Properties of vectors

Students place the vectors in an appropriate position on the grid. The aim is to cover as many spaces as possible with the vectors – not all the vectors will be needed and there is more than one solution. Where it says ‘these’ then two vectors are required and where it says ‘this’ only one vector is required.

	$\begin{pmatrix} 4 \\ -4 \end{pmatrix}$	$\begin{pmatrix} -1 \\ 3 \end{pmatrix}$	$\begin{pmatrix} -1 \\ -1 \end{pmatrix}$	$\begin{pmatrix} -3 \\ 2 \end{pmatrix}$
$\begin{pmatrix} 1 \\ 9 \end{pmatrix}$	$\begin{pmatrix} 2 \\ 2 \end{pmatrix}$	$\begin{pmatrix} 1 \\ -1 \end{pmatrix}$		$\begin{pmatrix} -2 \\ -3 \end{pmatrix}$
		$\begin{pmatrix} -1 \\ -3 \end{pmatrix}$		$\begin{pmatrix} 3 \\ 2 \end{pmatrix}$

This vector has a length of $\sqrt{10}$.	This vector is parallel to $\begin{pmatrix} 3 \\ -2 \end{pmatrix}$
These vectors are parallel.	These vectors have the same length.
This vector joins the points A (1, 7) and B (5, 3).	Vectors $\mathbf{a}$ and $\mathbf{b}$ such that $\mathbf{a}+\mathbf{b}=\begin{pmatrix} 2 \\ 8 \end{pmatrix}$.