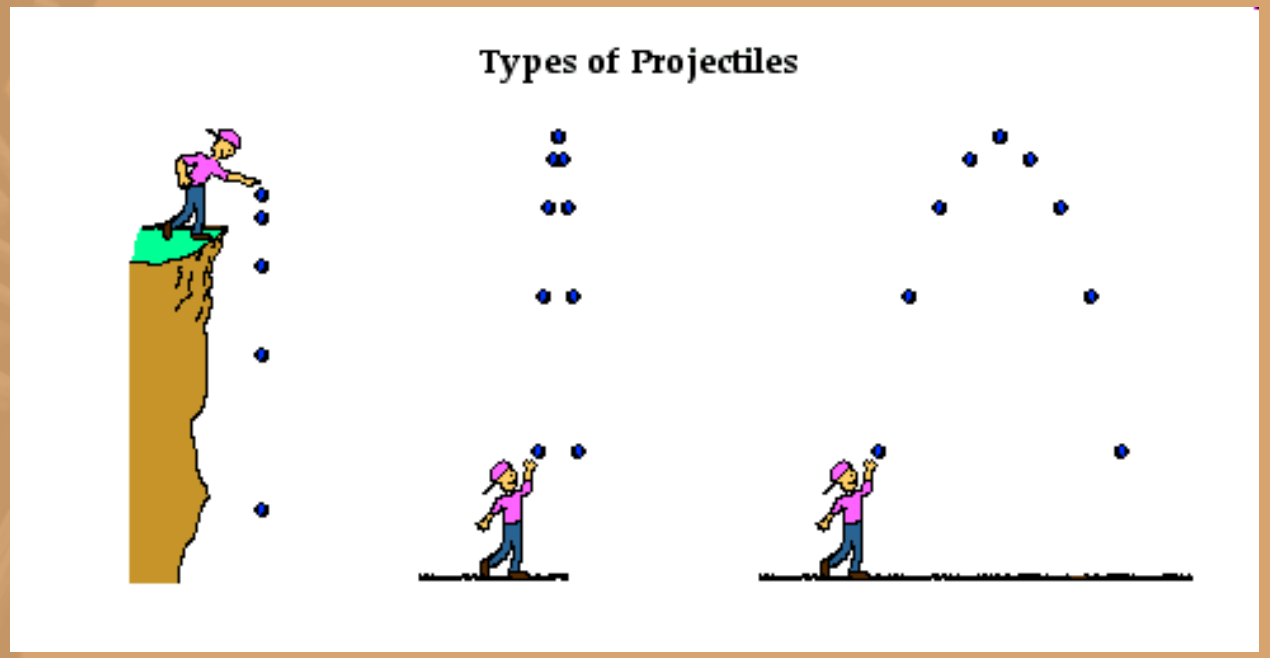
MECHANICS L0.5

QENA STUDENT CLUB

PROJECTILE MOTION

- **Projectile motion refers to the motion of an object that is thrown or projected into the air at an angle.**



The motion of a projectile is determined only by the object's initial velocity and gravity

- **We know from last semester all the equation of mechanics come from 4 main equation which are**

1. $v = v_0 + at$
2. $\Delta x = (\frac{v + v_0}{2})t$
3. $\Delta x = v_0 t + \frac{1}{2}at^2$
4. $v^2 = v_0^2 + 2a\Delta x$

- **So, this projected motion is in two dimension (x, y) that make carve parabola called trajectory And because the motion in two dimension we have to determine if the motion in x- y axis To solve problem**

(HORIZONTAL PROJECTILE) & PROJECTION DOWN AN INCLINED PLANE

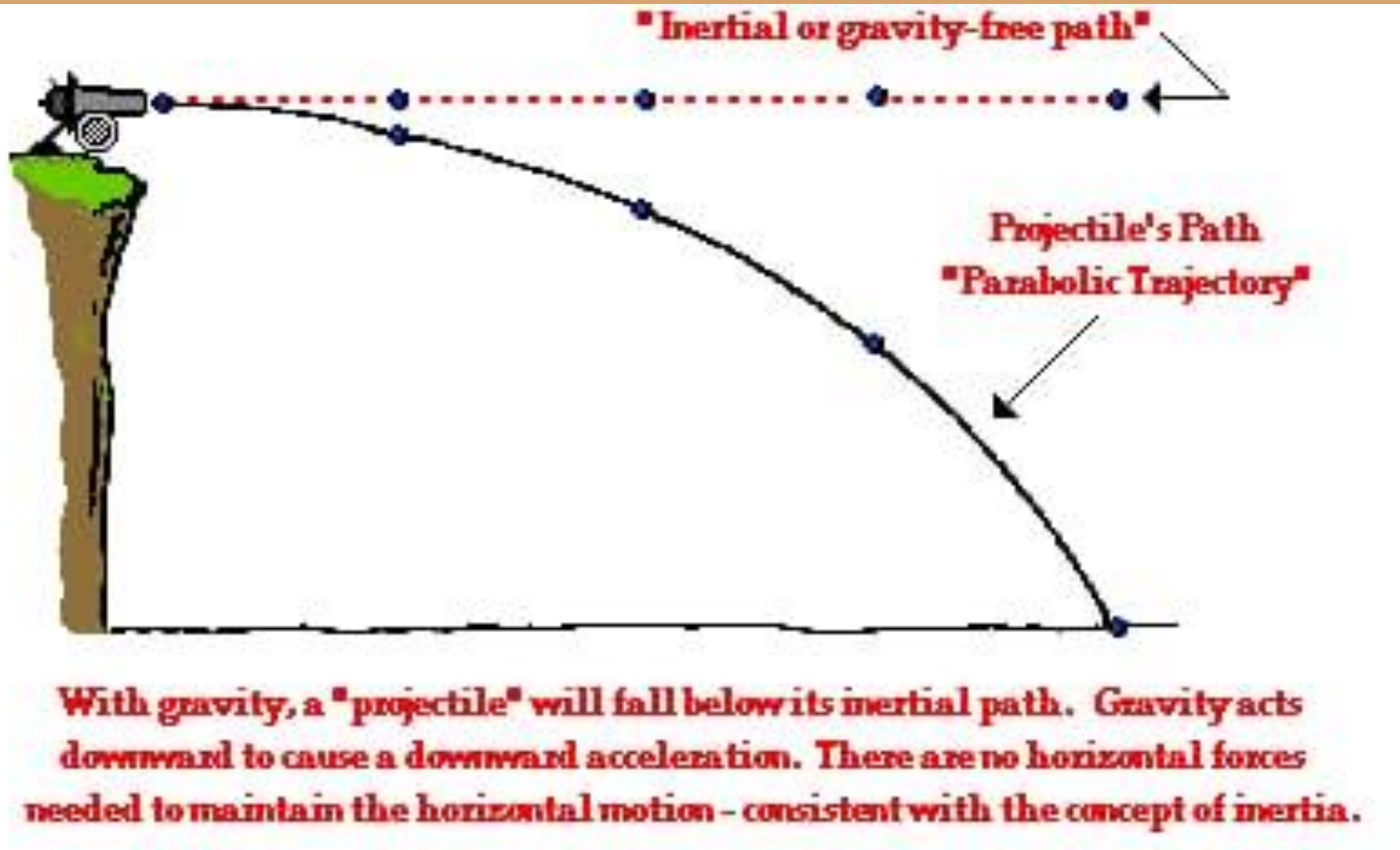
- **How to calculate Maximum height?!**

H= ½ at^2, How did we get this law

By this equation d= vi+at^2

dy = vy.t +1/2 ay t^2

H= Zero+ ½ at^2

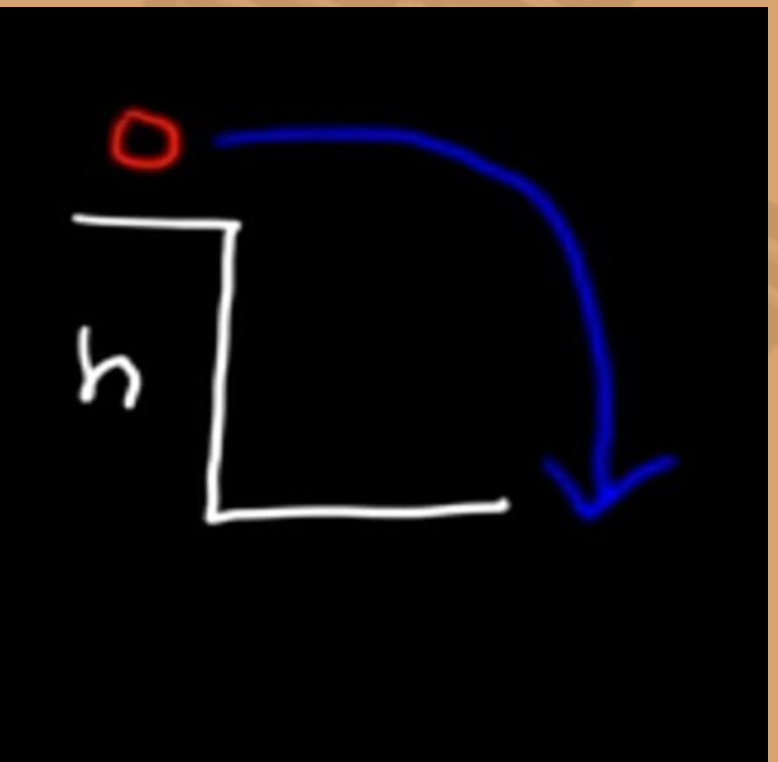


HOW TO CALCULATE THE RANGE

- R= vx.t, how did we get this law?
- By this equation, d=v.t
- -How to calculate the final velocity
- Vf = root vx^2 + Vy^2
- Vx is constant.
- Vy = viy + at

HOW TO CALCULATE THE TIME?!

- **Time from point a to b =v. sin(angle) / g**
- **Time from point b to c = root 2 ½ at^2 /g**
- **To calculate total time = Time from point a to b + Time from point b to c**



OBLIQUE PROJECTILE

-How to calculate the time?!

T= v sin (angle) /g, this time at the maximum height

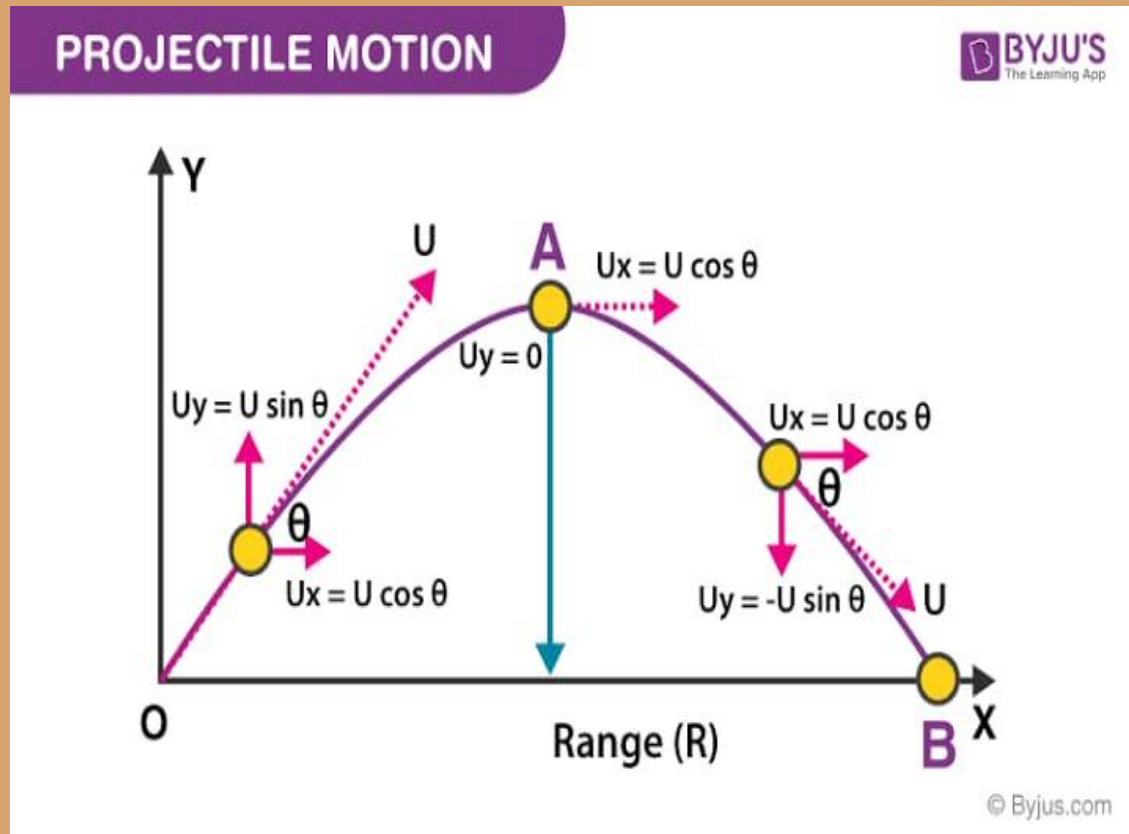
But to get the total time, we used this equation.

T= 2 v sin (angle) /9, but how did we get this law?!

By vf= viy+a.t

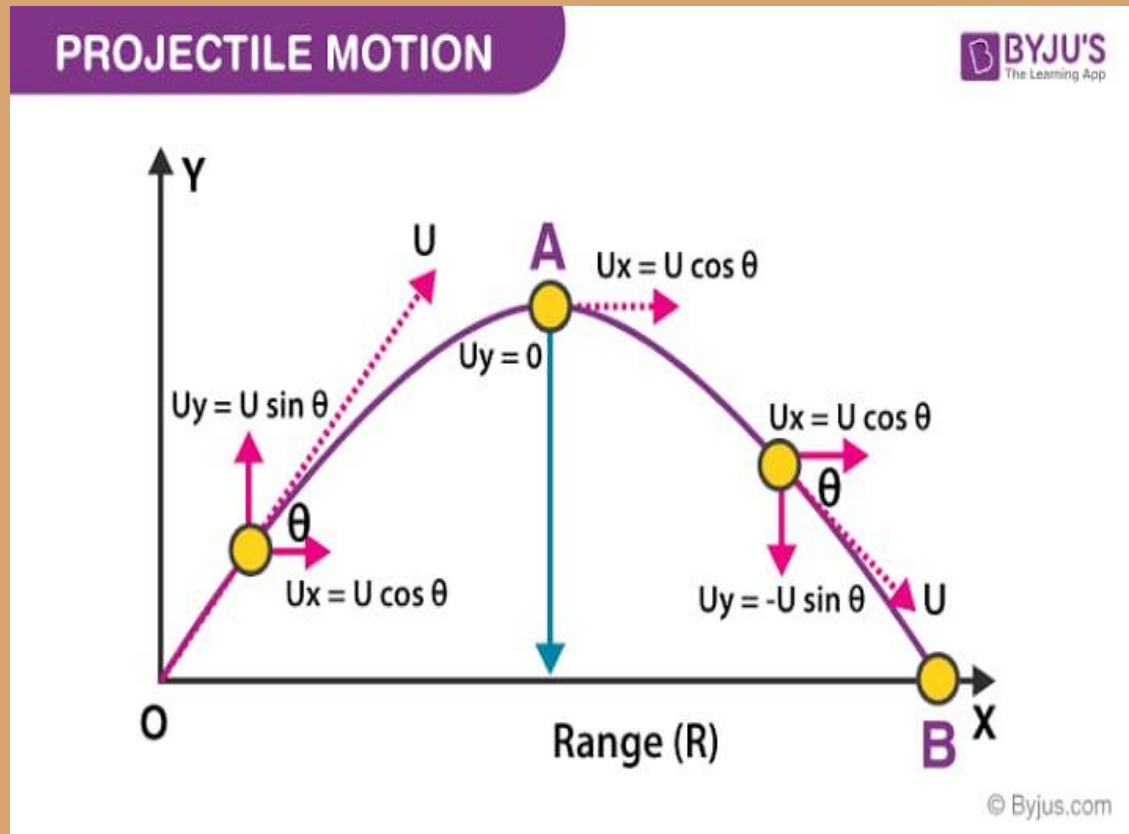
-V sin(angle) = a.t (g is negative)

T= v sin(angle)/g



HOW TO CALCULATE THE RANGE?!

- R=v^2 sin (2 angle)/g, how did we get this equation?
- By R= v cos (angle). 2v sin (angle) /g
- R= v^2 (2 sin (angle). cos (angle))/g
- R= v^2 sin (2 angle) /g



HOW TO CALCULATES THE MAXIMUM HEIGHT?!

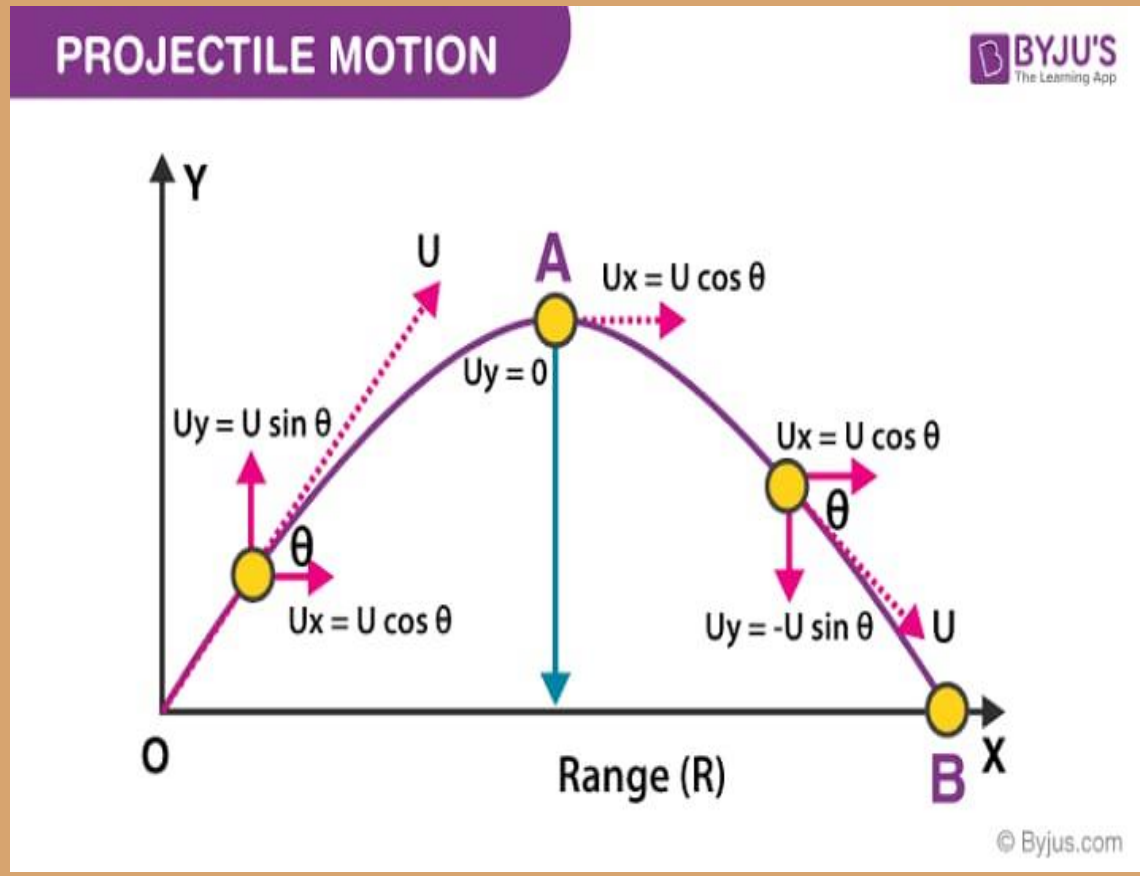
How o calculates the maximum height?!

H= v^2 sin^2 (angle) /2g, how did we get this law?!

By vf^2 = vi^2 +2gH

Zero = (v sin (angle)) ^2 /2gH

H= v^2 sin^2 (angle) /2g



THANKS

MADE BY:

QENA STUDENT CLUB