Question 17 (7 marks)

A school has analysed the examination scores for all its Year 12 students taking Methods as a subject. Let X = the examination percentage scores of all the Methods Year 12 students at the school. The school found that the mean was 75 with a standard deviation of 22.

Determine the following.

(a) $E(X + 5)$ (1 mark)

(b) $Var(25 - 2X)$ (2 marks)

The school has decided to scale the results using the transformation $Y = aX + b$ where a and b are constants and Y = the scaled percentage scores. The aim is to change the mean to 60 and the standard deviation to 15.

(c)   Determine the values of a and b. (4 marks)