

## Practice for Geometry, Proof and Systems of Equations

### Geometry, Proof and Systems of Equations Assessment Standard 1.2

1. Find  $\begin{pmatrix} 5 \\ -7 \\ -2 \end{pmatrix} \times \begin{pmatrix} 8 \\ 4 \\ -1 \end{pmatrix}$  (3)
2. Given the vectors  $\mathbf{a} = \mathbf{i} - 2\mathbf{j} + \mathbf{k}$  and  $\mathbf{b} = 2\mathbf{i} + \mathbf{j}$  calculate  $\mathbf{a} \times \mathbf{b}$ . (3)
3. Evaluate  $\mathbf{p} \cdot (\mathbf{q} \times \mathbf{r})$  where  $\mathbf{p} = -\mathbf{i} + 2\mathbf{j} - 2\mathbf{k}$ ,  $\mathbf{r} = 3\mathbf{i} + 5\mathbf{j} - 2\mathbf{k}$  and  $\mathbf{r} = 2\mathbf{i} - 4\mathbf{j} + 4\mathbf{k}$ . (4)
4. Obtain, in vector form, an equation for the line which passes through the points  $(2, -3, 5)$  and  $(-1, 4, 2)$ . (2)
5. Find the parametric equations for the line which passes through the points  $(5, -1, 0)$  and  $(6, 2, -7)$ . (3)
6. Find in symmetric form, the equation for the line which passes through the points  $(2, 1, 0, )$  and  $(6, 2, -7)$ . (3)
7. Find the Cartesian equation of the plane which has normal vector  $\begin{pmatrix} 3 \\ 2 \\ -1 \end{pmatrix}$  and passes through the point  $(1, -2, 5)$  (2)
8. Find the equation of the plane passing through  $P(2, 1, 2)$ ,  $Q(0, 3, -1)$  and  $R(3, 0, 4)$ . (3)