Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Physics 11

**Worksheet 2.8**

**Vertical Accelerated Motion**

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| 1. Bumblebee jumps straight upwards with a velocity of 14.0 m/s. What is his displacement after 1.8 s?
2. A surprisingly spherical decepticon is rolled up a constant slope with an initial velocity of 9.3 m/s. What is the acceleration of the decepticon if its displacement is 1.9 m up the slope after 2.7 s?
3. Optimus Prime coasts up a hill initially at 11 m/s. After 9.3 s he is rolling back down the hill at 7.3 m/s. What is his acceleration?
 | 1. Sonic (you know, the hedgehog) rolls up a slope at 9.4 m/s. After 3 s he is rolling back down at 7.4 m/s. How far up the hill is he at this time?
2. Luigi jumps straight upwards at 15 m/s. How high is he when he is travelling at:
	1. 8 m/s upwards?
	2. 8 m/s downwards?
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| 1. Sick of his guff, Optimus decides to **throw** Megatron **down** off the top of a building at 5 m/s. Megatron hits the ground traveling at 32 m/s.
	1. How long is he in the air?
	2. How far does he fall?
2. Mario rolls a coin up a slope at 2 m/s. It travels 2.7 m, comes to a stop, and rolls back down. What is the coin’s entire time of travel?
 | 1. While strolling along on Planet X, an astronaut decides to throw a hammer and a feather upwards at 5 m/s. They both return to the point of release in 3 s. What is the acceleration due to gravity on Planet X?
2. Princess Toadstool stands on the edge of a 30 m high cliff. She throws Bowser upwards at 20 m/s. If Bowser falls all the way to the bottom of the cliff, find:
	1. His velocity when he hits the ground.
	2. How long he’s in the air.
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Answers: 1) 9.32 m 2) -6.4 m/s2 3) -2.0 m/s2 4) 3.0 m 5a) 8.2 m 5b) 8.2 m, weird huh?
6a) 2.8 s 6b) -51 m 7) 5.4 s 8) -3.3 m/s2 9a) -31.4 m/s 9b) 5.24 s