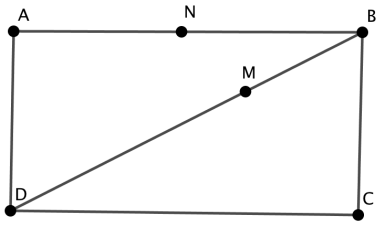
Vector basics

Name……

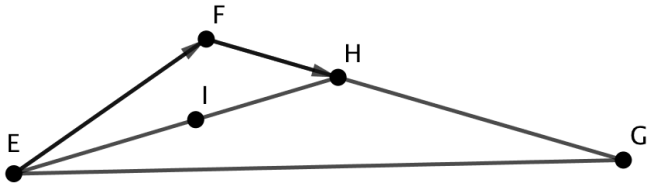
(1) For rectangle ABCD, N is the midpoint of AB and DM:MB = 3:2.
$\overrightarrow{AB}$ = **a**. $\overrightarrow{DA}$ = **b.**



(a) Find $\overrightarrow{MD}$

(b) Find $\overrightarrow{MN}$

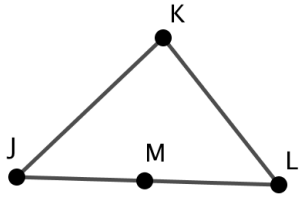
(2) For triangle EFG, $\overrightarrow{EF}$ = **a** , $\overrightarrow{FH}$ =**b**. I is the midpoint of EH and FH:HG = 1:4.



(a) Find $\overrightarrow{EI}$

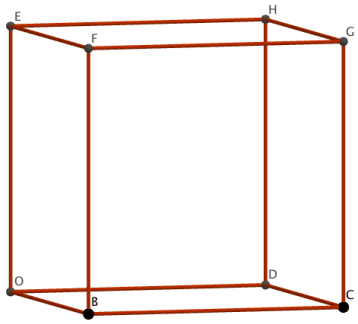
(b) Find $\overrightarrow{IG}$

(3) In the triangle JKL, the position vector of J is **a**, the position vector of K is **b** and the position vector of L is **c**. M is the midpoint of JL. Find $\overrightarrow{KM}$.



(4) A line passes through the point (3,2) and is parallel to the vector $\begin{pmatrix}2\\1\end{pmatrix}$. Find the equation of the line in the form $y = mx + c$.

(5) A cuboid OBCDEFGH is shown below, where O is the origin. $\overrightarrow{OB} = 3i$, $\overrightarrow{OD} = 5j$, $\overrightarrow{OE} = 4k$. Find $\overrightarrow{EC}$.



(6) Points A and B have coordinates $(6, -2, 0)$ and $(-2, 4, -5)$ respectively. Find the vector $\overrightarrow{AB}$.

(b) N is on the line AB such that AN:NB = 1:3. Find the coordinate N.

(7) Rectangular based pyramid ABCDE has coordinate A(0,1,1), C(2,4,1) and E(1.5, 3,6). Find $\overrightarrow{AE}$.