**Arc Problem Quizlette Name**

**Red Elk shoots an air rocket at an angle of 57.0o above the horizontal at a speed of 25.0 m/s on a very level field.**

A) Break the velocity vector into components. (These become your initial velocities for x and y) Set up your horizontal/vertical table, fill it with known quantities, and solve for everything you don’t know. (You know horizontally: both velocities and the acceleration, and vertically: the displacement, both velocities, and the acceleration) (13.616 m/s x + 20.967 m/s y)

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| B) What are the initial horizontal and vertical velocity components? (13.616 m/s x + 20.967 m/s y) | C) What time is the rocket in the air? (4.27 s) | D) How far does the rocket go before hitting the ground? (58.2 m) |
| E) What is the greatest height the rocket reaches? (22.4 m) | F) What is the speed of the rocket at the highest point? (13.6 m/s) |

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What is the position (in VC notation, how far over, how far up) and velocity (AM notation - draw a picture) at 1.50 seconds? (20.4 m over and 20.4 m up, 15.0 m/s, 24.7o above horizontal)

Suppose the rocket hits a very tall wall that is 45 m away. How high up on the wall does it hit, and what is the velocity of impact in AM notation? (draw a picture) (15.7 m up the wall, 17.8 m/s 40.1o below the horizontal)