

# Advanced Math

6-4

(Day 2)

Vectors: Components and Work

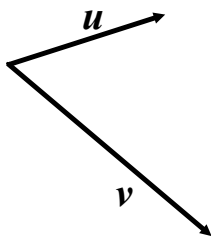
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Vector Components : Let  $\mathbf{u}$  and  $\mathbf{v}$  be non-zero vectors and

$\mathbf{u} = \mathbf{w}_1 + \mathbf{w}_2$ , where  $\mathbf{w}_1$  and  $\mathbf{w}_2$  are orthogonal and  $\mathbf{w}_1$  is parallel to  $\mathbf{v}$ .

$\mathbf{w}_1$  is called the force parallel or the projection of  $\mathbf{u}$  onto  $\mathbf{v}$ .

$\mathbf{w}_2$  is called the force normal or the force perpendicular or the force orthogonal.

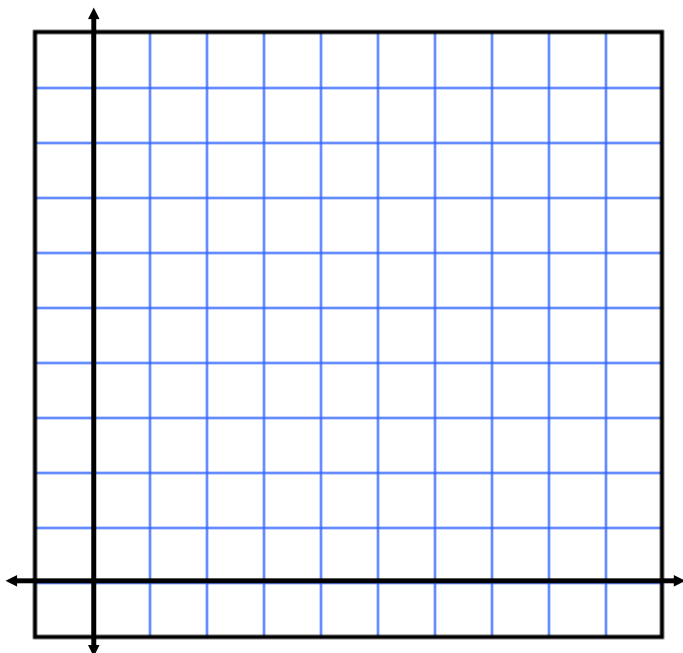


- \*) Draw the the projection of  $\mathbf{u}$  onto  $\mathbf{v}$  and the force perpendicular ( $\mathbf{w}_1$  and  $\mathbf{w}_2$ ) in the appropriate position at the right. Label the diagram appropriately.

Find the projection of  $\mathbf{u}$  onto  $\mathbf{v}$  and the vector component of  $\mathbf{u}$  orthogonal to  $\mathbf{v}$ .

\*1)  $\mathbf{u} = \langle 5, 1 \rangle$

$\mathbf{v} = \langle 3, 6 \rangle$



Assignment:  
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