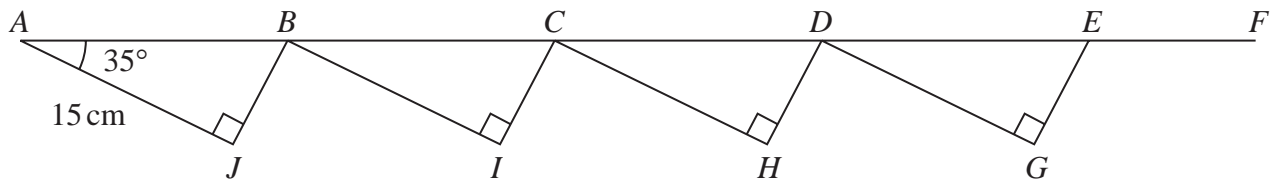1 The diagram shows four congruent right-angled triangles *ABJ*, *BCI*, *CDH* and *DEG*.
   The diagram also shows the straight line *ABCDEF*.

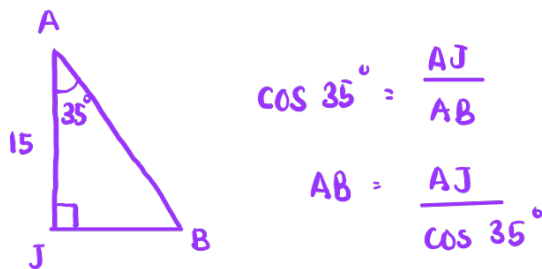Diagram **NOT**
accurately drawn

AJ = 15 cm
Angle *BAJ* = 35°

AF = 80 cm

Work out the length of *EF*.
Give your answer correct to 3 significant figures.

$$\cos 35^\circ = \frac{AJ}{AB}$$

$$AB = \frac{AJ}{\cos 35^\circ}$$

$$\text{length } AB = \frac{15 \text{ cm}}{\cos 35^\circ} \quad ①$$

$$= 18.3 \text{ cm} \quad ①$$

since all triangles are congruent :

length AE = 4 × 18.3 cm

$$= 73.2 \text{ cm} \quad ①$$

length EF = AF − AE

$$= 80 − 73.2 \quad ①$$

$$= 6.75 \text{ cm} \quad ①$$

6.75

.... cm

(Total for Question 1 is 5 marks)

2 The diagram shows two congruent isosceles triangles and parts of two congruent regular polygons, **X** and **Y**.
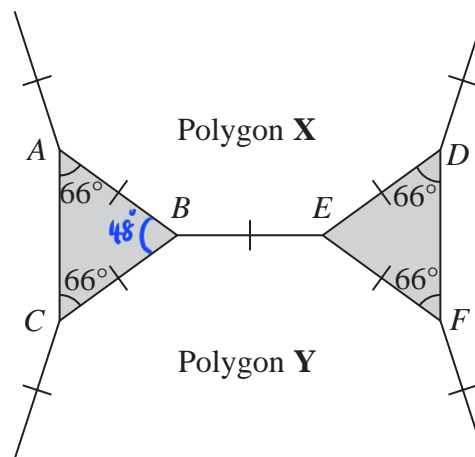
Diagram **NOT** accurately drawn

Polygon **X**

Polygon **Y**

A $66°$ $48°$ B E $66°$ D

$66°$ C $66°$ F

The two regular polygons each have *n* sides.

Work out the value of *n*.

$$\text{angle } ABC = 180° - 66° - 66°$$
$$= 48° \ \textcircled{1}$$

Half of angle ABC = exterior angle of polygon X and Y

$$= \frac{1}{2} \times 48° = 24°$$

$$\text{Exterior angle of polygon} = \frac{360°}{\text{no. of sides}}$$

$$24° = \frac{360°}{n}$$

$$n = \frac{360°}{24°} \ \textcircled{1}$$

$$= 15 \ \textcircled{1}$$

$n = $ ....15...........

(Total for Question 2 is 3 marks)