# ***GRAPHING CLUES***

**These are portions of rides rather than the whole ride.**

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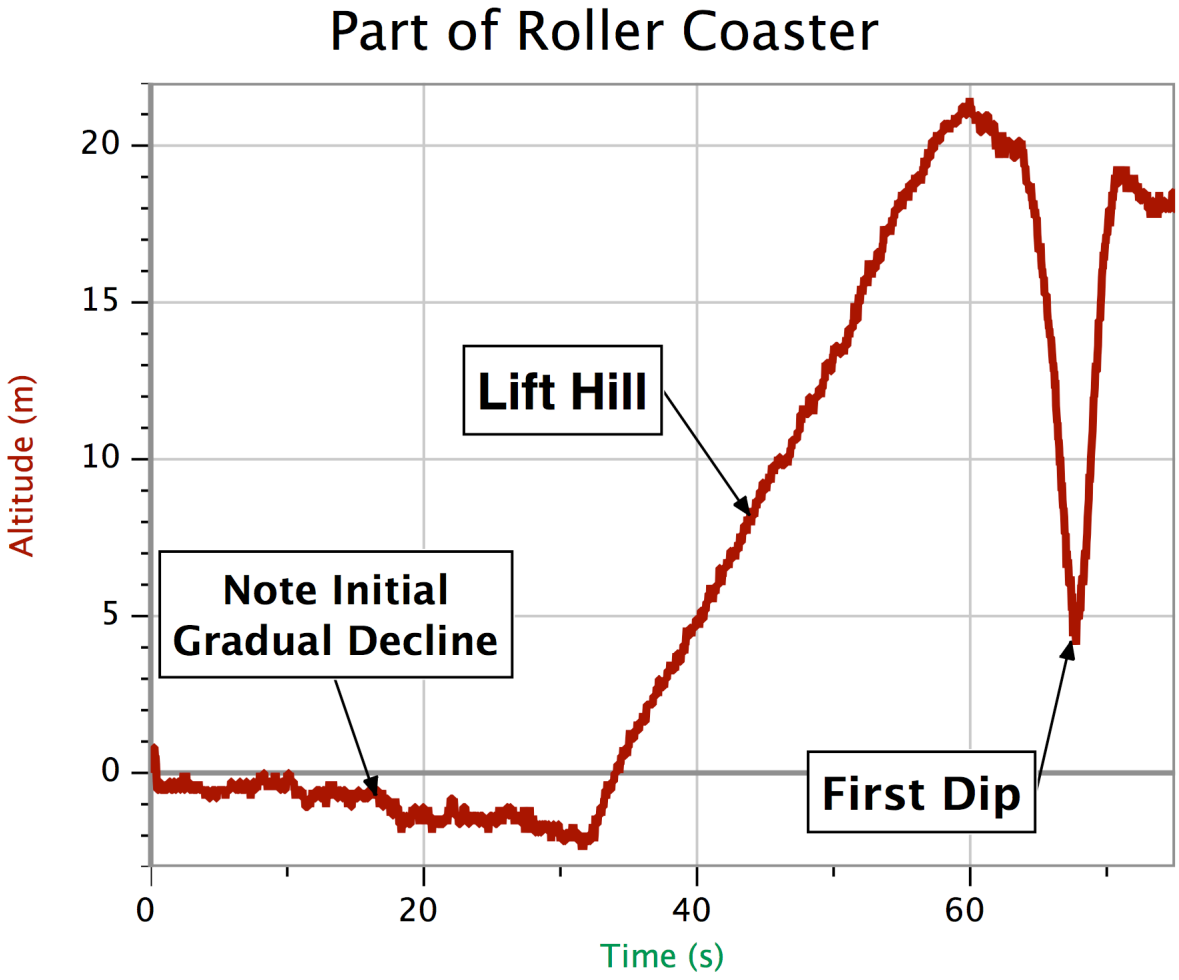
## Ride Profile – Altitude versus Time

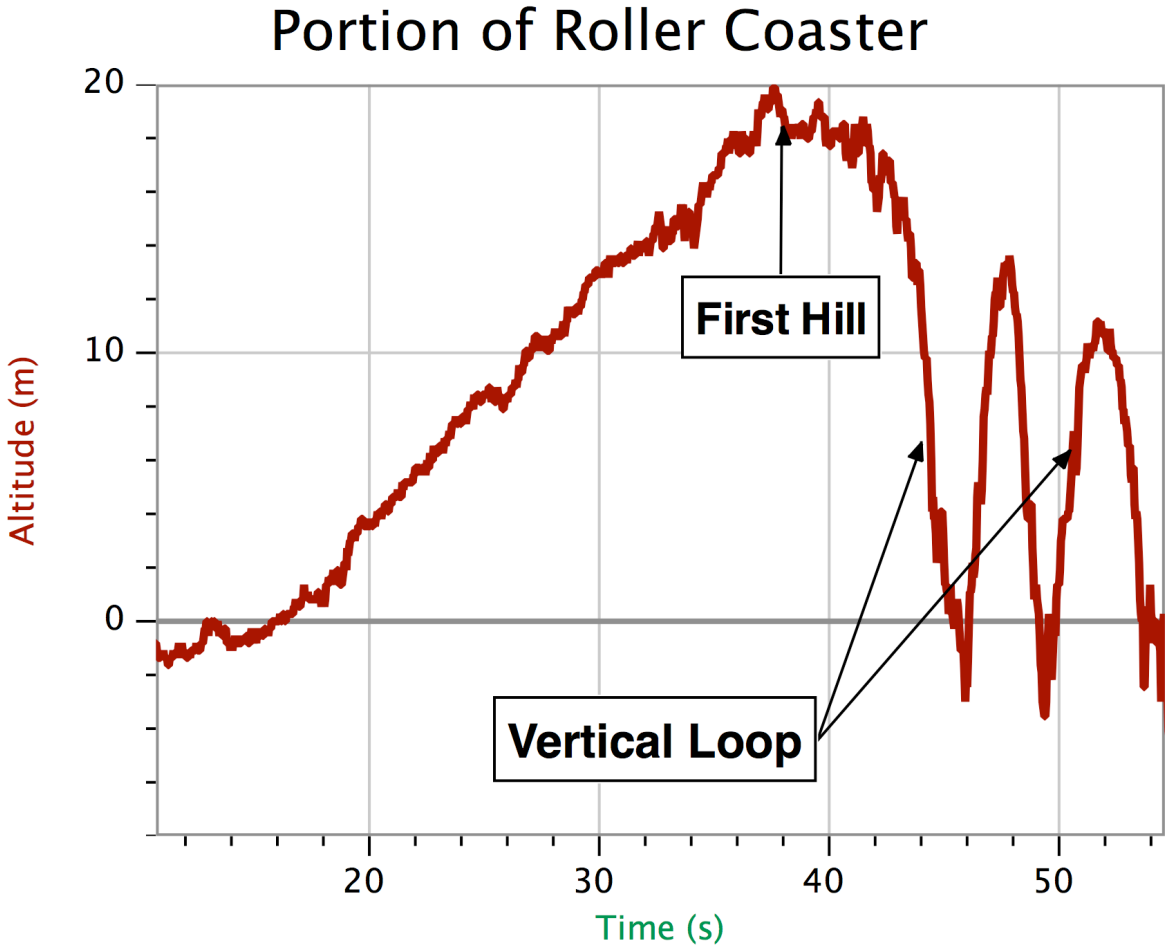
**Can you identify specific features from this graph?**

**Lift Hill – where a coaster goes up to gain potential energy. If there's a definite lift hill, then it's probably a roller coaster. If not, it's probably not a roller coaster**

**First Dip – bottom of the first hill. This is usually the place where the biggest forces happen on coasters.**



**This graph comes from a ride with a vertical loop. The loop often occurs near the bottom of the first hill.**



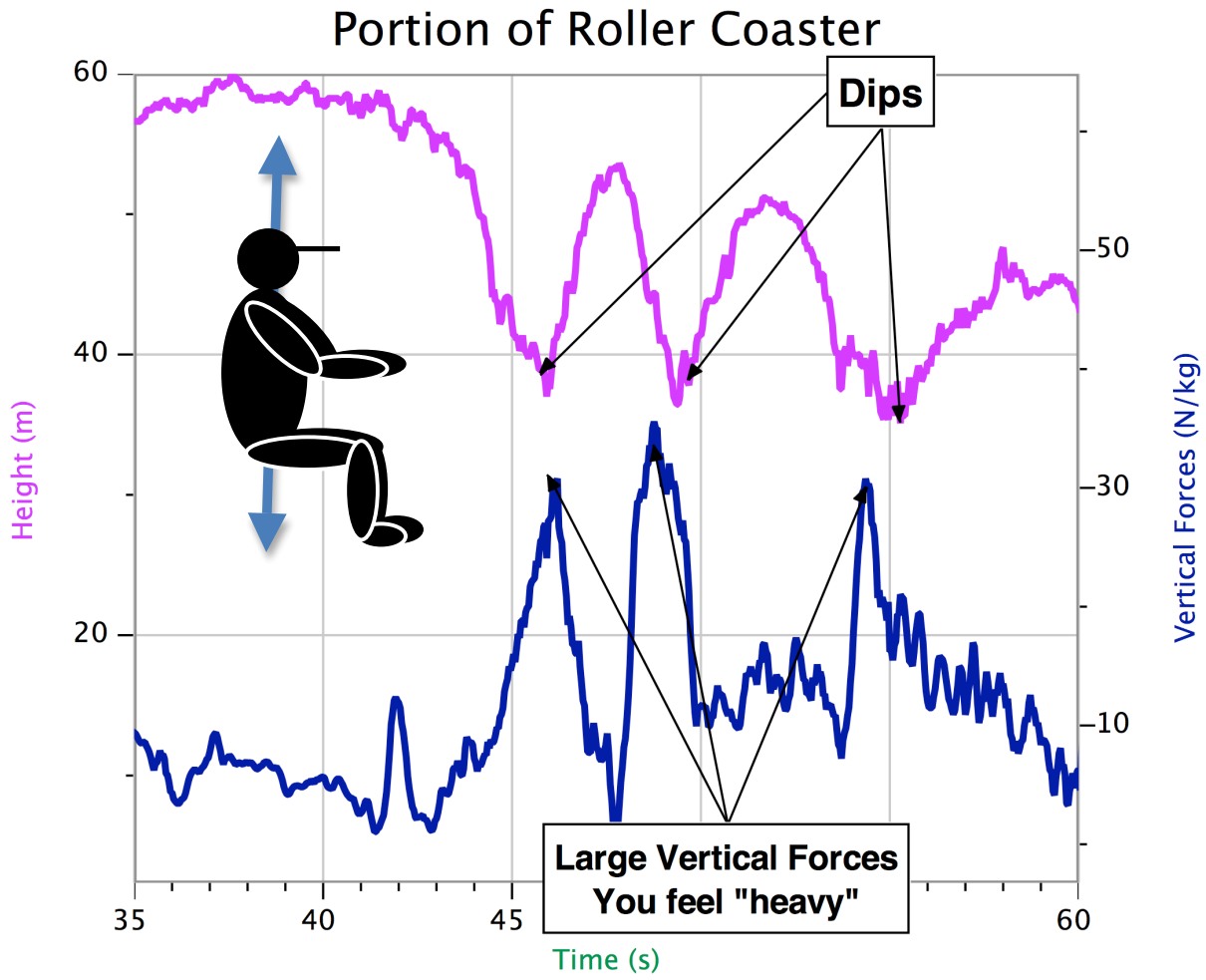

**Note how time can't go backwards, so a loop shows up as "W".**

**Can you see the lift hill portion clearly here?**

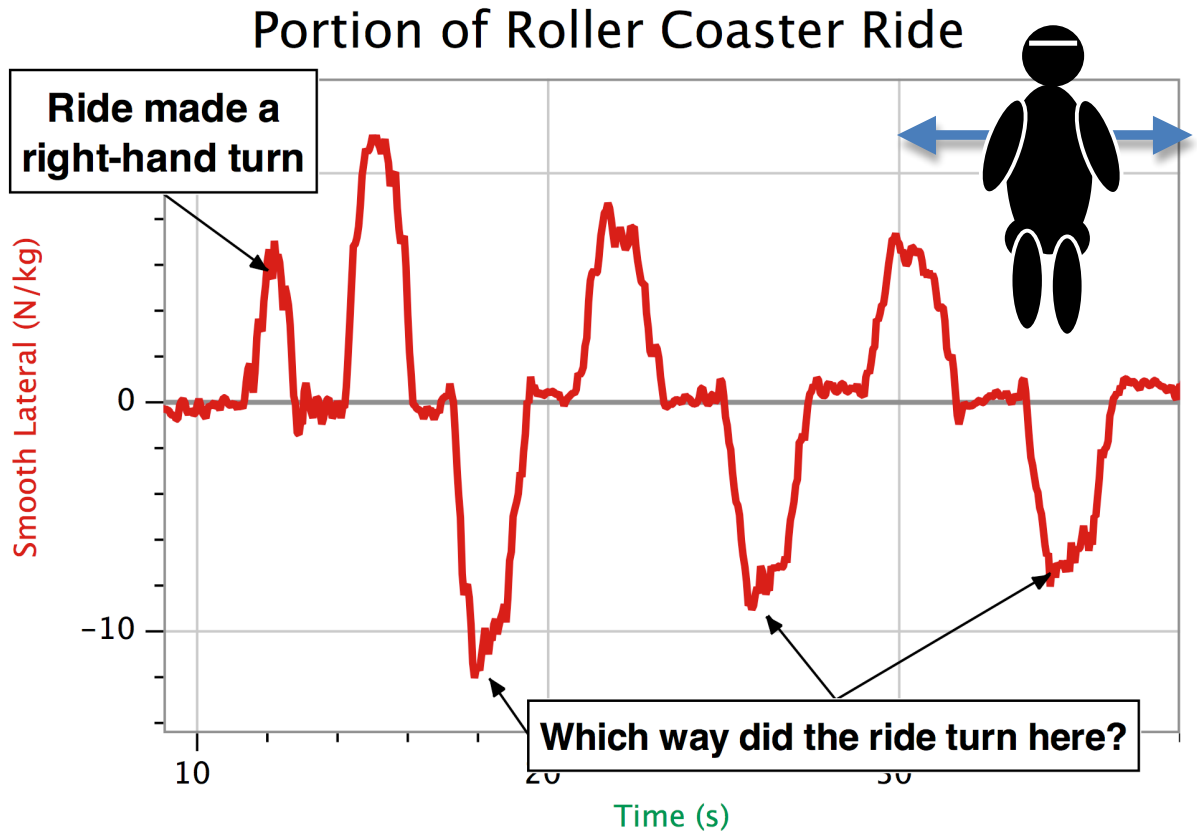
**Note: Not all the lines on your graphs will be perfectly smooth due to slight bouncing of the cars and other factors.**

## <u>Vertical Forces</u> – Up and Down along spine

**Big vertical forces occur when riders go through dips on Roller Coasters as shown in the graph below.**



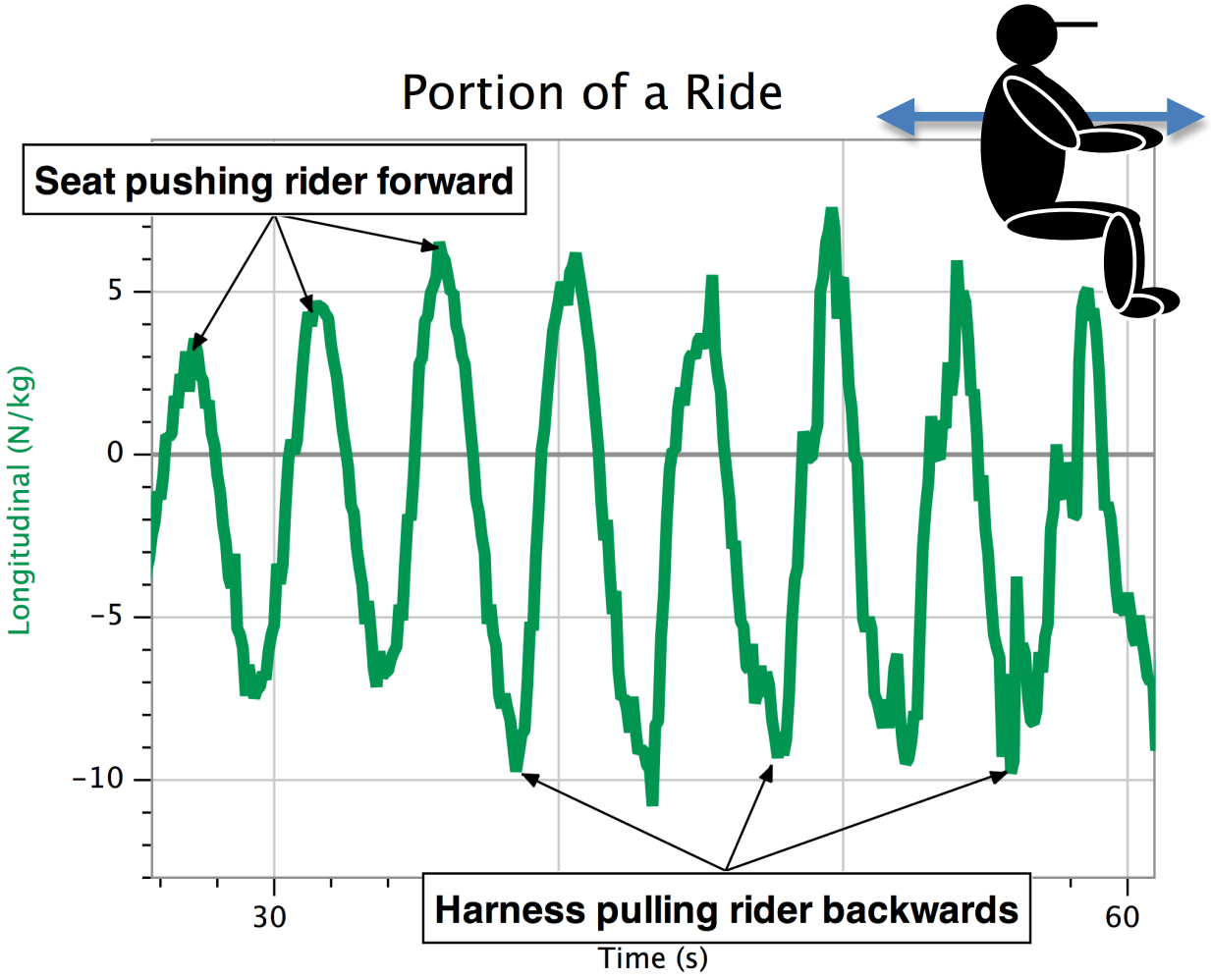
## <u>Lateral Forces</u> – Side to Side




**This ride has a series of zig-zags. Can you identify the directions of the various turns given the clue you were given?**

# <u>Longitudinal Forces</u> – To Front or To Back

**This ride repeats itself with regularity. Would it be a roller coaster or perhaps a circular ride? Explain.**



# GENERAL APPROACH:

**Read the vertical axis label. What quantity is being plotted?**

**Do you have information that tells you it is a roller coaster? If so, this limits the options.**

**If it is a roller coaster, is there a vertical loop section? Is there more than one? Do they come close together or far apart?**

**If it isn't a roller coaster, what clues do you have about the ride? Do the forces come at regular intervals? Check the x-axis label to see how much time is involved.**

**Limit things down to two choices, then do your best.**

***Teacher Steering Committee***
***2017***