CONSTANT ACCELERATION

PROJECTILES

**Projection velocity**

(A) angle \( \theta \)

(B) vector \( y = (u \sin \theta, u \cos \theta) \)

**At time \( t \),...**

- **Horizontally** \( a = 0 \)
  - no change in velocity

- **Vertically** \( a = -g \)
  - velocity decreases by \( 9.8\text{ms}^{-2} \) per sec.

- \( S = ut \) initial velocity horizontally \( u \cos \theta \)

- \( S = ut - \frac{1}{2}at^2 \) initial velocity vertically \( u \sin \theta \)

- \( v = u - gt \) vertical velocity

**Equation of flight**

**Time of flight**

**Greatest height**

**Range of flight**