SPH 3U Projectile Problems Period 4 Due Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What is the definition of a projectile?

1. List the four equations for full flight projectile motion.
2. What angle allows for the maximum range?
3. Owen and Brad invent a game involving a potato cannon and a moveable target.  If the cannon can fire a potato at 20 m/s at an angle of 15o at what distance should they place the target with Jeremy tied to it to ensure a direct hit?  How long does Jeremy have to untie the ropes before being hit?
4. Alex throws a ball at a speed of 30 m/s at an angle of 20o. How high will the ball reach?  How long will it take to get to the maximum height? How long will it take to land?
5. Simon wants to throw a ball 75 m across a river to Mireille. If he can throw a ball with a speed of 30 m/s at what angle should he throw it to achieve the 75 m?
6. If Kayla kicks a soccer ball with a speed of 15 m/s at an angle of 30o will it get to the goal 45 m away?  Prove mathematically.

8. Patrycja and Madelyn fling a 2 kg shot put off the school (height 10 m) horizontal with a speed of 6 m/s. How far from the base of the school does it land?