Assignment Starter Questions

Here are some potential ideas for your assignment. Before you select an experiment to complete you must:

* Check that you can link it to part of the National 5 course
* Find some information on the internet or in books to show whether your experiment would provide data that can be compared
* Be able to complete an experiment that can generate data which can be plotted on a line graph.

The assignment gives candidates an opportunity to demonstrate the following skills, knowledge and understanding:

* applying knowledge of physics to new situations, interpreting information and solving problems
* planning, designing and safely carrying out experiments/practical investigations to test given hypotheses or to illustrate particular effects
* selecting information from a variety of sources
* presenting information appropriately in a variety of forms
* processing the information (using calculations and units, where appropriate)
* making predictions based on evidence/information
* drawing valid conclusions and giving explanations supported by evidence/justification
* suggesting improvements to experiments/practical investigations
* communicating findings/information

| **No.** | **Title** | **Situation** | **Problem to Investigate** |
| --- | --- | --- | --- |
| 9 | Rolling Object | Different objects are rolled down a slope | What factors affect the time it takes for an object to roll down a slope? |
| 12 | Pendulum | A pendulum is made by attaching a mass to a length of string. The period of a pendulum is the time for it to swing from one side to the other and back | What factors affect the time it takes for a pendulum to make one swing (What factors affect the period of a pendulum)? |
|  | Electromagnet |  | What factors affect the strength of an electromagnet? |
| 16 | Shotputt | Why can some people throw a shotputt a long way? In a lab we can use a catapult to represent the shotputter to keep variable constant | What factors affect the distance a shotputter can throw her shot? |
|  |  |  | What factors affect the light level landing on a bench? |
| 15 | Electric Motor | We measure the output power of a motor by finding out how much work it does in a given time. We can measure the input power from the current and voltage using P=IV | What factors affect the power of a motor? |
| 17 | Javelin | Why can some people throw a javelin a long way? In a lab we can use a catapult to represent the javelin to keep variable constant | What factors affect the distance a javelin can be thrown? |
| 14 | Flow of Liquid | We can measure how quickly a liquid flows through a pipe by measuring the volume which comes out of the pipe in a given time | What factors affect the flow rate of a liquid through a pipe? |
| 13 | Resistance Wire | All wires have a certain amount of resistance. Resistance wire is made so that its resistance is higher than normal | What factors affect the resistance of a wire? |
| 18 | Solar Cell | A solar cell can take light and convert it to a voltage | What factors affect the output voltage of a solar cell? |
| 10 | Loudspeaker | A loudspeaker changes electrical signals into sound | What affects the loudness of the sound produced by the loudspeaker? |
| 11 | Runaway Vehicle | The brakes of this lorry failed on a hill | What affect the speed of the lorry before the crash? |
| 19 | Springs | When masses are added on the end of a spring the spring stretches, but the load must be kept low or the spring will permanently stretch and break | What factors affect the stretch of the spring? |
|  | LDR |  |  |
|  | Thermistor |  |  |
|  |  |  |  |
|  |  |  |  |

What factors affect the time it takes for an object to roll down a slope?

* Surface
* Steepness of slope
* Friction
* Mass of the object
* The type of object
* Length of slope

What factors affect the time it takes for a pendulum to make one swing (What factors affect the period of a pendulum)?

* Length of pendulum
* Mass on the end
* Angle
* Type of material
* Pushing starting force

What factors affect the strength of an electromagnet?

* No. of coils
* Voltage
* Current
* Core

What factors affect the distance a shotputter can throw her shot?

* Force of the shotputter
* Height of throw
* Strength of the shotputter
* Angle of release

What factors affect the light level landing on a bench?

* Whether objects are in the way
* Height the light is from the bench
* Brightness /power/energy of the lightbulb
* Voltage supplied to the light bulb

Write your aim out in the following form

*To find out how (your phrase used as an answer to question G1) affects (copy the rest of the title from affects)*

Write your hypothesis out in one of the following ways

*As (your answer to question G1) increases (write your independent variable here)* *increases*

*As (your answer to question G1) increases (write your independent variable here)* *decreases*

You must give sufficient detail by description and/or diagram to indicate:

*a how the chosen independent variable will be altered*

*b that the candidate has considered what will have to be measured.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Your answer to G1 (units)* | *Your dependent variable goes here (units)* | | | |
| *1* | *2* | *3* | *average* |
|  |  |  |  |  |