



THE GRAVITY OF VIDEO GAME WORLDS

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THE EQUATION

The equation I will be using is an equation for height, being:

$$h = \frac{1}{2} \times g \times t^2$$

OR

$$\text{Height} = \frac{1}{2} \times \text{gravitational pull} \times \text{time}^2$$

But, this figures out height? Well if we rearrange it, we get:

$$g = \frac{2 \times h}{t^2} \quad \text{OR} \quad \text{Gravitational Pull} = \frac{2 \times \text{height}}{\text{time}^2}$$

MINECRAFT



For the Minecraft Gravity, I built a 100 block tall tower, each block representing 1 metre, and timed myself falling from the top 3 times. I then figured out the mean average of these times and got 2.93 seconds.

I plugged this into the equation:

$$g = \frac{2 \times 100}{2.9^2}$$

This adds up to 23.9 m/s^2 , over double our Earths gravity.

FORTNITE



Using the ping system (the ability to mark locations, seeing how far away they are), I got up to 99 metres in the air. I then fell that distance 3 times and got the mean average of the time it took to fall, that being 3.2 seconds

Plugging it into the equation, we get this:

$$g = \frac{2 \times 99}{3.2^2}$$

All this adds up to 19.3 m/s^2 , just under double our Gravitational Pull.



ASSASSINS CREED UNITY

Similar to the other previous entries, I had to free fall a specific distance in order to get accurate results. However, unlike the other two, this game has real locations. Being set in France, I chose the famous location of Notre Dame, jumping off one of the towers which are both 226 feet tall, or 69 metres. After timing 3 falls and discovering the mean, I got 3.7 seconds.

Putting this in the equation, we get:

$$g = \frac{2 \times 69}{3.7^2}$$

All this results in the Gravitational Pull being 10.1 m/s^2 , incredibly close to our own Gravitational Pull of 10 m/s^2

SPIDER-MAN PS4



Similar to Assassins Creed Unity, this game takes place with real world structures. So, since it takes place in New York, I chose to jump off the Empire State Building, which is 443 metres tall. Jumping off this structure 3 times and getting the mean gets us 7.8 seconds

If we place it into the equation, we get:

$$g = \frac{2 \times 443}{7.8^2}$$

This gives the Gravitational Pull as 14.6 m/s^2 .



SPIDER-MAN: MILES MORALES

This game is set in the same world as Spider-Man PS4, so to keep results as accurate as possible I jumped off the Empire State Building 3 times and figured out the mean average. I did this and got 7.9 seconds.

The resulting equation looks like this:

$$g = \frac{2 \times 443}{7.9^2}$$

This gives us the resulting Gravitational Force of 14.2 m/s^2 , which is very close to the results of Spider-Man PS4, the difference most likely coming down to human error.

CONCLUSION

Though gameplay and art style can definitely affect your gameplay, a factor that is equally important that no one thinks about it's the games gravity, allowing you to jump higher or lower, pick up heavy objects, or maybe they just have no affect and just make us think how freakishly strong some video game characters are.