Vectors (F)

Name:	
Total Marks:	

1. Vectors a, b, c, d and e are drawn on an isometric grid.
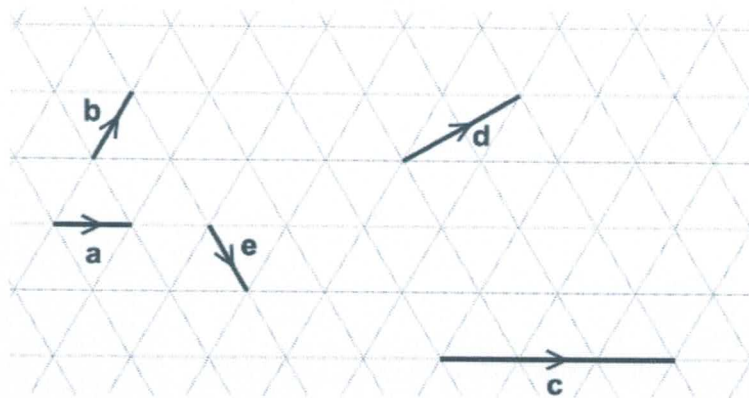
Write each of the vectors c, d and e in terms of a and/or b.

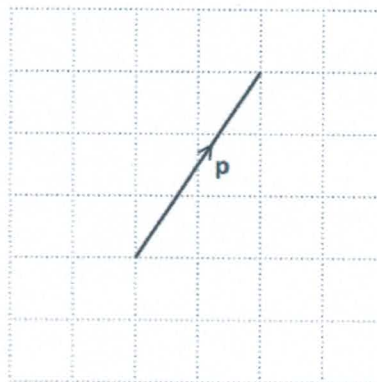$c =$ .... $3a$ ....

$d =$ .... $a + b$ ....

$e =$ .... $a - b$ ....

[3]

2. Vector p is shown on a unit grid.

(a) Write p as a column vector.

$\left(\begin{array}{c} 2 \\ 3 \end{array} \right)$ [1]

(b) $q = \begin{pmatrix} -2 \\ 4 \end{pmatrix}$ and $r = \begin{pmatrix} 5 \\ -3 \end{pmatrix}$

Work out q + r.

$\begin{pmatrix} 3 \\ 1 \end{pmatrix}$ [2]

3. $a = \begin{pmatrix} 3 \\ -7 \end{pmatrix}$, $b = \begin{pmatrix} 4 \\ 2 \end{pmatrix}$

Work out b – 2a as a column vector.

$$\begin{pmatrix} 4 \\ 2 \end{pmatrix} - 2\begin{pmatrix} 3 \\ -7 \end{pmatrix} = \begin{pmatrix} 4 \\ 2 \end{pmatrix} - \begin{pmatrix} 6 \\ -14 \end{pmatrix}$$

$$\begin{pmatrix} -2 \\ 16 \end{pmatrix}$$

[2]

4. $a = \begin{pmatrix} 5 \\ -2 \end{pmatrix}$ and $b = \begin{pmatrix} -2 \\ 3 \end{pmatrix}$

Circle the vector a – b

[1]

$$\begin{pmatrix} -3 \\ -5 \end{pmatrix} \qquad \begin{pmatrix} 7 \\ 1 \end{pmatrix}$$

$$\begin{pmatrix} 3 \\ 1 \end{pmatrix} \qquad \begin{pmatrix} 7 \\ -5 \end{pmatrix}$$

5. Here are two column vectors.

$f = \begin{pmatrix} 4 \\ 5 \end{pmatrix}$ $g = \begin{pmatrix} 5 \\ -2 \end{pmatrix}$

Work out 3f - 2g

$$3\begin{pmatrix} 4 \\ 5 \end{pmatrix} - 2\begin{pmatrix} 5 \\ -2 \end{pmatrix}$$

[2]

$$\begin{pmatrix} 12 \\ 15 \end{pmatrix} - \begin{pmatrix} 10 \\ -4 \end{pmatrix} = \begin{pmatrix} 2 \\ 19 \end{pmatrix}$$