**Kinematics Challenge Problems**

1. Who dropped the AC?

An air conditioning unit falls out of a window and crashes to the ground several stories below. Luckily no one is hurt, but authorities want to track down the culprits. Knowing that you have had some practice with physics, they enlist your help. Here is all the information they know: eye witnesses didn't see which floor the AC fell from, but one of them had the presence of mind to time that it took 1.2s to fall the last three stories. Each story is 5m tall. If air resistance is negligible, which floor was the AC dropped from?

1. The Wishing Well.

Bob drops a heavy stone down a deep well. He measures that it takes 12.2s before the faint sound of the stone hitting the bottom of the well reaches his ears. How deep is the well? Hint: look up the speed of sound in air at standard temperature and pressure. Ignore air resistance and assume any variations in the speed of sound are negligible.