Group activity sheet

Your objective today is to graph a height vs. time scatterplot of your data and write a sinusoidal equation to match your graph. As a group, you might consider sketching your graph on a piece of scrap paper before making your big graph. Extend the horizontal axis to include two full periods of your graph.

**Graphing Check List:**

* Title
* Spatially, does the graph fill the paper? Use only the quadrant(s) necessary.
* Label axis with units and descriptions.
* Plot your points. Using a smooth curve, create a sinusoidal graph through the points. This is not a connect-the-dot activity. Do NOT use straight lines.
* Accurately sketch a second period of your graph.
* Using a dashed line, sketch the midline of your graph. Discuss how the midline relates to the transformations.

**Writing Equation Checklist:**

* What is the equation of the midline?
* What is the amplitude and how do you find it?
* How long does it take to complete one full cycle of your graph?
* The FREQUENCY, ***b***, of a sinusoidal function is the number of cycles between 0 and 2$π$. What is the frequency of your function?
* To account for the frequency in your equation, you would write.
* How is the vertical shift related to the picture?

**Ferris Wheel Data**

| Object | Max height | Height of Center of Object | Diameter | Radius of Moving Part | Period (one per moving part) |
| --- | --- | --- | --- | --- | --- |
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