Problem #1

Solve:
In the space below solve the problem. Make sure to draw out the scenario and SHOW ALL WORK!!!

$$D = V_i(t) + \frac{at^2}{2}$$

$$10 = 0(t) + \frac{(9.8)t^2}{2}$$

I put the 10 meter too!

$$\frac{10}{1} = \frac{9.8t^2}{2}$$

$$\frac{\cancel{9.8}t^2}{\cancel{9.8}} = \frac{20}{9.8}$$

$$\sqrt{t^2} = 2.0$$

$$t = 1.4 \text{ sec}$$

Time is the same

$$V = \frac{\Delta x}{\Delta t}$$

$$V = \frac{8}{1.4}$$

I actually just kept the first 2 digits to solve, which you went 1.427

$$V = 5.7 \text{m/s}$$

my answer is 5.7 & yours is 5.63, I just didn't divide by an extra number

$$\overset{\text{top}}{PE} = \overset{\text{bottom}}{KE}$$

I didn't include the mass b/c it wasn't needed.

$$gh = \frac{v^2}{2}$$

$$\frac{(9.8)h}{9.8} = \frac{(5.7)^2}{2}$$

As I got 5.7 not a 3 digit number than our first of all velocity in looks different. $V = \frac{\Delta x}{\Delta t}$ for Δt.

I worked out this side first then the other side

$$= \frac{32.49}{2}$$

$$\frac{16.2}{9.8}$$

After being divided by 2

$$\boxed{h = 1.6 \text{ meters}}$$

or 1.65 or 1.7

We both got the same right answer anyways

Explain:
Explain your thought process and why you used each equation next to each step of the problem.

The first thing I had to figure out is the height of the slide. So I knew right away that I'm going to work backwards. The first thing I already knew is that between the table and the pool there is a distance of 8 meters, so that must be Δx from the equation $V = \frac{\Delta x}{\Delta t}$. Now I need to figure out the Δt to get my velocity, then to plug my velocity in the equation PE = KE to find the height of the slide. So for my 10 meters I plugged it in $D = V_i(t) + \frac{at^2}{2}$ to find Δt. I worked it out and got 1.4 sec. Then I plugged that in the equation $V = \frac{\Delta x}{\Delta t}$ to get my Velocity which is 5.7 m/s. After I plugged my velocity in PE = KE to find the height up in the table. After solving it, I got a height of 1.6 meters. It can either be 1.65 or round up 1.7