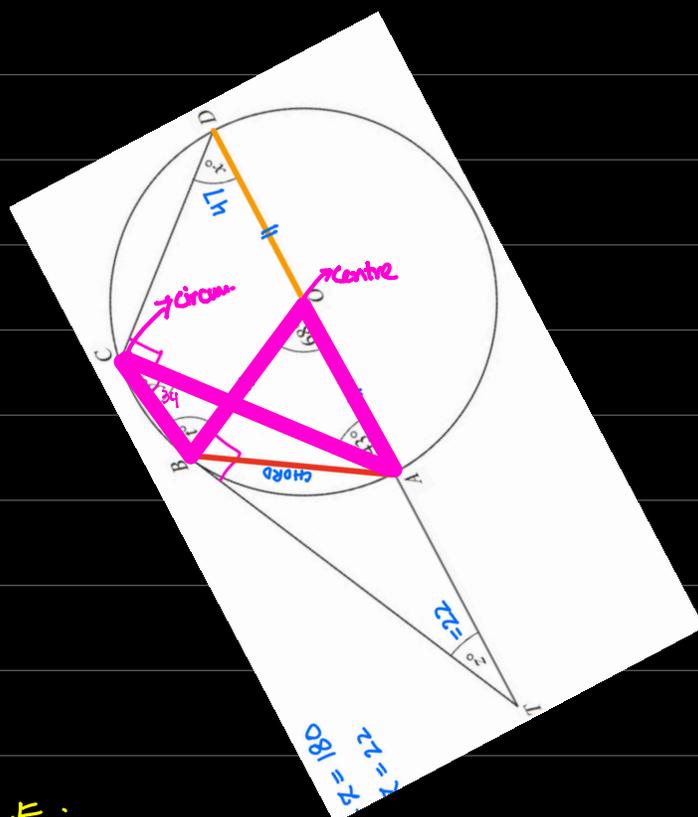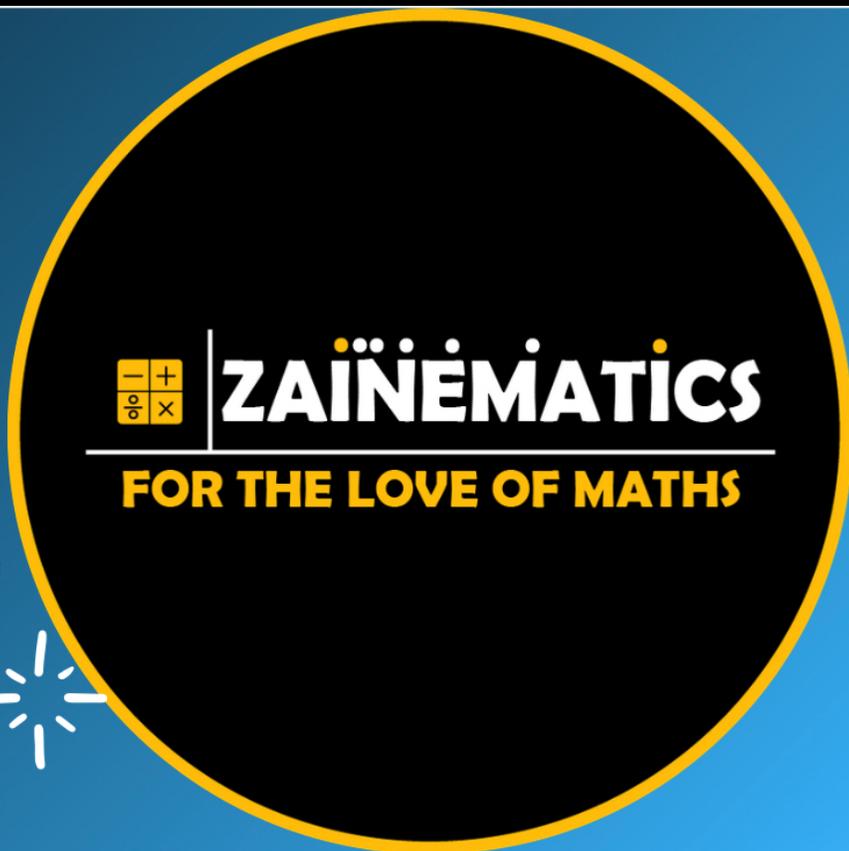
GOLDEN RULE:

WHENEVER YOU SEE PARALLEL LINES, ALWAYS
EXTEND THEM A LITTLE IN BOTH DIRECTIONS

21
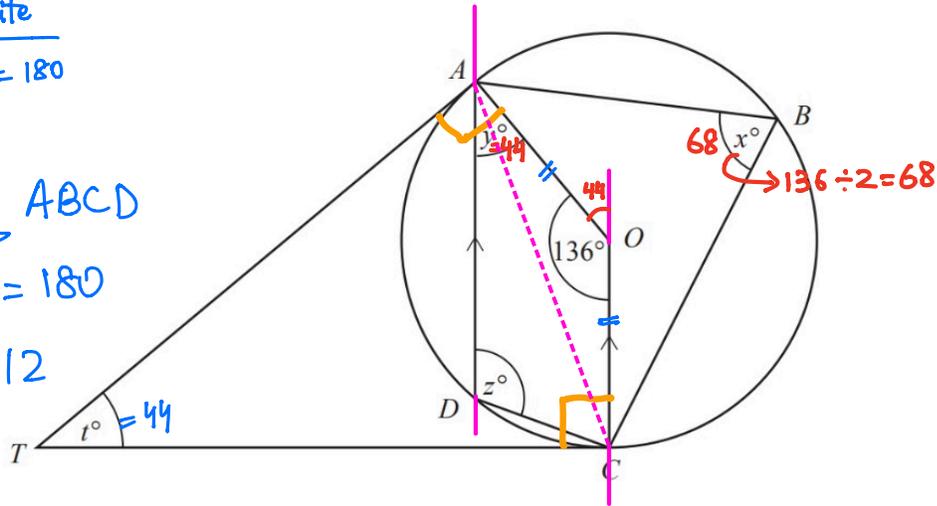
In the diagram, A, B, C and D lie on the circle, centre O.
CO is parallel to DA.
The tangents to the circle at A and C meet at T.

$A\hat{O}C = 136°$.

(a) Find x.

Answer $x =$ .... [1]

(b) Find y.

Answer $y =$ .... [1]

(c) Find z.

Answer $z =$ .... [1]

(d) Find t.

Answer $t =$ .... [1]

25 THERE are no properties relating TWO CIRCLES. SO DEAL ONE CIRCLE AT A TIME.
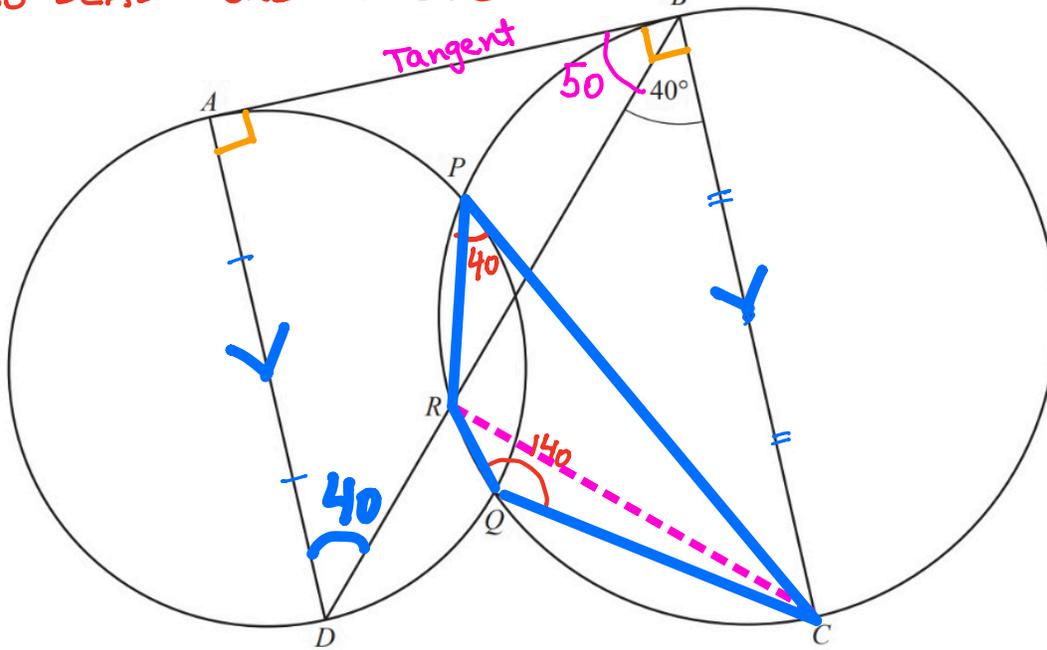
In the diagram, the two circles intersect at P and Q.
The line AB is a tangent to the circles at A and B.
AD and BC are diameters.
BD intersects the larger circle at R.

$D\hat{B}C = 40°$.

(a) Find $C\hat{P}R$.

Answer $C\hat{P}R =$ **40** [1]

(b) Find $C\hat{Q}R$.

Answer $C\hat{Q}R =$ **140** [1]

(c) Find $A\hat{B}D$.

Answer $A\hat{B}D =$ **50** [1]

(d) Find $A\hat{D}B$.

Answer $A\hat{D}B =$ **40** [1]

90 + 90
= 180