



March 2000

Activity 1 : Jumping Out A Window Solutions

1. This activity gives students an idea of how numerical dimensions translate into actual size. You may wish to pre-measure your classroom. Getting a mark to the 9-foot level may require a ladder or high step stool. You can also mark a long poll and use it to measure the room.

2. The eleventh floor. $120/11 = 10.9$, so you can only be 10 floors high and still be less than 120 feet high. However, in the U.S. the first floor is at ground level, so the eleventh floor is ten floors up. In other countries, like France, the first floor is the floor above ground level, so a stunt person would have to be careful on an international shoot.

When you divide 120 by 11, the remainder is 10, so a 3-foot high windowsill is not a problem. Another way to look at this is that 10 times 11 plus 3 = 113, which is less than 120.

3. The twelfth floor. You might think that because $120/10 = 12$, you could safely jump from the 13th floor, but the remainder is zero so the 2-foot windowsill height would put the jump over 120 feet. You might ask the students whether they would jump from the highest possible floor if they were stunt people. This could introduce the notion of a margin of safety.

4. Since the air bag has to absorb twice as much energy, it is best to cut the maximum height in half.

5. The volume of the Model 100 bag is 7020 cubic feet (30 times 26 time 9). The volume of the Model 200 is 15750 cubic feet. The time needed to inflate the larger bag is about 11 minutes (5 minutes times 15750 divided by 7020). To allow the Model 200 to inflate in about the same time as the Model 100, you could use either one fan that was twice as powerful or two fans. Actually, the Model 200 is designed for use with two fans.

6. This is an open-ended discussion. Some ideas might include making a drawing or model of a building and lowering a doll in front of it, dropping a paper machete dummy dressed in the actor's clothes, and using an off-camera hair dryer to ruffle the actors clothes and hair while they act like their falling.house. Determine the number of bundles necessary to re-roof this house.