

You will have a choice of three rides. Copy the three choices below and circle the selected ride.

Your assignment should be separated into three sections:

- 1) Questions
- 2) Measurements
- 3) Solutions

Questions

Create a set of physics questions related to the ride (four questions minimum).

Your set of questions must involve at least **three** of the following topics:

- Kinematics
- Dynamics
- Equilibrium
- Energy
- Momentum
- Circular Motion
- Gravitation
- Electrostatics
- Circuits
- Electromagnetism
- Electromagnetic Induction

Measurements

Your solutions must use measurements made at Playland. Parameters required for your solution which cannot be reasonably measured may be given estimated values. For each quantity, you must indicate whether the value was measured, estimated or referenced, and you must also explain how you arrived at your value.

Measured: Explain how the measurement was made, including any measurement tools used

Estimated: Explain how you arrived at your estimated value

Referenced: Provide the source of your value (e.g. website)

Below is a list of suggested measurements that you may wish to take. The measurements you choose to take will depend on the ride. You are not limited to this list of measurements.

- height of hill
- length of track
- radius of rotation
- angle of swing
- period/frequency of rotation

Note that hand-held measuring devices, or anything classified as a “loose item”, are not permitted on rides. Cell phones may be used but cannot be held while the ride is in operation. If cell phones are used, they must be securely stored (e.g. in an arm band or hip pack). Phyphox is a free app that you may find useful. Ensure any apps required are downloaded in advance as Playland does not have Wi-Fi on site.

Solutions

Provide a solution to each of your questions. Along with the calculations, a complete explanation in words must be provided for each solution. Diagrams should be included when appropriate.

	Emerging	Developing	Proficient	Extending
Questions	Questions are not appropriate for the ride and/or do not cover the required minimum of three topics.	Questions are basic. Some questions are not appropriate for the ride. The three topic minimum has been met.	Questions range in difficulty from basic to challenging. Questions are appropriate for the ride. The three topic minimum has been met	Questions range in difficulty from basic to challenging. Extra thought has been given to make the questions appropriate and unique to the ride. The three topic minimum has been met.
Measurements	Key measurements are missing or inaccurate. Estimated parameters are not reasonable.	Required measurements are provided but are inaccurate. All parameters that cannot be measured have been given estimates but may not be reasonable.	Most relevant measurements are provided and accurate. All parameters that cannot be measured have been given estimates but may not be reasonable. Explanations are provided to describe how each value was attained.	All relevant measurements are provided and accurate. All parameters that cannot be measured have been given reasonable estimates. Clear explanations are provided to describe how each value was attained.
Solutions	Major errors are present in the solutions. Physics principles have not been applied correctly.	Correct physics principles have been applied for most questions. Calculation errors are present. Explanations are present but part of the argument is missing.	Correct physics principles have been applied but minor calculation errors are present. Most explanations are complete but may not be easy to follow.	Correct physics principles have been applied. No apparent calculation errors are present. Explanations are complete, use full sentences and are easy to follow.
Presentation	Assignment is not word-processed. Diagrams are not provided.	Assignment is word-processed with the possible exception of calculations. Assignment is loosely organized. Diagrams are provided but are not helpful.	Assignment is word-processed with the possible exception of calculations. Assignment is mostly organized. Diagrams are provided where necessary but are not always clear.	Assignment is word-processed with the possible exception of calculations. Clear diagrams are provided where necessary. Assignment is effectively organized.