

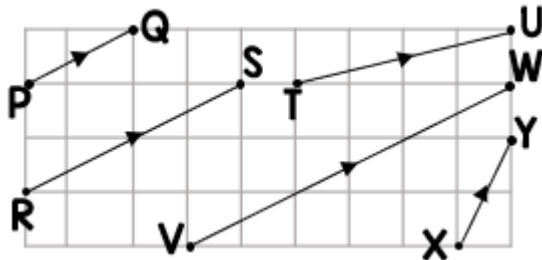
Summer Term Maths Year 10

Parallel Column Vectors

Day 1

Week 8

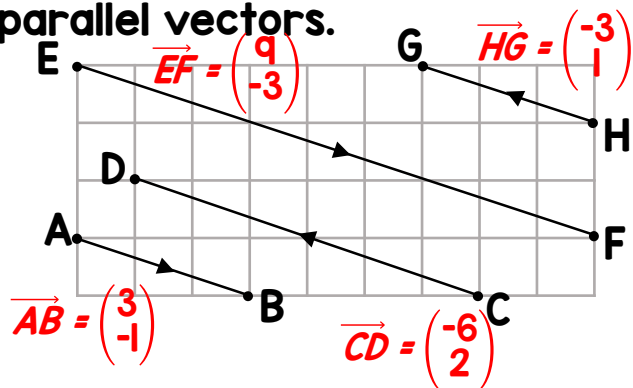
1 (a) Which vectors are parallel to \overrightarrow{PQ} ?



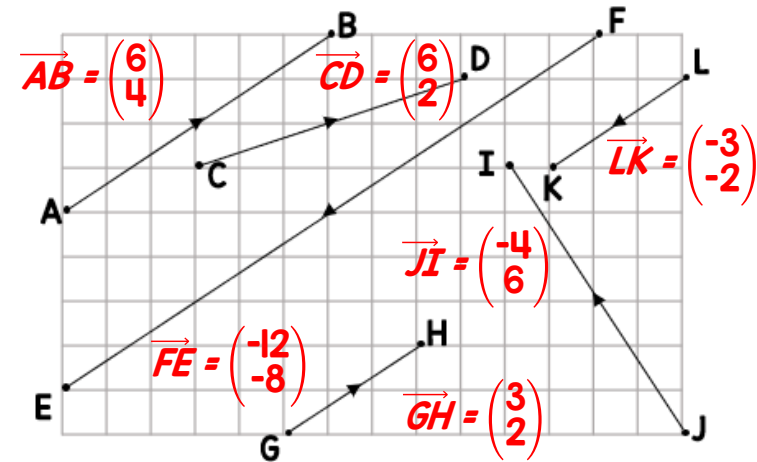
(b) $\overrightarrow{PQ} = \begin{pmatrix} 2 \\ 1 \end{pmatrix}$ $\overrightarrow{RS} = \begin{pmatrix} 4 \\ 2 \end{pmatrix}$ $\overrightarrow{VW} = \begin{pmatrix} 6 \\ 3 \end{pmatrix}$

Write your answers to (a) as column vectors too.

2 Write the column vectors for each of these parallel vectors.



3 (a) Identify the parallel vectors in this diagram and express them as column vectors.



(b) Which one of these vectors is also parallel to those in (a)? Explain your reasoning.

$\begin{pmatrix} 2 \\ 3 \end{pmatrix}$ $\begin{pmatrix} -4 \\ 6 \end{pmatrix}$ $\begin{pmatrix} -9 \\ -6 \end{pmatrix}$ $\begin{pmatrix} 3 \\ -2 \end{pmatrix}$

Scalar multiple of \overrightarrow{AB} , $-3 \begin{pmatrix} 3 \\ 2 \end{pmatrix}$

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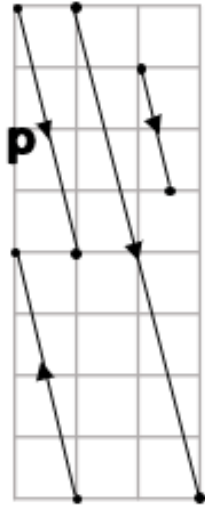
4 Complete the multiplication of p by different scalars, you may wish to use the diagram to help you.

$$p = \begin{pmatrix} 1 \\ -4 \end{pmatrix}$$

$$2p = 2 \begin{pmatrix} 1 \\ -4 \end{pmatrix} = \begin{pmatrix} 2 \\ -8 \end{pmatrix}$$

$$-p = -1 \begin{pmatrix} 1 \\ -4 \end{pmatrix} = \begin{pmatrix} -1 \\ 4 \end{pmatrix}$$

$$\frac{1}{2}p = \frac{1}{2} \begin{pmatrix} 1 \\ -4 \end{pmatrix} = \begin{pmatrix} 0.5 \\ -2 \end{pmatrix}$$



5 Which vectors below are parallel to $\begin{pmatrix} -5 \\ 2 \end{pmatrix}$?

$\begin{pmatrix} 2 \\ -5 \end{pmatrix}$ $\begin{pmatrix} -10 \\ 4 \end{pmatrix}$ $\begin{pmatrix} 5 \\ -2 \end{pmatrix}$ $\begin{pmatrix} 15 \\ 6 \end{pmatrix}$ $\begin{pmatrix} -3 \\ 4 \end{pmatrix}$

6 If $w = \begin{pmatrix} 6 \\ -2 \end{pmatrix}$ then find:

(a) $4w = \begin{pmatrix} 24 \\ -8 \end{pmatrix}$ (b) $-2w = \begin{pmatrix} -12 \\ 4 \end{pmatrix}$ (c) $1.5w = \begin{pmatrix} 9 \\ -3 \end{pmatrix}$
 (d) $-0.5w = \begin{pmatrix} -3 \\ 1 \end{pmatrix}$ (e) $\frac{2}{3}w = \begin{pmatrix} 4 \\ -\frac{4}{3} \end{pmatrix}$ (f) $-\frac{1}{4}w = \begin{pmatrix} -\frac{3}{2} \\ \frac{1}{2} \end{pmatrix}$

7 Complete the missing values in the table.

x	y	Scalar multiple (from x to y)
$\begin{pmatrix} -3 \\ 5 \end{pmatrix}$	$\begin{pmatrix} -18 \\ 30 \end{pmatrix}$	6
$\begin{pmatrix} -4 \\ -7 \end{pmatrix}$	$\begin{pmatrix} -2 \\ -3.5 \end{pmatrix}$	$\frac{1}{2}$
$\begin{pmatrix} -2 \\ 5 \end{pmatrix}$	$\begin{pmatrix} 8 \\ -20 \end{pmatrix}$	-4
$\begin{pmatrix} -6 \\ -5 \end{pmatrix}$	$\begin{pmatrix} 15 \\ 12.5 \end{pmatrix}$	-2.5