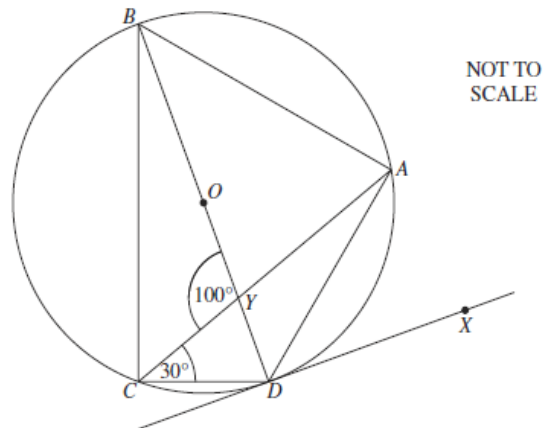


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- 2015 12 a** In the diagram, the points A, B, C and D are on the circumference of a circle, whose centre O lies on BD . The chord AC intersects the diameter BD at Y . The tangent at D passes through the point X . It is given that $\angle CYB = 100^\circ$ and $\angle DCY = 30^\circ$. Copy or trace the diagram into your writing booklet.
- What is the size of $\angle ACB$?
 - What is the size of $\angle ADX$?
 - Find, giving reasons, the size of $\angle CAB$?



1
1
2

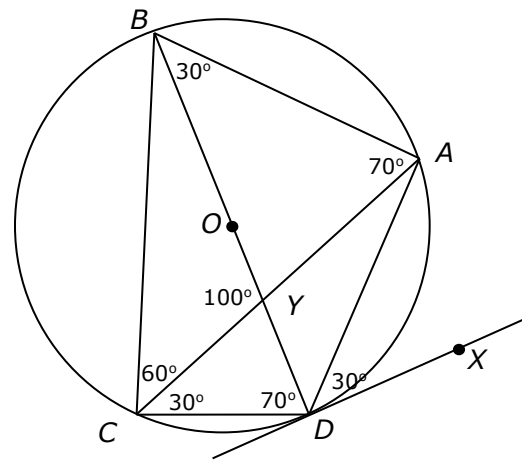
(i) $\angle ACB = 60^\circ$ (\angle in a semi-circle) State Mean: **0.9**

(ii) As $\angle ACD = 30^\circ$
 then $\angle ABD = 30^\circ$ (\angle in same segment)
 $\therefore \angle ADX = 30^\circ$ (\angle in alternate segment)

State Mean: **0.75**

(iii) $\angle CDB = 70^\circ$
 (ext \angle equals sum of int \angle s)
 $\angle CAB = 70^\circ$ (\angle in same segment)

State Mean: **1.71**



* These solutions have been provided by [projectmaths](#) and are not supplied or endorsed by BOSTES.

Board of Studies: Notes from the Marking Centre



(a)(i)

A large number of candidates found $\angle ACB = 60^\circ$ using the fact that $\angle ACD$ was the angle in a semicircle. Almost all candidates gave reasons even though it was not required in the question.

(ii)

Many candidates used the appropriate theorem (ie the angle between a tangent and a chord through the point of contact is equal to the angle in the alternate segment) in one step to correctly find $\angle ADX = 30^\circ$.

A small number of candidates did not find the correct value of $\angle ADX$ after numerous steps and quoted many circle geometry theorems, when reasoning was not required.

(iii)

A large number of candidates found $\angle CAB = 70^\circ$, correctly quoting or stating some circle geometry theorems.

A small number of candidates executed an efficient solution in two steps, stating the appropriate theorems.

Common problems were:

- finding almost every angle in the pursuit of $\angle CAB$ and quoting irrelevant theorems
- writing every theorem in the hope that one may be correct, rather than composing a deductive argument.