Physics 11

PLC Activity #4: Projectile Motion

To get credit for this activity, you must show your answers to a PLC tutor and have them initial the sign-out sheet before 4:00 pm on Tuesday.

Show all of your work for each question.

1) Do Physlets Kinematics Problem 6 and answer the following question:
Rank the paths of the four animations in terms of the displacement of the bowling ball during the animations (greatest first). Explain your reasoning.

2) Go to Physlet Kinematics Problem 4 and answer the following:
What is the minimum speed of the projectile?

3) A leopard springs upward at a 45° angle and then falls back to the ground. Does the leopard, at any point on its trajectory, ever have a speed that is one-half of its initial value? Give your reasoning.
4) The figure shows three paths for a football kicked from ground level. Ignoring the effects of air resistance, rank the paths according to (a) time of flight, (b) initial vertical velocity component, (c) initial horizontal velocity component, and (d) initial speed.

a)

b)

c)

d)

5) The eight figures below show rifles that are being fired horizontally, i.e., straight out, off platforms. The bullets fired from the rifles are all identical, but the rifles propel the bullets at different speeds. The specific speed of each bullet and the height of each platform is given. All of the bullets miss the targets and hit the ground.

Rank these bullets, from longest to shortest, on the basis of how long it takes a bullet to hit the ground. That is, put first the bullet that will take the longest time from being fired to hitting the ground, and put last the bullet that will take the shortest time.

Longest 1_____ 2_____ 3_____ 4_____ 5_____ 6_____ 7_____ 8_____ Shortest

Please carefully explain your reasoning.