

- (f) Solve the simultaneous linear equations:

$$3x + 10y = 15$$

$$4x + 7y = 1$$

(5 marks)

- (g) Transpose $\frac{3m+n}{2m+3} = 4$ to make m the subject

(4 marks)

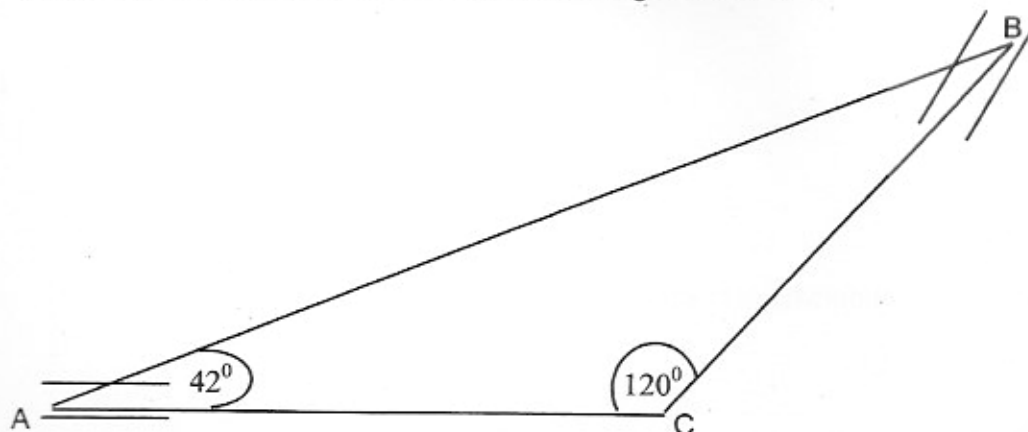
QUESTION TWO

- (a) State two situations when the Cosine Rule is used and not the Sine Rule

(2 marks)

- (b) The motion of a mechanism causes the ends of a link AB to move in grooves as shown in the diagram. The centre lines of the grooves, if continued, would intersect at an angle of 120° . If $AB = 30$ cm find the lengths AC and BC at the moment when the angle BAC is 42° .

(8 marks)



How can you check you are correct?

- (c) In an experiment involving Newton's law of cooling, the temperature $\theta(^{\circ}\text{C})$ is given by:

$$\theta = \theta_0 e^{-kt}$$

Transpose this formula to make ' k ' the subject and hence evaluate ' k ' when $\theta_0 = 56.6^{\circ}\text{C}$
 $\theta = 16.5^{\circ}\text{C}$ and $t = 83.0$ seconds.

Give your answer in standard form.

(7 marks)

- (d) Factorise $4x^2 + 16x + 15$

Hence, express: $\frac{-2 - 4x}{4x^2 + 16x + 15}$ in partial fractions.

(8 marks)