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1. Jeremiah is investigating the relationship between the annual heating bill, h dollars, and the total floor area, f square metres, of buildings.

A random sample of 8 buildings is taken and the data for each building are coded using

$$x = \frac{f - 3500}{80} \text{ and } y = \frac{h - 4500}{80}$$

The results for the coded data are summarised below

$$\sum x = 5 \qquad \sum y = 0 \qquad \sum xy = 1818 \qquad S_{xx} = 1754$$

(a) Calculate S_{xy}

(1)

(b) Find the equation of the regression line of h on f in the form $h = a + bf$

(6)

(c) Give an interpretation of (i) the value of b in your regression line,

(ii) the value of a in your regression line.

(2)

(d) Estimate the annual heating bill for a building with a total floor area of 4600 square metres.

(2)

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Question 1 continued

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Q1