Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Block:\_\_\_\_\_\_\_

**2-Variable Statistics Lesson 2 Practice: Correlation Coefficient and Regression**

1. In a mountain region there appears to be a relationship between the number of trees growing in the region and the depth of snow in winter. A set of 10 areas was chosen, and in each area the number of trees was counted and the depth of snow measured.  
The results are given in the table below.

|  |  |
| --- | --- |
| **Number of trees (*x*)** | **Depth of snow in cm (*y*)** |
| 45 | 30 |
| 75 | 50 |
| 66 | 40 |
| 27 | 25 |
| 44 | 30 |
| 28 | 5 |
| 60 | 35 |
| 35 | 20 |
| 73 | 45 |
| 47 | 25 |

(a) Use your graphic display calculator to find

(i) the mean number of trees;

(ii) the standard deviation of the number of trees;

(iii) the mean depth of snow;

(iv) the standard deviation of the depth of snow.

(4)

(b) Find the product-moment correlation coefficient, *r*, on your calculator.

(2)

(c) Write down the equation of the regression line of *y* on *x*.

(2)

(d) If the number of trees in an area is 55, estimate the depth of snow.

(2)

(e) (i) Use the equation of the regression line to estimate the depth of snow in an area with 100 trees.

(ii) Decide whether the answer in (e)(i) is a valid estimate of the depth of snow in the area. Give a reason for your answer.

(3)

(Total 13 marks)