Physics 11

**Section 3.4: Projectiles**

Any vector can be replaced with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

These two vectors are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

We *usually* choose one horizontal component (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) and one vertical

component (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_).

**Examples:**

A projectile is an object that moves through the air where the only force acting on it is \_\_\_\_\_\_\_\_\_\_\_\_\_.

Draw the trajectory for a projectile with horizontal initial velocity. Show the velocity at several points, including the x- and y- components:

**Example:** A ball is thrown horizontally at 14 m/s from on top of a 12 m high building.

1. How long is the ball in the air for?
2. How far from the building is the ball when it lands?
3. What is the ball’s velocity as it hits the ground?