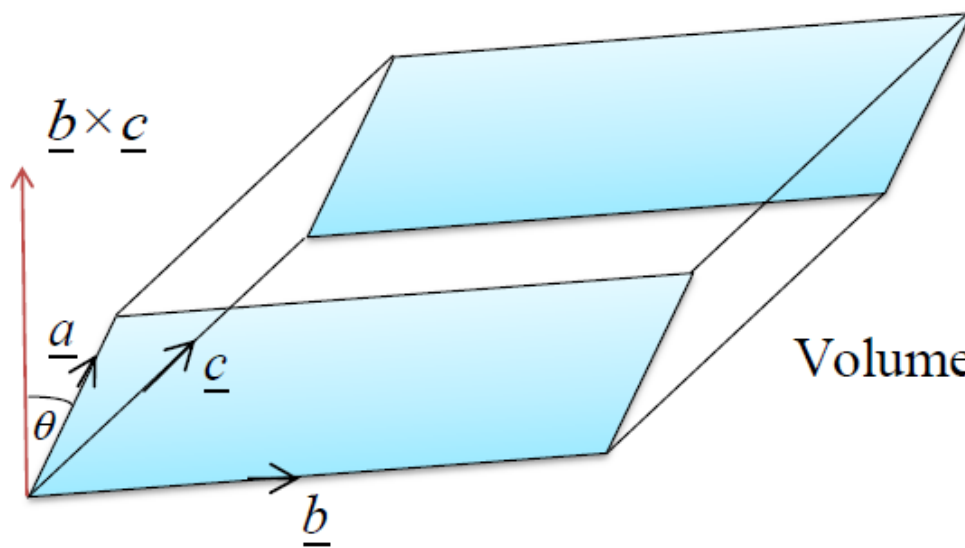


## (Volume of a parallelepiped and scalar triple product)

If  $\underline{a}$ ,  $\underline{b}$  and  $\underline{c}$  represent three adjacent lines of a parallelepiped, then volume of the parallelepiped is given by  $|\underline{a} \cdot (\underline{b} \times \underline{c})|$ .

Here also you can choose any two vectors for the cross product and the remaining vector for the dot product.



$$\begin{aligned}\text{Volume} &= \text{Height} \times \text{Area of the bottom} \\ &= |\underline{a}| \cos \theta |\underline{b} \times \underline{c}| \\ &= |\underline{a}| |\underline{b} \times \underline{c}| \cos \theta = \underline{a} \cdot (\underline{b} \times \underline{c})\end{aligned}$$