Cliff Practice Problems for A3.2

Round to the correct significant figures, Ignore air friction and use the convention that down is negative. g = 9.81 m/s/s

1.22 s 5.59 m/s 13.2 m/s 2.52 m x + -0.993 m y 5.59 m/s x + -4.41 m/s y 7.13 m/s 38.3^{o} blw. hrz.	1. A fifth grader is projected with a purely horizontal velocity from an 7.25 m tall cliff and lands 6.80 m from the base of the cliff. What time is the child in the air? With what purely horizontal velocity was he projected from the top of the cliff? What is the speed of impact? At 0.450 seconds after he leaves the edge of the cliff: What is the position of the child? (How far out, how far down) What is the velocity of the child in vector components and as an angle and a magnitude? Draw a picture of the velocity vector.
81.7 m 86.9 m 45.3 m/s 60.0 m x + -38.9 m y 21.3 m/s x + -27.6 m/s y 34.9m/s, 52.4^{o} blw. hrz.	2. A Chevy drives off the edge of a cliff. The instant it leaves the edge, it has a purely horizontal velocity of 21.3 m/s, and it strikes the ground after 4.08 seconds. How high is the cliff? How far from the base of the cliff does the car land? What is the speed of impact? When the car has gone horizontally 60.0 m: What is the position of the car? (How far out, how far down) What is the velocity of the car in vector components and as an angle and a magnitude? Draw a picture of the velocity vector.
1.30 m 0.514 s 5.22 m/s 0.545 m x + -0.800 m y 1.35 m/s x + -3.96 m/s y 4.19 m/s, 71.2^{o} blw. hrz.	3. A meatball leaves the edge of a table with a purely horizontal velocity of 1.35 m/s, and lands 0.694 m from the base of the table. How high is the table? What time does it take the meatball to hit the ground? What is the speed of impact? When the meatball has gone down 0.800 m: What is the position of the meatball? (How far out, how far down) What is the velocity of the meatball in vector components and as an angle and a magnitude? Draw a picture of the velocity vector.
0.887 s 2.43 m 9.12 m/s 1.12 m x + -0.825 m y 2.74 m/s x + -4.02 m y 4.87 m/s, 55.7^{o} blw. hrz.	4. A Giant Lizard is projected sideways at 2.74 m/s from the top of a 3.86 m tall cliff. What time is the lizard in the air? How far from the base of the cliff does the lizard land? What is the speed of impact? At 0.410 seconds after it leaves the edge of the cliff: What is the position of the lizard? (How far out, how far down) What is the velocity of the lizard in vector components and as an angle and a magnitude? Draw a picture of the velocity vector.
6.71 m 7.06 m/s 13.5 m/s 4.00 m x + -1.57 m y 7.06 m/s x + -5.56 m/s y 8.99 m/s, 38.2^{o} blw. hrz.	5. A can of Spotted Dick rolls off the edge of a cliff with a purely horizontal velocity, and strikes the ground 1.17 s later at a distance of 8.26 m from the base of the cliff. How high is the cliff? What was the can's horizontal velocity? What is the speed of impact? When the can has covered a horizontal distance of 4.00 m: What is the position of the can? (How far out, how far down) What is the velocity of the can in vector components and as an angle and a magnitude? Draw a picture of the velocity vector.