

- 6** Relative to an origin O , the position vectors of the points A , B and C are given by

$$\overrightarrow{OA} = \mathbf{i} - 2\mathbf{j} + 4\mathbf{k}, \quad \overrightarrow{OB} = 3\mathbf{i} + 2\mathbf{j} + 8\mathbf{k}, \quad \overrightarrow{OC} = -\mathbf{i} - 2\mathbf{j} + 10\mathbf{k}.$$

- (i) Use a scalar product to find angle ABC . [6]
- (ii) Find the perimeter of triangle ABC , giving your answer correct to 2 decimal places. [2]