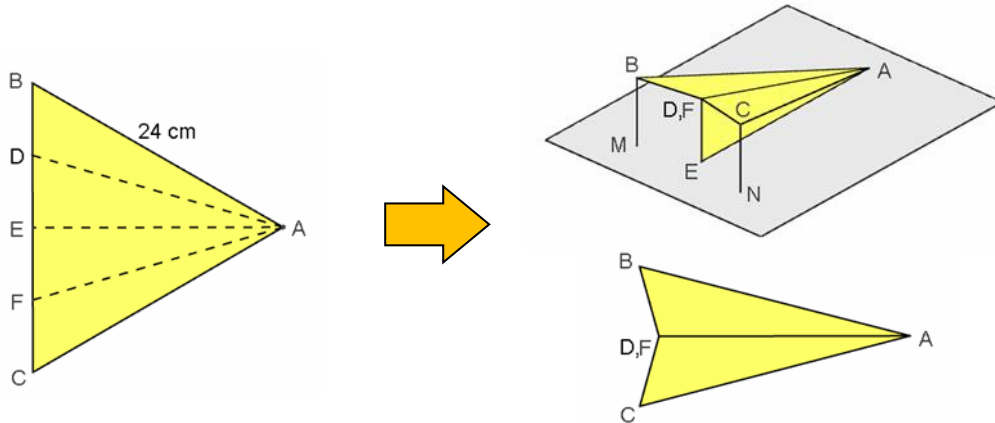


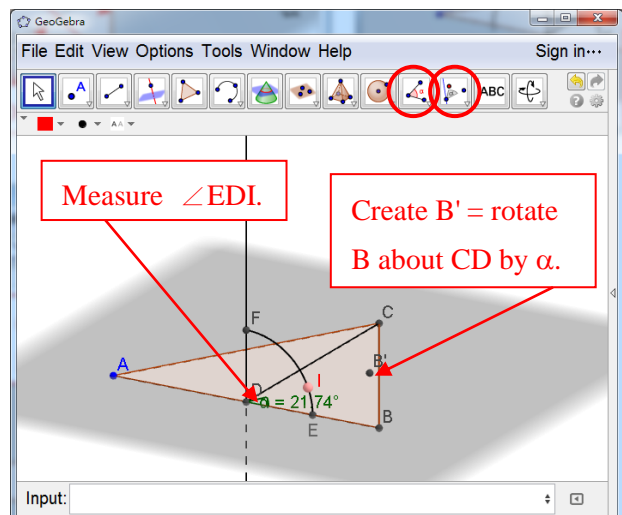
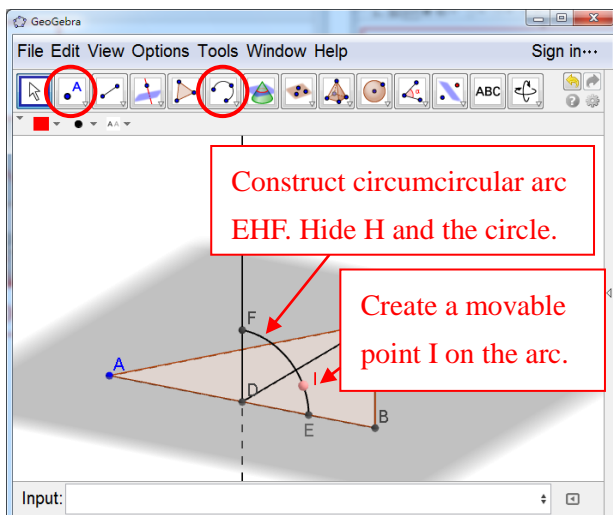
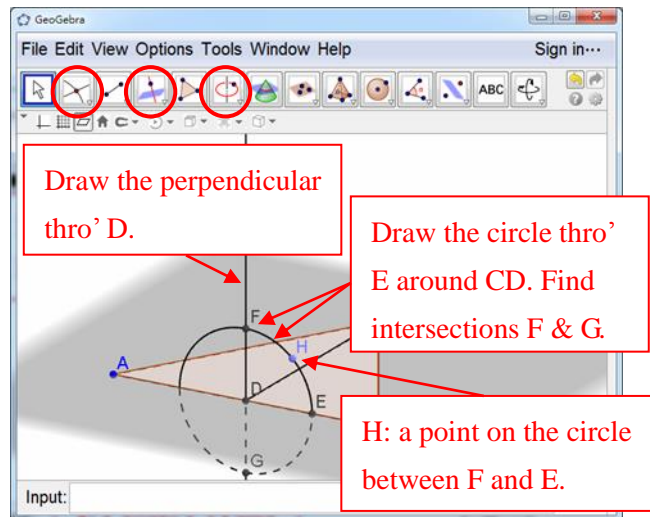
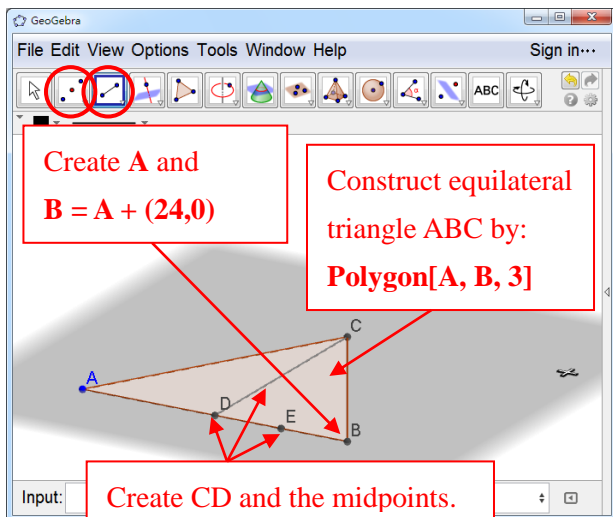


Task 14 HKCEE 1999: Folding an Aeroplane

A paper card ABC in the shape of an equilateral triangle of side 24 cm is folded to form an aeroplane. D, E and F are points on edge BC so that $BD = DE = EF = FC$. The aeroplane is formed by folding the paper card along the lines AD, AE and AF so that AD and AF coincide. It is supported by two vertical sticks BM and CN so that A, B, D, F, C lie on the same plane.



- (a) Find the distance between the tips, B and C, of the wings of the aeroplane. (11.5 cm)
- (b) Find the inclination of the wings of the aeroplane to the horizontal ground. (16.1°)
- (c) Find the length of the stick CN. (6.46 cm)





Create the plane with FD and CD

Create the line thro' I \perp plane

Create the inclined plane with C and the line thro' I. Draw CI.

Create the circle thro' B' around CI.

Find the intersections J, K of the circle and the inclined plane.

Hide unwanted objects.

Draw triangles CDI and CIJ. Reflect them in the vertical plane.

Reflect I and J in the vertical plane.

Hide unwanted objects. Change colours.

Rename the points according to the question.

Change the colours of the points as shown.

Drag F to D. Draw perpendiculars from B and C to the base plane. Find the intersections and rename them as M and N.

Hide the perpendiculars and draw segments BM and CN. Set the "Condition to Show" of BM, CN, M and N as " $F = D$ ".