*Engage*

**Free Fall- Cliff Jump**

View the following:

<https://youtu.be/j5uXL4w90yU>

Equation you will need:

$$h\left(t\right)=\frac{1}{2}(-9.8)t^{2}$$

*Explore*

h(t) – represents the directed distance the cliff diver has fallen in meters.

1. Create a table of values to show the directed distance for integral times from 0 sec to 4 seconds.

|  |  |
| --- | --- |
| Time, t sec | H(t), meters |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

*Explain*

1. Use the video and determine the time it takes to hit the water. \_\_\_\_\_\_\_\_\_
2. Calculate the time based on the equation you are given above.

***Expectations- Explain***

1. Are they equal? \_\_\_\_Can you explain why they are not equal? Discuss with partner.
2. What might be acting on the body that our equation did not account for?

NASA SOURCE:

BEGINNERS GUIDE TO AERONAUTICS

<https://www.grc.nasa.gov/www/k-12/airplane/guided.htm>

DRAG / TERMINAL VEL

<https://www.grc.nasa.gov/www/k-12/airplane/falling.html>

<https://www.grc.nasa.gov/www/k-12/airplane/newton1a.html>

<https://www.grc.nasa.gov/www/k-12/airplane/ffall.html>

<https://www.grc.nasa.gov/www/k-12/airplane/mofall.html>

TERMINAL VELOCITY

<https://www.grc.nasa.gov/www/k-12/airplane/termv.html>

SHAPE AND DRAG

<https://www.grc.nasa.gov/www/k-12/airplane/shaped.html>