<https://www.youtube.com/watch?v=TrrfVHpqmUw>

Smooth curve made using interpolation

Matlab costs money :( - can use matplotlib on python instead

Coefficient of resititution equation for time taken to fall = 2\*sqrt(2h/g)\*((1/(1-c))-½)

2 balls (1 big, 1 small), H/h = v^2/u^2=(C1-(m/M) + C2\*C1+C2)/(1+(m/M))^2

Make calculators for these equations in excel

H = (((2C+1)-(m2/m1))/(1+(m2/m1))^2\*h

Distance from centres to other centre during collision= > r1+r2

0 momentum frame V = (m1u1+m2u2)/(m1+m2)

0 momentum frame means velocities must be such that total momentum of frame = 0

(im good at coding but idk how to use excel so im going to use excel)

<https://www.youtube.com/watch?v=RKVS2FVbLAc>

Travelling to the moon uses only newtonian laws

Most basic astrophysics only requires newtonian laws until more gravity is added when general relativity is needed

G=6.67x10^-11m3kg-1s-2

Rate of area swept = 0.5\*sqrt(G(M+m(often insignificant))(1-epsilon^2)a)

epsilon=eccentricity of ellipse, eccentric if >0, 0=circle, 1=parabola, >1=hyperbola

Epsilon = sqrt(1-(b^2/a^2))

Moonfall = how much moon ‘falls’ - orbits and gets lower/closer to earth, following orbit

Moonfall can be calculated using pythagoras, newtons laws and galileos principles