Answer the following questions. Be sure to show all work. Once you have finished answering the questions, submit your responses to the dropbox.

1. A daredevil jumps her motorcycle off a ramp angled 55 degrees above the horizontal at a speed of 75 m/s.
	1. What is the initial x-component of her velocity?
	2. What is the initial y-component of her velocity
2. A bullet is shot with a speed of 240 m/s at an angle of 25˚ above the horizontal on a level surface.
	1. Complete the following table:

|  |  |  |
| --- | --- | --- |
|  | horizontal | vertical |
| initial velocity |  |  |
| acceleration |  |  |

(show work here)

* 1. How long is the bullet in the air?
	2. What is the maximum height achieved by the bullet?
	3. How far away from the shooter does the bullet hit the ground?

A frustrated physics student throws his textbook off a cliff with a speed of 12 m/s at an angle of 35˚ below the horizontal. It takes 3 seconds for the book to reach the ground.

* 1. Complete the following table:

|  |  |  |
| --- | --- | --- |
|  | horizontal | vertical |
| Initial velocity |  |  |
| acceleration |  |  |

(show work here)

* 1. How tall is the cliff?
	2. How far from the base of the cliff does the book hit the ground?
	3. What is the final x-component and y-component of the book’s velocity (just **before** it hits the ground)?
	4. What is the **total** final speed (not x- or y- but total) of the book (just **before** it hits the ground)?