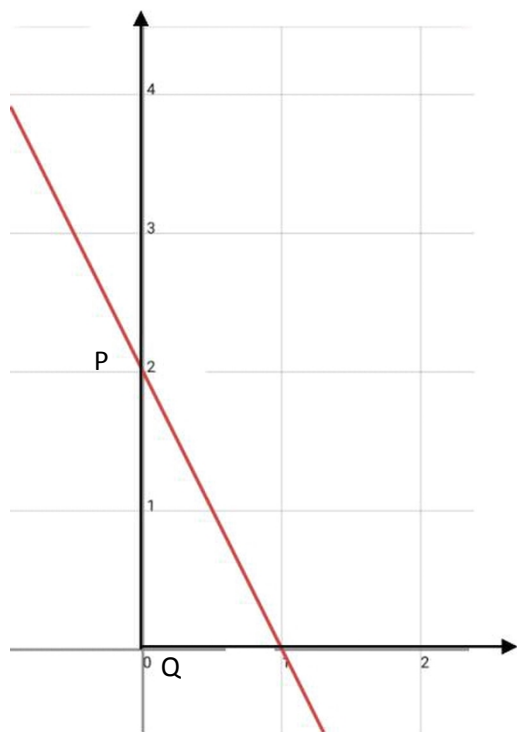


SENIOR TWO ASSIGNMENT

1. COORDINATE GEOMETRY

- a) Find the equation of the line passing through $(-2, 3)$ and $B(4, -1)$
- b) State any two coordinates which satisfy the equations of the straight lines below:-
- c) A line passes through $(-1, 2)$ and has a gradient of $-\frac{1}{2}$. What is the equation of the line?
- d) Find the gradient and intercepts on both axes of the line $2x + 3y = 6$ and hence sketch the line on a Cartesian plane.
- e) (i) Draw a table of values for $y = 2x - 4$ for values of x from -2 to 3 .
- (ii) Plot the coordinates and join them in a straight line on a graph.
- (iii) State the gradient and coordinates of both intercepts.
- f) A straight line passes through the points $(-1, 3)$ and $(2, -1)$ and has gradient of $-\frac{4}{3}$. Find the value of c in the equation $y = -\frac{4}{3}x + c$.
- g) The line $3x + 4y = 12$ cuts the y-axis at P . Find the gradient of the line and the coordinates of P .
- h) Determine the equation of the line shown in the diagram below



2. STATISTICS

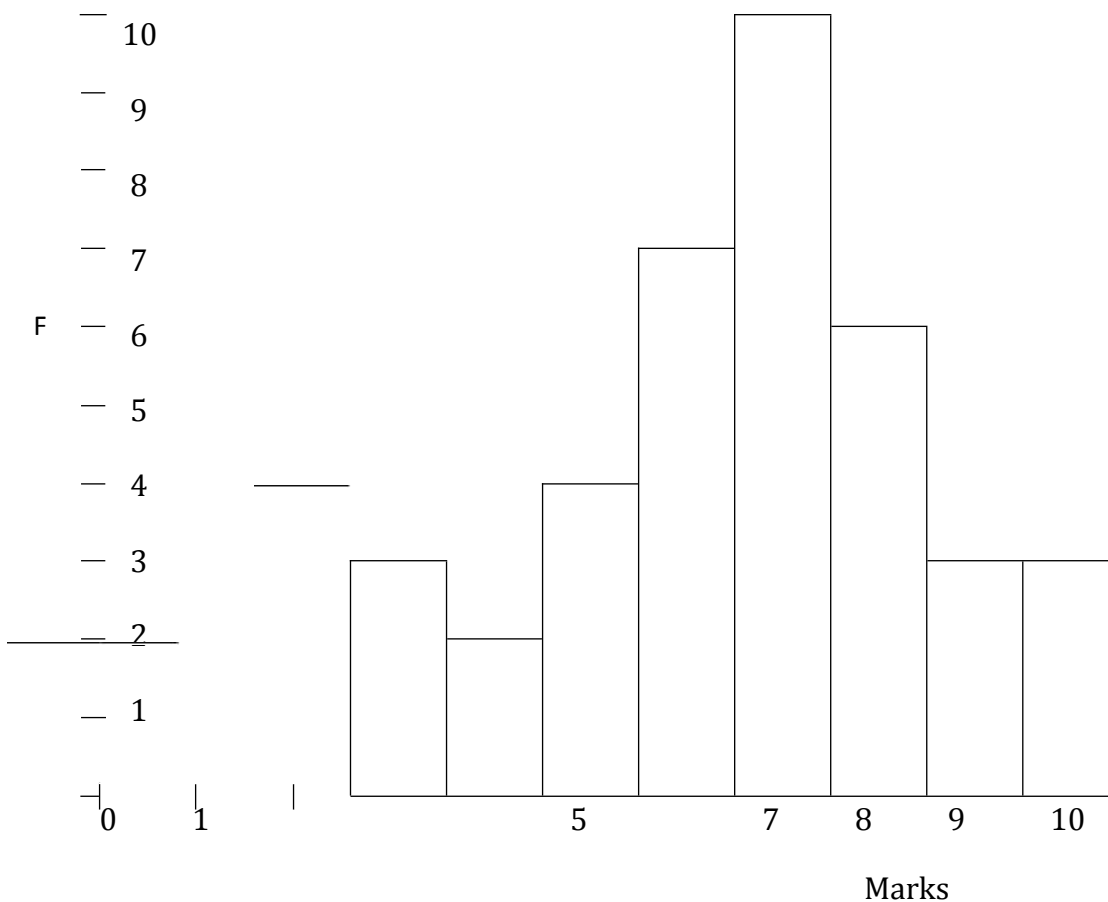
a) The data below shows the marks scored by senior two students in a mathematics exercise marked out of

18 11 11 13 14 11 14 14 13 13
14 16 14 15 16 16 16 15 12 16
15 12 16 15 19 12 15 18 15 16

Draw a frequency distribution table and use it to calculate the:

- (i) Mean mark
- (ii) Modal mark
- (iii) Median mark

b) The bar chart below shows marks obtained by 40 students in a Spell Bee Contest



Use the bar graph above to draw a frequency distribution table and hence calculate the

- (i) Mean mark
- (ii) Modal mark
- (iii) Median mark

3. VECTORS

a) If $\vec{a} = \begin{pmatrix} 2 \\ 3 \end{pmatrix}$, $\vec{b} = \begin{pmatrix} -1 \\ 4 \end{pmatrix}$

Find: (i)

(ii) The length of $\vec{a} + \vec{b}$

b) On a graph paper, draw straight lines to represent the following vectors

- i) $\vec{a} = \begin{pmatrix} 3 \\ 4 \end{pmatrix}$
- ii) $\vec{b} = \begin{pmatrix} -2 \\ 5 \end{pmatrix}$
- iii) $\vec{c} = \begin{pmatrix} 1 \\ -3 \end{pmatrix}$
- iv) $\vec{d} = \begin{pmatrix} 4 \\ -1 \end{pmatrix}$
- v) $\vec{e} = \begin{pmatrix} -3 \\ 2 \end{pmatrix}$

c) $\vec{a} = \begin{pmatrix} 2 \\ 3 \end{pmatrix}$ has image $\vec{b} = \begin{pmatrix} 5 \\ 7 \end{pmatrix}$ under a translation. Find the column vector of the translation.

d) Given that $\vec{a} = \begin{pmatrix} 3 \\ 4 \end{pmatrix}$ and $\vec{b} = \begin{pmatrix} -1 \\ 4 \end{pmatrix}$ and O is the origin. If $\vec{c} = \begin{pmatrix} 2 \\ 3 \end{pmatrix}$. Find the coordinates of R .

e) Given that $\vec{a} = \begin{pmatrix} 2 \\ 3 \end{pmatrix}$ and $\vec{b} = \begin{pmatrix} -1 \\ 4 \end{pmatrix}$ where O is the origin, find;

- (i) The position vector of Q
- (ii) The magnitude of OQ

4. INDICES

Simplify

a. $\frac{2^3 \times 2^4}{2^5}$ b. $3^2 \times 3^3 \times 3^4$ c. $\frac{5^6}{5^2}$

d. $\frac{10^5 \times 10^3}{10^8}$

Solve for the unknowns

- (i) $2^x = 8$
- (ii) $3^y = 27$