12 The monthly mean temperature of a city, T degrees Celsius, may be modelled by the equation

$$T = 15 + 8\sin(30m - 120)°$$

where m is the month number, counting January = 1, February = 2, through to December = 12

12 (a) Using this model, calculate the monthly mean temperature of the city for May, the fifth month.

[2 marks]

12 (b) Using this model, find the month with the highest mean temperature.

[2 marks]

12 (c) Climate change may affect the parameters, 8, 30, 120 and 15, used in this model.

12 (c) (i) State, with a reason, which parameter would be increased because of an overall rise in temperatures.

[1 mark]

12 (c) (ii) State, with a reason, which parameter would be increased because of the occurrence of more extreme temperatures.

[1 mark]