**Videos 2F-Free Fall Problems Name**

Problem solving tips:

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Example 1 - An object is launched straight up with a velocity of 33.0 m/s, and strikes the ground at the same elevation from which it is launched. Use the acceleration of gravity to be -9.80 m/s/s, and neglect air friction

1. What time did it take to reach the top
2. How high does it go at the highest?
3. What total time is it in the air?

Example 2 – An air rocket leaves reaches a height of 31.0 m before falling back to the ground.

1. What was the initial velocity
2. What time did it take to reach the top
3. What total time is it in the air?

Example 3 – Red Elk drops from a cliff that is 11.2 m tall

1. With what velocity does he strike the water?
2. What time does it take to hit the water?

Example 4 – Black Elk drops from a cliff and strikes the water at a velocity of 34.0 m/s.

1. What time did it take him to hit the water?
2. How high is the cliff?

Try these example problems. Don't freak out if you can't immediately get the answer. We will work on these as a group in class. They are solved in the linked videos that follow the main one

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| 1. An air rocket goes straight up, and then falls back to earth, remaining in the air for a total of 6.32 s   1. What time did it take to reach the top 2. What was the initial velocity (3.16 s, 31.0 m/s) | 2. It takes a rock 1.52 s to fall from rest from a bridge and strike the water below.   1. How high is the bridge? 2. With what velocity does the rock strike the water? (11.3 m, -14.9 m/s) |