VECTORS - an INTRODUCTION

Section A

On squared paper show each of the three vectors below. Remember to label each vector and include an arrow to show direction.

$a = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$ $b = \begin{pmatrix} -1 \\ 3 \end{pmatrix}$ $c = \begin{pmatrix} 2 \\ -3 \end{pmatrix}$

Section B

Use the vectors a, b and c given in section A.

Give direction vectors eg. $\begin{pmatrix} 4 \\ 3 \end{pmatrix}$ for the following vectors:

1. 2a
2. 3b
3. –b
4. a + b
5. 2a + c
6. a + b + c
7. c – a remember this is just c + (– a)
8. b – c

By considering the column vectors, show that the statement below is true ;

$$2a + 2c = 2(a + c)$$

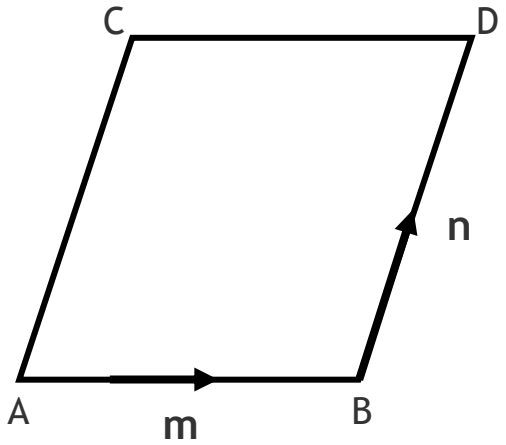
Section C

Use 1 cm squared paper, **pencil and ruler** to draw vector diagrams for each of the eight vectors above in section B.

Use a **dotted line** or a different colour to show the **resultant vector** and remember to LABEL this correctly.

Section D

Here is a parallelogram with vectors m and n as shown.



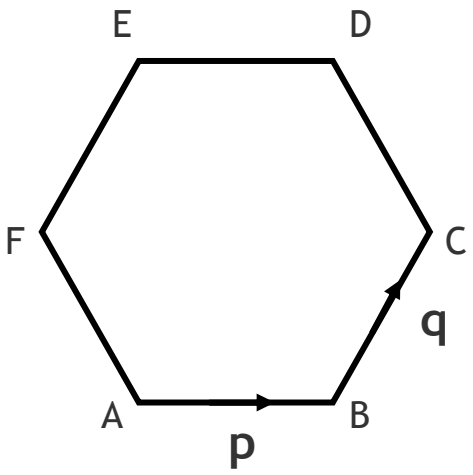
Write in **terms of m and n**, the vectors

(a) CD (b) AC (c) CA

(d) AD (e) BC (f) ½ DA

Section E

Here is a hexagon with vectors **p** and **q** as shown.



Write in terms of **p** and **q** the following vectors

(a) ED (b) FE (c) AC (d) CD
(think **outside** the hexagon)