

Name _____

Show your work, circle your answers, and use significant digits to receive full credit (but don't round until the end) Ignore air friction, use the convention that down is negative, and use $g = 9.81 \text{ m/s}^2$.

When you have finished this, go to the website and check your answers. If you got a problem wrong, cross it off on the front, and do it correctly on the back.

1-3: A ball is launched at 27.2 m/s at an angle of 75.0° above horizontal on a level field.

1. What time is the ball in the air?

2. What horizontal distance does it travel before hitting the ground again?

3. At 3.20 s after launch, what are the position of the ball **and** the velocity of the ball in vector components? Write them both as proper component vectors.

4-5: A ball is launched at 31.7 m/s at an angle of 56.0° above horizontal from the top of a 65.3 m tall cliff. (it lands 65.3 m lower in elevation)

4. What is its speed of impact?

What time does it take to hit the ground?

5. What horizontal distance does it travel before hitting the ground again?