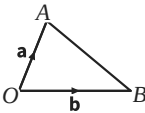
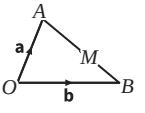
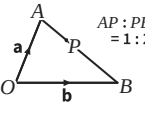
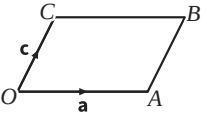
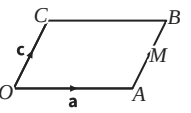
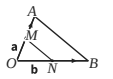
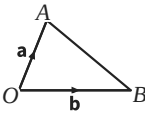
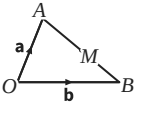
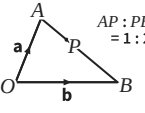
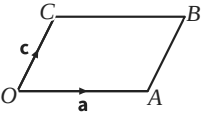
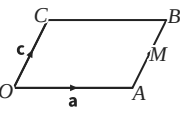
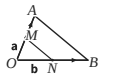


a Find $\vec{AB}$ in terms of $\mathbf{a}$ and $\mathbf{b}$  $-\mathbf{a} + \mathbf{b}$ a path back through O	b M is the midpoint. Find $\vec{OM}$  $\frac{1}{2}\mathbf{a} + \frac{1}{2}\mathbf{b}$ to the midpoint of a side	c Find $\vec{OP}$ in terms of $\mathbf{a}$ and $\mathbf{b}$  $\frac{2}{3}\mathbf{a} + \frac{1}{3}\mathbf{b}$ a point in a ratio along a side	d Find $\vec{CA}$ in terms of $\mathbf{a}$ and $\mathbf{c}$  $\mathbf{a} - \mathbf{c}$ a diagonal of a parallelogram
e M is the midpoint. Find $\vec{OM}$  $\mathbf{a} + \frac{1}{2}\mathbf{c}$ a midpoint in a parallelogram	f M and N are midpoints. Find $\vec{MN}$  $-\frac{1}{2}\mathbf{a} + \frac{1}{2}\mathbf{b}$ between two midpoints	g Is $3\mathbf{a} - 6\mathbf{b}$ parallel to $\mathbf{a} - 2\mathbf{b}$? Yes: $3(\mathbf{a} - 2\mathbf{b})$ parallel: one is a multiple	h $k\mathbf{a} + 6\mathbf{b}$ is parallel to $2\mathbf{a} + 3\mathbf{b}$. Find k $k = 4$ k from parallel vectors
i $\vec{OP} = \mathbf{a} + 2\mathbf{b}$, $\vec{OQ} = 3\mathbf{a} + 6\mathbf{b}$. Is OPQ a straight line? Yes: $\vec{OQ} = 3\vec{OP}$ a straight line through O	j $\vec{AB} = 2\mathbf{a} - \mathbf{b}$, $\vec{BC} = 6\mathbf{a} - 3\mathbf{b}$. Is ABC a straight line? Yes: $\vec{BC} = 3\vec{AB}$ a line: a multiple and a shared point	k $\vec{OX} = 2\mathbf{a} + 2\mathbf{b}$, $\vec{OY} = 5\mathbf{a} + 5\mathbf{b}$. Find OX : XY $2 : 3$ a ratio from parallel vectors	l X is on AB and $\vec{OX} = \frac{1}{3}\mathbf{a} + \frac{2}{3}\mathbf{b}$. Find AX : XB $2 : 1$ a ratio read from a vector

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a Find $\vec{AB}$ in terms of $\mathbf{a}$ and $\mathbf{b}$  $-\mathbf{a} + \mathbf{b}$ a path back through O	b M is the midpoint. Find $\vec{OM}$  $\frac{1}{2}\mathbf{a} + \frac{1}{2}\mathbf{b}$ to the midpoint of a side	c Find $\vec{OP}$ in terms of $\mathbf{a}$ and $\mathbf{b}$  $\frac{2}{3}\mathbf{a} + \frac{1}{3}\mathbf{b}$ a point in a ratio along a side	d Find $\vec{CA}$ in terms of $\mathbf{a}$ and $\mathbf{c}$  $\mathbf{a} - \mathbf{c}$ a diagonal of a parallelogram
e M is the midpoint. Find $\vec{OM}$  $\mathbf{a} + \frac{1}{2}\mathbf{c}$ a midpoint in a parallelogram	f M and N are midpoints. Find $\vec{MN}$  $-\frac{1}{2}\mathbf{a} + \frac{1}{2}\mathbf{b}$ between two midpoints	g Is $3\mathbf{a} - 6\mathbf{b}$ parallel to $\mathbf{a} - 2\mathbf{b}$? Yes: $3(\mathbf{a} - 2\mathbf{b})$ parallel: one is a multiple	h $k\mathbf{a} + 6\mathbf{b}$ is parallel to $2\mathbf{a} + 3\mathbf{b}$. Find k $k = 4$ k from parallel vectors
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