

## Vectors HW:

### Question 1:

$$\mathbf{a} = \begin{pmatrix} 4 \\ 1 \end{pmatrix} \text{ and } \mathbf{b} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$$

(a) Write down as a column vector

(i)  $\mathbf{a} + \mathbf{b}$

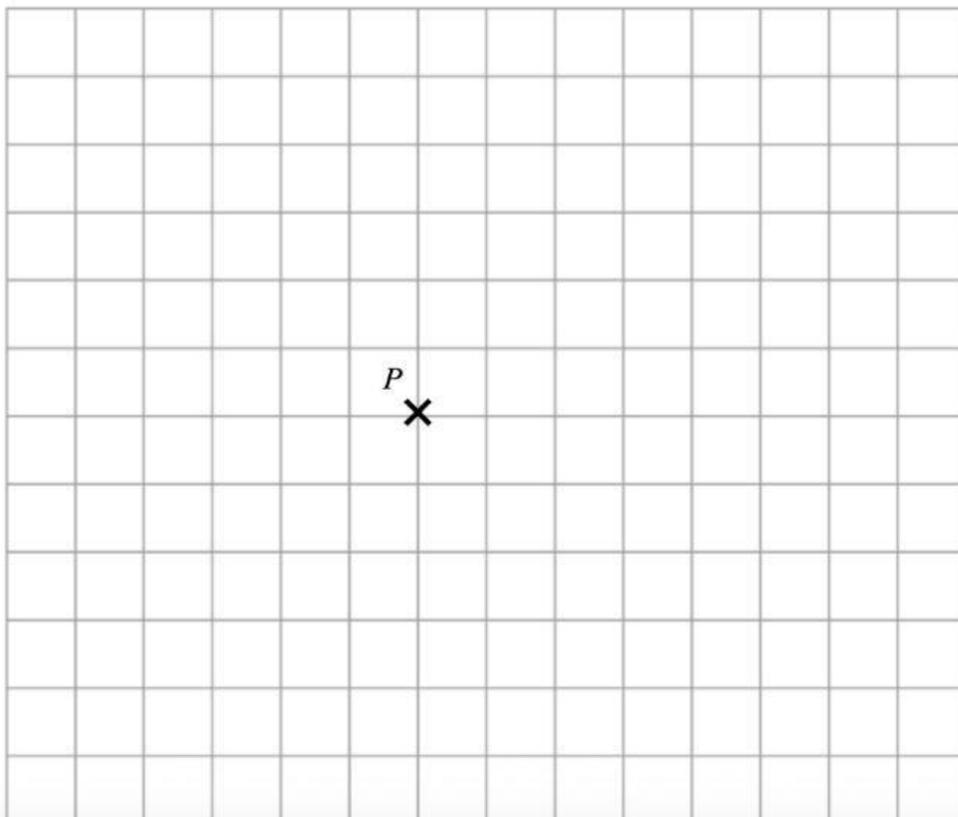
.....  
(1)

(ii)  $2\mathbf{a} - \mathbf{b}$

.....  
(2)

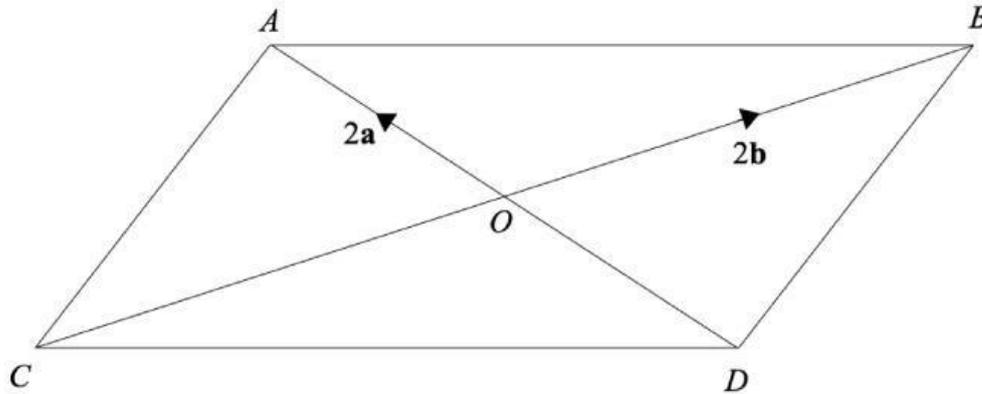
$$\mathbf{c} = \begin{pmatrix} 5 \\ -4 \end{pmatrix}$$

(b) From the point  $P$ , draw the vector  $\mathbf{c}$



### Question 2:

The diagram shows a parallelogram.



$$\vec{OA} = 2\mathbf{a}$$

$$\vec{OB} = 2\mathbf{b}$$

Hint: First find and label onto the diagram what C-to-O is, and what D-to-O is. This will help you solve parts a, b & c mor easily

(a) Find, in terms of  $\mathbf{a}$ , the vector  $\vec{DA}$

.....  
(1)

(b) Find, in terms of  $\mathbf{a}$  and  $\mathbf{b}$ , the vector  $\vec{AB}$

.....  
(1)

(c) Find, in terms of  $\mathbf{a}$  and  $\mathbf{b}$ , the vector  $\vec{AC}$

.....  
(1)

### Question 3:

A is the point (5, -1) and B is the point (4, -3).

(a) Write down as a column vector  $\vec{AB}$

.....  
(1)

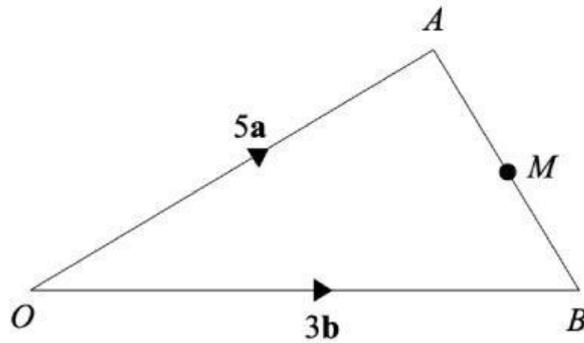
Question 4:

$C$  is the point  $(1, 6)$  and  $D$  is the point  $(-3, 9)$ .

(b) Write down as a column vector  $\vec{CD}$

.....  
(1)

Question 5:



$\vec{OA} = 5\mathbf{a}$

$\vec{OB} = 3\mathbf{b}$

$M$  is the midpoint of  $AB$

(a) Find, in terms of  $\mathbf{a}$  and  $\mathbf{b}$ , the vector  $\vec{AB}$

.....  
(1)

(b) Find, in terms of  $\mathbf{a}$  and  $\mathbf{b}$ , the vector  $\vec{AM}$

.....  
(1)

(c) Find, in terms of  $\mathbf{a}$  and  $\mathbf{b}$ , the vector  $\vec{OM}$

.....  
(1)

End of questions