

# ALL SAINTS S.S HOMELEARNING TEST

## S.5 SUBSIDIARY MATHEMATICS

NAME: .....

### Instructions

- Attempt all questions
- Show all the working.

1. The row data below gives the marks obtained by 10 students in a mathematics test.

35, 40, 45, 50, 60, 35, 40, 35, 45, 70.

- Find the mean mark
- Find the median
- Find the range
- Find the mean deviation
- Find the inter quartile range. (10 marks)

2.

Height (cm)	<100	<110	<120	<130	<140	<150	<160	<170
Cum. Freq.	0	27	85	215	320	370	395	400

The table above gives the cumulative distribution of the heights (in cm) of 400 children.

- Draw a cumulative frequency curve.
- Use the curve above to estimate the;
  - Median height.
  - $P_{90}$  and  $P_{10}$  percentile range. (10 marks)

3. The heights of S.5 students were according to the following frequency table.

Class	Frequency
151 – 153	2
154 – 156	14
157 – 159	13
160 – 162	13
163 – 165	2
166 - 168	1

- (a) Calculate the means.  
 (b) Find the standard deviation of the heights of the students.

(10 marks)

4. (a) If  $M = \begin{pmatrix} 4 & 2 & 3 \\ 5 & -6 & 7 \\ 8 & 9 & -4 \end{pmatrix}$ ,  $N = \begin{pmatrix} 0 & 1 & 1 \\ 2 & 3 & -4 \\ 8 & 4 & -3 \end{pmatrix}$

Find (i) MN

(ii)  $M + N$ .

(b) Given that  $\begin{pmatrix} 3 & x \\ 5 & 4 \end{pmatrix} \begin{pmatrix} 1 & y \\ 2 & 3 \end{pmatrix} = \begin{pmatrix} 7 & 3 \\ 13 & 7 \end{pmatrix}$ . Find the values of x and y.

(10 marks)

5. (a) If  $A = \begin{pmatrix} 1 & -1 \\ 2 & -1 \end{pmatrix}$  and  $B = \begin{pmatrix} 1 & 1 \\ 4 & -1 \end{pmatrix}$

Show that  $(A + B)^2 = A^2 + B^2$

(b) Given that  $D = \begin{pmatrix} 1 & 2 \\ 0 & 1 \end{pmatrix}$  and I is a 2X2 identity matrix, obtain the values of p and q such that  $D^2 = PD + qI$ . (10 marks)

==End==