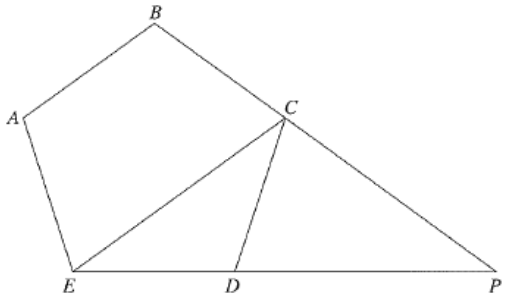
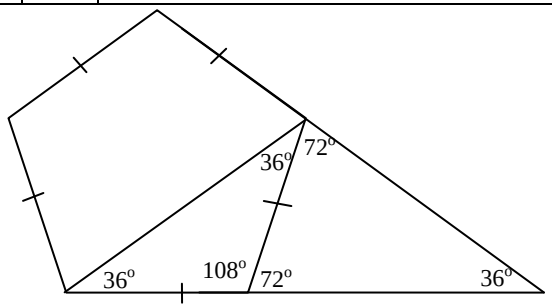
11	**6a**	The diagram shows a regular pentagon *ABCDE*. Sides *ED* and *BC* are produced to meet at *P*. Copy or trace the diagram into your writing booklet. (i) Find the size of $\angle CDE$. (ii) Hence, show that ΔEPC is isosceles.	**1** **2**





(i) Angle sum of pentagon is 540°

$$\therefore \angle CDE = \frac{540^\circ}{5}$$

$$= 108^\circ$$

(ii) $DE = DC$ (sides of regular pentagon)

$\angle DEC = 36^\circ$ (base $\angle$s isos Δ)

$\angle CDP = \angle DCP = 72^\circ$

(ext $\angle$s of regular pentagon)

$\angle CPD = 36^\circ$ ($\angle$ sum of Δ)

$\therefore$ ΔEPC is isosceles (base $\angle$s equal)

State Mean:
0.78/1
1.14/2

* These solutions have been provided by *projectmaths* and are not supplied or endorsed by the Board of Studies

Board of Studies: Notes from the Marking Centre

This part instructed candidates to draw a diagram and the majority of candidates did so. The diagram allowed for checking the candidate's working.

(i) Very few responses treated $\angle CDE$ as an internal angle of a regular pentagon. Many completed this question using the formula for the sum of external angles. Common errors included misinterpreting the question, with many candidates finding the incorrect angle, and using an incorrect formula/method to find the angle.

(ii) There were a number of non-attempts for this part. In better responses, candidates drew and labelled their diagram, showing the calculated angle sizes. In a large number of these cases there was no supporting statement and/or geometric reason. Common errors included proving that other irrelevant triangles were isosceles and accepting obviously incorrect answers, such as two obtuse angles in a triangle.

Source: http://www.boardofstudies.nsw.edu.au/hsc_exams/