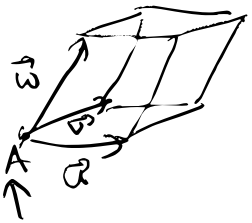
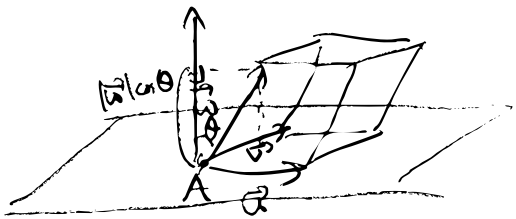
In this short note we explain why the volume of the parallelepiped 

is $|\vec{w}\cdot(\vec{u}\times\vec{v})|$.

Let A be this vertex and P be the plane passing through A & parallel to $\vec{u}, \vec{v}$. Let θ be the angle between the normal vector of P and $\vec{w}$.



Then, the height of the parallelepiped is $|\,|\vec{w}|\cos\theta\,|$. So the volume is

$$\underbrace{|\vec{w}|\cos\theta}_{\text{height}} \cdot \underbrace{|\vec{u}\times\vec{v}|}_{\text{base}}.$$

Since θ is also the angle formed by the normal vector and $\vec{w}$, and since the normal vector can be taken as $\vec{u}\times\vec{v}$, this is precisely $|(\vec{u}\times\vec{v})\cdot\vec{w}|$.