Name:_____

Montsaye ACADEMY

Excellence Resilience Aspiration

Year 9 Physics Homework Booklet

Homework 1	Key science terms 1	Due date:	Completed?
Homework 2	Maths in physics homework 1	Due date:	Completed?
Homework 3	Practical Homework: Forces acting on a rocket	Due date:	Completed?
Homework 4	Key science terms 2	Due date:	Completed?
Homework 5	Maths in physics homework 2	Due date:	Completed?
Homework 6	Practical Homework: Plan an investigation into speed	Due date:	Completed?
Homework 7	Key science terms 3	Due date:	Completed?
Homework 8	Maths in physics 3	Due date:	Completed?
Homework 9	Practical Homework – lunar landing module	Due date:	Completed?
Homework 10	Key science terms 4	Due date:	Completed?
Homework 11	Maths in physics 4	Due date:	Completed?
Homework 12	Keyword science 5	Due date:	Completed?

Homework 1 - Key Science Terms 1

Learn the spelling of the key term and their definition. Use each of the terms in a sentence and bring this to your lesson

Term	Definition
Variable	These are physical, chemical or biological quantities or characteristics.
Categoric variables	have values that are labels
Continuous variables	can have values (called a quantity) that can be given a magnitude either by counting or by measurement
Control variable	A variable which may, in addition to the independent variable, affect the outcome of the investigation and therefore has to be kept constant or at least monitored.
Dependent variable	The variable of which the value is measured for each and every change in the independent variable.
Independent variable	The variable for which values are changed

Homework 2 – Maths in Science 1

Complete the questions on the maths in science homework sheet 1

Homework 3 – Practical Science Homework

Forces acting on a rocket:

Draw a picture of a rocket or build a model rocket.

State the forces that act on a rocket. Which directions do these forces act in, and how do these directions change during fight?

Challenge - Describe Newton's three laws of motion and how they are related to the principle of rockets. The link below is one possible source you could use
https://www.grc.nasa.gov/www/k-12/rocket/rktfor.html

Homework 4 - Key Science Terms 2

Learn the spelling of the key term and their definition. Use each of the terms in a sentence and bring this to your lesson

Term	Definition
Accuracy	A measurement result is considered accurate if it is judged to be close to the true value.
True value	This is the value that would be obtained in an ideal measurement.
Uncertainty	The interval within which the true value can be expected to lie, with a given level of confidence or probability
Calibration	Marking a scale on a measuring instrument.
Data	Information, either qualitative or quantitative, that has been collected.

Homework 5 – Maths in Science 2

Complete the questions on the maths in science homework sheet 2

Homework 6 – Practical Science Homework

- Plan a practical to investigate the walking and running speeds of 5 different people (this can be family or friends)

OR

- Plan a practical to investigate walking and running speeds on different terrains.
- In your report you should include:
    - What the independent, dependent and control variables are
    - A bullet point method you used
    - Table of results
    - Conclusion (describe how the independent variable affected the dependent)
    - Evaluation (how could you improve the validity of the method)

Homework 7 - Key Science Terms 3

Learn the spelling of the key term and their definition. Use each of the terms in a sentence and bring this to your lesson

Term	Definition
Measurement error	The difference between a measured value and the true value.
Anomalies	A value that doesn't fit the pattern
Random error	These cause readings to be spread about the true value, in an unpredictable way from one measurement to the next.
Systematic error	These cause readings to differ from the true value by a consistent amount each time a measurement is made
Zero error	An indication of a false reading measuring system, therefore systematic uncertainty

Homework 8 – Maths in Science 3

Complete the questions on the maths in science homework sheet 3

Homework 9 – Practical Science Homework

Descending to the lunar surface is one of the most critical and difficult phases of a lunar landing. The spacecraft needs to decrease its speed from 6000 km/h in lunar orbit to a few km/h for a soft touchdown. Design, and if you can build, a landing module to secure the survival of the crew (in the form of an egg-naut) landing on the Moon**.**

Option 1

Design on paper your landing module. State the materials you would use and describe the different design features that would secure the survival of the crew.

Option 2

Design and build a landing module to secure the survival of the crew in the form of an egg-naut. Use an actual egg (raw or cooked) and then any materials you have at home to build a suitable landing module. Take a picture of landing modular! Or bring it into school

Mark a test-landing site on the ground. You can mark a cross with tape on the floor, or draw a target as a bullseye and rings marking the distance from the centre. Drop your module from a height.

Hand in a report that includes

- Picture of landing module (this can be a drawing or a photo
- Did the module hit the target?
- Did the egg-naut survive (not break)?
- State some improvements you would make
- Describe how you could calculate the velocity and acceleration of your module

Homework 10 - Key Science Terms 4

Learn the spelling of the key term and their definition. Use each of the terms in a sentence and bring this to your lesson

Term	Definition
Range	The maximum and minimum values of the independent or dependent variables
Repeatable	A measurement is repeatable if the original experimenter repeats the investigation using same method and equipment and obtains the same results.
Reproducible	A measurement is reproducible if the investigation is repeated by another person, or by using different equipment or techniques, and the same results are obtained.
Validity	Suitability of the investigative procedure to answer the question being asked
Valid conclusion	A conclusion supported by valid data, obtained from an appropriate experimental design and based on sound reasoning

Homework 11 – Maths in Science 4

Complete the questions on the maths in science homework sheet 2

Homework 10 - Key Science Terms 5

Learn the spelling of the key term and their definition. Use each of the terms in a sentence and bring this to your lesson

Term	Definition
Precision	Measurements are ones in which there is very little spread about the mean value.
Prediction	A prediction is a statement suggesting what will happen in the future, based on observation, experience or a hypothesis.
Hypothesis	A proposal intended to explain certain facts or observations.
Fair test	A fair test is one in which only the independent variable has been allowed to affect the dependent variable.
Resolution	The smallest measurement possible on the instrument