1. **Horizontal and Vertical Components of Velocity**

When a particle is projected with initial velocity U at an angle  above the horizontal:

* The horizontal component of the initial velocity is Ucos
* The vertical component of the initial velocity is Usin
* When the particle is at its highest point, the vertical velocity = 0.
* The speed of the object is the magnitude of the velocity vector.



**Example** *(Textbook Exercise 6B Q4)*

A particle is projected from the top of a building with initial velocity of 28ms-1 at an angle ** below the horizontal, where $\tan(θ)=\frac{7}{24}$.

a) Find the horizontal and vertical components of the initial velocity

b) Express the initial velocity as a vector in terms of ***i***and ***j***.

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