

# Cliff Problem Quizlette

Name \_\_\_\_\_

**Red Elk runs at a speed of 9.20 m/s horizontally off a cliff that is 6.40 m above the water.**

A) 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, the initial velocity, and the acceleration)

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| <p>B) What time is he in the air?<br/>(1.14 s)</p>   | <p>C) What is his final vertical velocity of impact? (-11.2 m/s)</p> | <p>D) How far from the base of the cliff does he hit the water?<br/>(10.5 m)</p> |
| <p>E) Draw a picture of his velocity of impact, and turn it into an angle-magnitude velocity vector. Find the angle with the horizontal, and label both the angle and the magnitude. (14.5 m/s, 50.6° below horiz)</p> |  | <p>F) What is his speed of impact with the water? (14.5 m/s)</p>                 |

**Red Elk runs at a speed of 9.20 m/s horizontally off a cliff that is 6.40 m above the water.**

When Red Elk is 3.1 m above the water, inspiration strikes him. (set up another H|V table and solve)

- What is Red Elk's position (relative to the cliff edge) when he is 3.10 m above the water? (how far over, how far down from the edge) (7.55 m over, -3.30 m down)
- What is Red Elk's velocity in Vector Components and Angle Magnitude (draw a picture) notation when he is 3.1 m above the water? (9.20 m/s x + -8.05 m/s y, 12.2 m/s 41.2° below horiz)

What is Red Elk's position (VC notation relative to the cliff edge) and Velocity (VC and AM - draw a picture) at 0.50 seconds after leaving the edge of the cliff?

(4.60 m over, -1.23 (down), 9.20 m/s x + -4.905 m/s y, 10.4 m/s 28.1° below horiz)

What is Red Elk's position (VC notation relative to the cliff edge) and Velocity (VC and AM - draw a picture) when he has covered 8.0 horizontal meters of distance?

(8.00 m over, -3.71 m down, 9.20 m/s x + -8.53 m/s y, 12.5 m/s 42.8° below horiz)