# Assessment Task 1

# Physics – ATAR Year 12

**Investigation of motion on an inclined plane (35 marks)**

**Assessment type:** Science inquiry – Investigation

**Conditions**

Time for the task: One lesson for planning, one for conducting, one for processing and completion of report

**Task weighting**

4% of the school mark for this pair of units

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**Task**

Design an investigation to determine how a factor influences acceleration down a ramp.

Decide which factor you are going to investigate. Some ideas are mass, angle of slope, friction.

You will need to decide which measurements you are going to make, and how you will calculate acceleration.

You could use trolleys or model cars and ramps, skateboards, rollerblades or bicycles.

**Planning** (11 marks)

Write the hypothesis that you will investigate. This should include a relationship between the dependent and independent variables.

Conduct some preliminary trials and record how you will modify your procedure to ensure that controlled variables are kept the same.

Write your method, including how you will take your measurements.

**Conducting** (4 marks)

Conduct the investigation, recording all data in an appropriate table.

**Processing** (12 marks)

Process the data and represent it in a clear format. Draw a graph, if appropriate.

Calculate the force accelerating the body down the ramp.

Make your conclusions.

**Evaluation** (8 marks)

Discuss the errors or uncertainty in your results, and suggest modifications which could improve the results in future investigations.

# Marking key for sample assessment task 1 – Unit 3

Investigation: Motion on an inclined plane

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| **Description** | **Marks** |
| **Phase 1 – Planning** | **/11** |
| Develops a clear hypothesis which relates the variables  Lists all materials required, procedure to be used and labelled diagram (or photo) of equipment set up  States all variables and explains how controlled variables were controlled  Report in correct format | 1–2  1–5  1–2  1–2 |
| **Phase 2 – Conducting** | **/4** |
| Displays data in suitable table  Averages data from repeat trials | 1–2  1–2 |
| **Phase 3 – Processing** | **/12** |
| Calculates quantities (including percentage errors) appropriate for the investigation  Displays data in suitably labelled and presented graph (including error bars)  Calculate theoretical quantities related to the investigation and compare to experimental values  Makes a statement about trends in the data and states a conclusion and relates it to the hypothesis | 1–4  1–4  1–2  1–2 |
| **Phase 4 – Evaluation** | **/8** |
| Discusses significant sources of uncertainty in the data  Makes reasonable suggestions for improvements to procedure  Uses appropriate scientific terminology in the discussion | 1–4  1–2  1–2 |
| **Total** | **/35** |