## CONCEPT: SOLVING PROJECTILE MOTION WITH ENERGY CONSERVATION

$$K_i + U_i + W_{NC} = K_f + U_f$$

● Projectile Motion problems asking for <u>height</u> / <u>speed</u> CAN sometimes* be solved *easier* by using **Energy Conservation**.

<u>EXAMPLE</u>**:** You throw a ball from the top of a 30m building with an initial speed of 20m/s at an unknown launch angle**.** Ignore air resistance**.** Use **Energy Conservation** to calculate the ball's speed before hitting the ground**.**
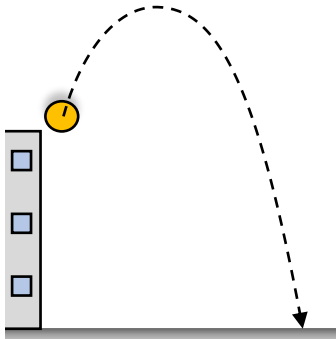
CONSERVATION OF ENERGY

1) Draw Diagram
2) Write Cons. of Energy EQ
3) Eliminate & expand terms
4) Solve

PROBLEM: You throw a ball with 20m/s at 37° above the horizontal. Use Energy Conservation to find its maximum height.

PROBLEM: You are practicing jumping as far as you can. In one attempt, you run and leave the floor with 7 m/s directed at an unknown angle. What maximum height do you reach if your speed at that point is 5 m/s? Ignore air resistance.

CONSERVATION OF ENERGY

1) Draw Diagram
2) Write Cons. of Energy EQ
3) Eliminate & expand terms
4) Solve