VCE General Mathematics Unit 2

Learning activity: Variation in random samples

Introduction

The task uses different sets of random data to create scatterplots and the associated equations of the lines of good fit by eye are analysed for their similarities and differences.

This activity could be carried out with the use of the relevant technology for constructing and printing scatterplots so that a line of good fit by eye can be drawn.



**Part 1**

a. i. Randomly generate a set of 20 ordered pairs with integer coordinates from within a given interval of *x-*values and a given interval of *y*-values.

ii. Draw a scatterplot of the corresponding points. Add a line of good fit by eye and calculate the equation of this line.

b. Repeat the above random generation of 20 ordered pairs, construct the linked scatterplot and calculate the equation of the line of good fit by eye.

c. Discuss the similarities and differences between the calculated equations of the lines of good fit by eye.

Part 2

a. i. Expand the given interval to choose the required integer values.

Randomly generate a set of 20 ordered pairs (*x*- and *y*-values) with integer coordinates from this adjusted interval of *x-* and *y*-values.

ii. Draw a scatterplot of the corresponding points. Add a line of good fit by eye and calculate the equation of this line.

b. Repeat the above random generation of 20 ordered pairs, construct the linked scatterplot and calculate the equation of the line of good fit by eye.

c. Discuss the similarities and differences between the calculated equations of the lines of good fit by eye found in Part 2 compared to those found in Part 1.

Part 3

Increase the sample size of ordered pairs to investigate.

Discuss the impact of an increased sample size on the equations of good fit found by eye calculated in Part 3, as compared to previous parts.

Areas of study

The following content from the areas of study is addressed through this learning activity.

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| **Unit 2** |
| **Area of study** | **Topic** | **Content dot points** |
| Data analysis, probability and statistics | Investigating relationships between two numerical variables | 2, 3, 4, 5 |

Outcomes

The following outcomes, key knowledge and key skills are addressed through this task.

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| **Unit 2** |
| **Outcome** | **Key knowledge dot point** | **Key skills dot point** |
| 1 | 1, 4, 5, 7, 8 | 2, 5, 6, 7 |
| 2 | 1, 2, 3, 4 | 1, 2, 3, 4 |
| 3 | 1, 2, 4, 5 | 1, 2, 3, 7, 8, 9, 10, 11, 12 |