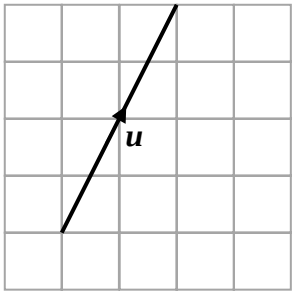
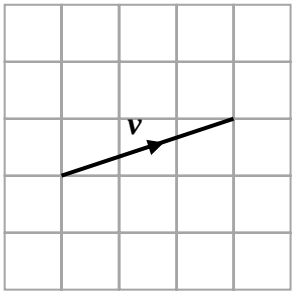
APPLICATIONS 1.2

PRACTICE ASSESSMENT

PART A

4. The diagrams below show 2 directed line segments ***u*** and ***v***.

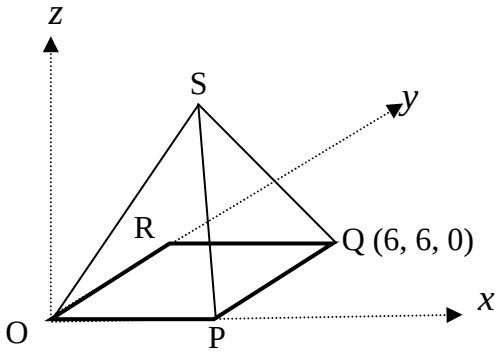




Draw the resultant of $3\boldsymbol{u}+\boldsymbol{v}$.

5. The diagram below shows a square based model of a glass pyramid of height 8 cm. Square OPQR has a side length of 6 cm.

The coordinates of Q are (6, 6, 0). R lies on the *y*-axis.



Write down the coordinates of S.

6. The forces acting on a body are represented by three vectors ***a***, ***b*** and ***c*** as given below.

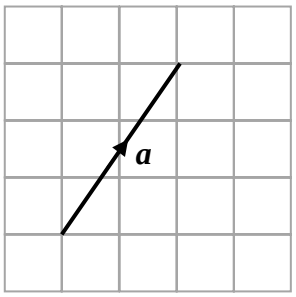
$$\boldsymbol{a}=\begin{pmatrix}5\\2\\2\cdot5\end{pmatrix} \qquad \boldsymbol{b}=\begin{pmatrix}-3\\7\\5\cdot5\end{pmatrix} \qquad \boldsymbol{c}=\begin{pmatrix}1\cdot5\\6\\-2\end{pmatrix}$$

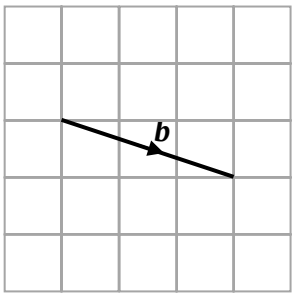
Find the resultant force.

7. Vector $\boldsymbol{p}=\begin{pmatrix}5\\3\end{pmatrix}$ and vector $\boldsymbol{q}=\begin{pmatrix}1\\-3\end{pmatrix}$. Calculate $|\,2\boldsymbol{p}+\boldsymbol{q}\,|$

PART B

4. The diagrams below show 2 directed line segments ***a*** and ***b***.

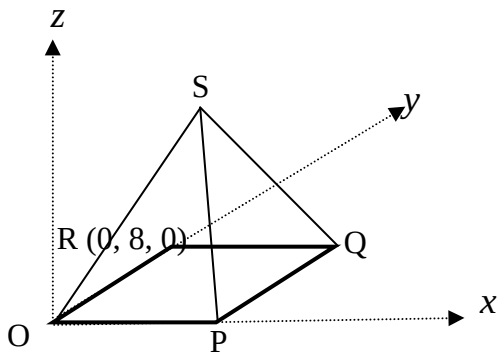




Draw the resultant of $2\boldsymbol{a} + 2\boldsymbol{b}$.

5. The diagram below shows a square based model of a glass pyramid of height 10 cm. Square OPQR has a side length of 8 cm.

The coordinates of R are (0, 8, 0). P lies on the *x*-axis.



Write down the coordinates of S.

6. The forces acting on a body are represented by three vectors ***k***, ***l*** and ***m*** as given below.

$$\boldsymbol{k} = \begin{pmatrix} 3 \\ 2 \cdot 5 \\ -4 \end{pmatrix} \qquad \boldsymbol{l} = \begin{pmatrix} 2 \\ 4 \\ 1 \cdot 5 \end{pmatrix} \qquad \boldsymbol{m} = \begin{pmatrix} -3 \cdot 5 \\ 0 \\ -4 \end{pmatrix}$$

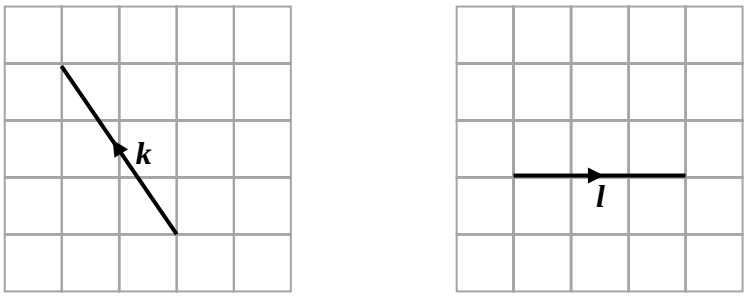
Find the resultant force.

7. Vector $\boldsymbol{a} = \begin{pmatrix} 3 \\ 6 \end{pmatrix}$ and vector $\boldsymbol{b} = \begin{pmatrix} -2 \\ -5 \end{pmatrix}$.

Calculate $\left| \boldsymbol{a} + 2\boldsymbol{b} \right|$

PART C

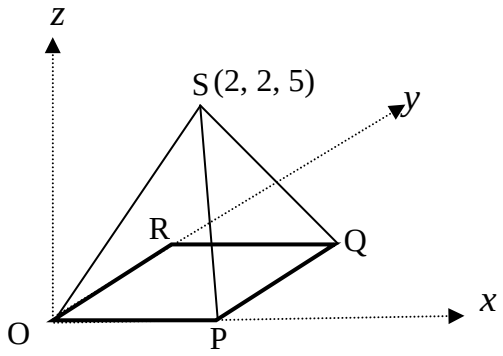
4. The diagrams below show 2 directed line segments ***k*** and ***l***.



Draw the resultant of ***k*** + 2***l***.

5. The diagram below shows a square based model of a glass pyramid of height 5 cm. The base OPQR is a square.

The coordinates of S are (2, 2, 5). P lies on the *x*-axis and R lies on the *y* – axis.



Write down the coordinates of Q.

6. The forces acting on a body are represented by three vectors ***x***, ***y*** and ***z*** as given below.

$$\boldsymbol{x} = \begin{pmatrix} 4 \\ 2\cdot 3 \\ -1 \end{pmatrix} \qquad \boldsymbol{y} = \begin{pmatrix} -2 \\ 2\cdot 7 \\ 0\cdot 5 \end{pmatrix} \qquad \boldsymbol{z} = \begin{pmatrix} -2 \\ 1 \\ -2 \end{pmatrix}$$

Find the resultant force.

7. Vector $\boldsymbol{x} = \begin{pmatrix} 3 \\ 6 \end{pmatrix}$ and vector $\boldsymbol{y} = \begin{pmatrix} 2 \\ 5 \end{pmatrix}$.

Calculate $\left| 3\boldsymbol{x} - 2\boldsymbol{y} \right|$