



# Core Mathematics S1(GCE)

Practice Question 1

Standard A<sup>★</sup>

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**CRITICAL THINKING IS THE KEY TO SOLVE REAL WORLD PROBLEMS.  
CHILDREN MUST BE TAUGHT HOW TO THINK, NOT WHAT TO THINK.  
A GREAT TEACHER WILL BE CREATING STUDENTS TO DO NEW THINGS  
THROUGH CRITICAL THINKING, NOT SIMPLY REPEATING WHAT OTHER  
GENERATIONS HAVE DONE BEFORE. WE DO NOT NEED ANOTHER  
ALBERT EINSTEIN OR ISAAC NEWTON.... WE NEED A PERSON BETTER  
THAN THEM.**

**MR.S.V. SWARNARAJA**

## Question:

The volume of a sample of gas is kept constant. The gas is heated and the pressure,  $p$ , is measured at ( $n =$ )10 different temperatures,  $t$ . the results are summarised below.

$p$	41	47	50	40	46	39	51	49	44	43
$t$	18	25	34	26	22	19	39	29	21	27

$$\sum p = 450 \quad \sum p^2 = 20414 \quad \sum t = 260 \quad \sum t^2 = 7158 \quad \sum pt = 11901$$

(a) Find  $S_{pp}$  and  $S_{pt}$ .

(3 marks)

Given that  $S_{tt} = 398$

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(b) Calculate the product moment correlation coefficient

(2 marks)

(c) Give an interpretation of your answer to part (b)

(1 mark)

(d) Part (b) answer is to remain the same, what new pair ( $p, t$ ) should be added to the table. [so that  $n = 11$ ]

(2 marks)

(e) For each of the following cases draw separate scatter diagrams and show the pattern using only 5 points ( $\bullet$ ) in first quadrant.

(i)  $r = \frac{100}{100}$

(ii)  $r = -\frac{100}{100}$

(iii)  $r = \frac{0}{100}$

(iv)  $r = \frac{0}{0}$

(4 marks)



# Golden Rules

- $s_{xx} = \Sigma x^2 - \frac{(\Sigma x)^2}{n} = \Sigma(x - \bar{x})^2$
- $s_{yy} = \Sigma y^2 - \frac{(\Sigma y)^2}{n} = \Sigma(y - \bar{y})^2$
- $s_{xy} = \Sigma xy - \frac{(\Sigma x)(\Sigma y)}{n} = \Sigma(x - \bar{x})(y - \bar{y})$
- $r = \frac{s_{xy}}{\sqrt{s_{xx}s_{yy}}}$

*Traditional or Online classes*

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