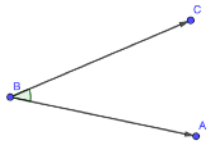
1 Complete the table below, to find the angle between the stated vectors.

Points	Angle	Diagram	Vectors	Magnitudes	Scalar Product	Angle Calculation
A(5, 3, 2) *B(6,-1, 5)* *C(-1, 7, 10)*	$\angle ABC$		$\overrightarrow{BA} = \begin{pmatrix}5\\3\\2\end{pmatrix} - \begin{pmatrix}6\\-1\\5\end{pmatrix} = \begin{pmatrix}-1\\4\\-3\end{pmatrix}$ $\overrightarrow{BC} = \begin{pmatrix}-1\\7\\10\end{pmatrix} - \begin{pmatrix}6\\-1\\5\end{pmatrix} = \begin{pmatrix}-7\\8\\5\end{pmatrix}$	$\lvert\overrightarrow{BA}\rvert = \sqrt{(-1)^2+4^2+(-3)^2}$ $\lvert\overrightarrow{BA}\rvert = \sqrt{26}$ $\lvert\overrightarrow{BC}\rvert = \sqrt{(-7)^2+8^2+(5)^2}$ $\lvert\overrightarrow{BC}\rvert = \sqrt{138}$	$\overrightarrow{BA} \cdot \overrightarrow{BC} = (-1\times-7)+(4\times8)+(-3\times5)$ $\overrightarrow{BA} \cdot \overrightarrow{BC} = 24$	$\cos\theta = \frac{\overrightarrow{BA}\cdot\overrightarrow{BC}}{\lvert\overrightarrow{BA}\rvert\lvert\overrightarrow{BC}\rvert}$ $\cos\theta = \frac{24}{\sqrt{26}\sqrt{138}}$ $\theta = \cos^{-1}\frac{24}{\sqrt{26}\sqrt{138}}$ $\theta = 66.38^o$
O(0,0,0) *A(6,4,2)* *C(2, 4, 6)*	$\angle AOC$					
A(5, 3, 2) *B(6,-1, 5)* *C(-1, 7, 10)*	$\angle BCA$					
A(2, -1, 3) *B(3, 6, 5)* *C(6, 6, -2)*	$\angle BAC$					
A(5, 3, 2) *B(6,-1, 5)* *C(-1, 7, 10)*	$\angle ABC$					