**Levers Investigation**

**Part a – Group work (1 period)**

Outcomes: Science Inquiry; Science Understanding: Physics

**Aim: To find out how length of levers can create a force advantage.**

**Prediction:** What will the effect of the length of a lever be on the force it can produce?

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*Follow instructions to complete the experiment.*

**Apparatus:** Draw a labelled scientific diagram for your experiment. Include a caption.

**Results: Make sure all group members have a copy of the results.**

Write a title for your table.

Write headings for each column (don’t forget units).

Record your results in the table below.

Title\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Part b – Individual work completed under test conditions (1 period)**

**Graph your results.**

**Discussion:**

What was your independent (changed) variable?

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What was your dependent (measured result) variable?

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What were three controlled (kept the same) variables?

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Did you have any uncontrolled variables?

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Summarise your results.

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Explain your results.

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Did you have any difficulties or problems with your experiment?

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How would you fix this problem if you did this experiment again?

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**Conclusion:**

What was the overall result?

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Was your prediction correct?

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|  |  | Mark Allocation | Mark |
| Prediction | * Write a prediction which relates length and force | 1 |  |
| Diagram | * All equipment is labelled, including sizes or types where appropriate. * Diagram is neat, drawn in pencil, of suitable size, stylised and two dimensional * Diagram has suitable caption (eg Figure 1: …) | 3 |  |
| Results | * Table title relates variables * Headings include units where appropriate * Average calculated for repeat trials | 3 |  |
| Graph | * Graph title relates variables * Graph type is appropriate for data * Axis are correct orientation and labelled, including units; Graph is appropriate size and scale | 3 |  |
| Variables | * Independent variable is identified * Dependant variable is identified * 1-3 controlled variables identified * At least one uncontrolled variable identified | 4 |  |
| Discussion | * Results summarised (overall trend) * Explains results in terms of mechanical advantage * Difficulties or sources of error identified * Suggestion for improvement | 4 |  |
| Conclusion | * Summary of findings * Prediction correct or not | 2 |  |
|  |  | Total  /20 |  |