

Up and Down (Work and Power)

Objective Summary

The objective of this lab is to compare the work and power I used to climb up a slide and the work and power gravity used to bring me back down that slide. First, I calculated by weight in newtons from my weight in pounds. Then Audrey and I went to Brookside school where there is a slide. We then measured the height of the slide. I multiplied this information by my weight in newtons to get my PEG. I then divided by PEG by both the time it took me to climb up the slide (my work and power) and the time it took me to slide down the slide (gravity's work and power). Now I have all the information I need to compare.

~

Step 1: Calculate weight in newtons

$$114 \text{ pounds} = 507 \text{ newtons}$$

Step 2: Measure the height of the slide and multiply that by my newtons, to get my PEG

Height of slide = 5 meters

$$PEg = (m)(g)(h)$$

$$PEg = (507)(5 \text{ meters})$$

$$PEg = 2,535 \text{ J}$$

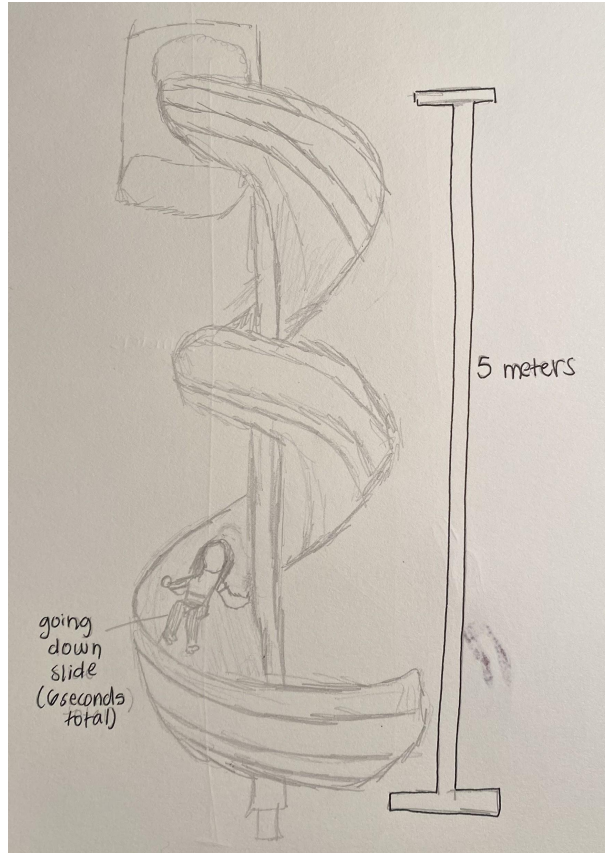


Diagram of Slide

Step 3: Divide my PE_g by the time it took me to go up the slide to get how many watts of power I used.

$$P = w/t$$

$$P = 2,535/9.6s$$

$$P = 264 \text{ watts of power}$$

Step 4: Divide my PE_g by the time it took me to go down the slide to get how many watts of power gravity used.

$$P = w/t$$

$$P = 2,535/6s$$

$$P = 422.5 \text{ watts of power}$$

~

Reflection and Summary

It took me 264 watts of power to climb up the slide while it took gravity 422 watts of power to pull me back down the slide. Overall, I now have a better understanding of my force of gravitational potential energy along with gravity's!