Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hr \_\_\_\_\_\_\_\_

**Projectile Motion at an Angle**

So far we have looked at motion of objects in free fall and motion as an object is projected horizontally. Now we will look at objects projected at an angle.

-Motion is accelerated.

-Acceleration is \_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_.

- a = acceleration due to \_\_\_\_\_\_\_\_\_\_ = g = -9.81m/s2

-The horizontal (x) component of velocity is \_\_\_\_\_\_\_\_\_\_\_\_ (not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the x direction.)

-The \_\_\_\_\_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_\_\_\_motions are independent of each other, but they have a common time.

**ANALYSIS OF MOTION:**

**ASSUMPTIONS**

 x-direction (horizontal): \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 y-direction (vertical): \_\_\_\_\_\_\_\_\_\_\_\_\_\_ motion

 no air resistance

**QUESTIONS**

 What is the \_\_\_\_\_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_\_\_\_?

 What is the total \_\_\_\_\_\_\_\_\_\_ of the motion?

 What is the horizontal \_\_\_\_\_\_\_\_?

 What is the maximum \_\_\_\_\_\_\_\_\_?

y

 What is the \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_?

**Path Of Motion – \_\_\_\_\_\_\_\_\_, open down**

Assumes no air resistance

**Δx is the horizontal \_\_\_\_\_\_\_\_\_\_\_**

x

 **Δ x**

**Path of Motion and horizontal range**

CONCLUSIONS:

Horizontal range is \_\_\_\_\_\_\_\_ for the throw angle of \_\_\_\_0

Horizontal range is the \_\_\_\_\_\_ for 30o & 60o launch angles.

Final speed = \_\_\_\_\_\_\_\_\_\_\_ speed *(conservation of energy)*

\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ = - launch angle *(symmetry of parabola)*

PROJECTILE MOTION – SUMMARY

* Projectile motion is motion with a \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ combined with a constant \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The projectile moves along a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Practice**

* P. 40-42 #7-10, 12-14, 34, 42-44, 46