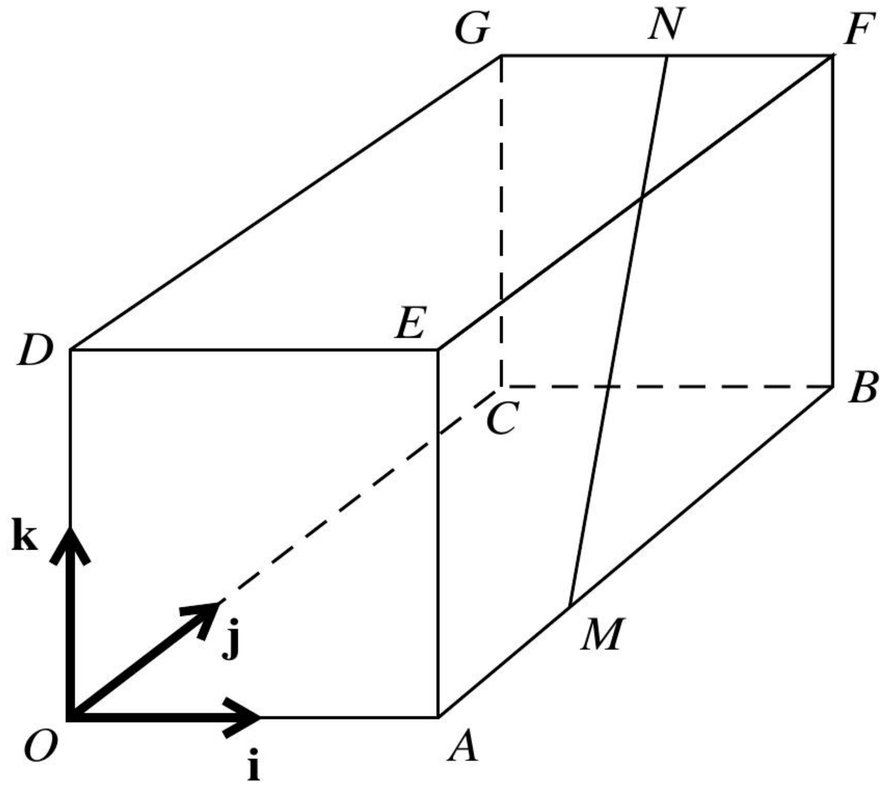

In the diagram, $OABCDEFG$ is a cuboid in which $OA = 2$ units, $OC = 3$ units and $OD = 2$ units. Unit vectors **i**, **j** and **k** are parallel to OA, OC and OD respectively. The point M on AB is such that $MB = 2AM$. The midpoint of FG is N.

(a) Express the vectors $\overrightarrow{OM}$ and $\overrightarrow{MN}$ in terms of **i**, **j** and **k**. [3]

(b) Find a vector equation for the line through M and N. [2]

(c) Find the position vector of P, the foot of the perpendicular from D to the line through M and N. [4]