Obj No	Physics - Forces 1.3.1 Friction and drag	Started (/) Completed (X)	Level Achieved
1	Identify examples of drag forces and friction		1 2 3 4 5 6 7 8
2	Describe how drag forces and friction arise		1 2 3 4 5 6 7 8
3	Write down two things an object can do when the resultant force on it is zero		1 2 3 4 5 6 7 8
4	Carry out an experiment to test a prediction of friction caused by different surfaces		1 2 3 4 5 6 7 8
5	Describe the effect of drag forces and friction		1 2 3 4 5 6 7 8
6	Explain why drag forces and friction arise		1 2 3 4 5 6 7 8
7	Describe what happens to a moving object when the resultant force acting on it is zero		1 2 3 4 5 6 7 8
8	Plan and carry out an experiment to investigate friction, selecting suitable equipment		1 2 3 4 5 6 7 8
9	Explain the effect of drag forces and friction in terms of forces		1 2 3 4 5 6 7 8
10	Explain why drag forces and friction slow things down in terms of forces		1 2 3 4 5 6 7 8
11	Interpret the motion of objects subject to drag forces and friction		1 2 3 4 5 6 7 8
12	Plan and carry out an experiment, stating the independent, dependent, and control variables		1 2 3 4 5 6 7 8

Obj No	Physics - Forces 1.3.2 Squashing and stretching	Started (/) Completed (X)	Level Achieved
1	State an example of a force deforming an object		1 2 3 4 5 6 7 8
2	Recognise a support force		1 2 3 4 5 6 7 8
3	Use Hooke's Law to identify proportional stretching		1 2 3 4 5 6 7 8
4	State how you know from a graph that a relationship is linear, present data in a line graph, and identify a pattern		1 2 3 4 5 6 7 8
5	Describe how forces deform objects		1 2 3 4 5 6 7 8
6	Explain how solid surfaces provide a support force		1 2 3 4 5 6 7 8
7	Use Hooke's Law to predict the extension of a spring		1 2 3 4 5 6 7 8
8	Present data in a graph and identify a quantitative relationship in the pattern		1 2 3 4 5 6 7 8
9	Explain how forces deform objects in a range of situations		1 2 3 4 5 6 7 8
10	Explain how solid surfaces provide a support force, using scientific terminology and bonding		1 2 3 4 5 6 7 8
11	Apply Hooke's Law to make quantitative predictions with unfamiliar materials		1 2 3 4 5 6 7 8
12	Present data in a graph and recognise quantitative patterns and errors		1 2 3 4 5 6 7 8

Obj No	Physics - Forces 1.3.3 Turning forces	Started (/) Completed (X)	Level Achieved
1	State the law of moments		1 2 3 4 5 6 7 8
2	State the equation to calculate a turning force		1 2 3 4 5 6 7 8
3	Identify questions from results with help		1 2 3 4 5 6 7 8
4	Describe what is meant by a moment		1 2 3 4 5 6 7 8
5	Calculate the moment of a force		1 2 3 4 5 6 7 8
6	Independently identify scientific questions from results		1 2 3 4 5 6 7 8
7	Apply the concept of moments to everyday situations		1 2 3 4 5 6 7 8
8	Use calculations to explain situations involving moments		1 2 3 4 5 6 7 8
9	Suggest relevant, testable questions		1 2 3 4 5 6 7 8

Obj No	Physics - Forces 1.4.1 Pressure in gases	Started (/) Completed (X)	Level Achieved
1	Describe the motion of particles in a fluid		1 2 3 4 5 6 7 8
2	Calculate fluid pressure with support		1 2 3 4 5 6 7 8
3	State the cause of atmospheric pressure		1 2 3 4 5 6 7 8
4	Explain why fluids exert a pressure		1 2 3 4 5 6 7 8
5	Calculate fluid pressure		1 2 3 4 5 6 7 8
6	Describe how atmospheric pressure changes with height		1 2 3 4 5 6 7 8
7	Explain a range of observations in terms of fluid pressure		1 2 3 4 5 6 7 8
8	Calculate fluid pressure in a range of situations		1 2 3 4 5 6 7 8
9	Predict the changes to the effects of atmospheric pressure at different altitudes or temperatures		1 2 3 4 5 6 7 8

Obj No	Physics - Forces 1.4.2 Pressure in liquids	Started (/) Completed (X)	Level Achieved
1	State simply what happens to pressure with depth		1 2 3 4 5 6 7 8
2	Describe characteristics of some objects that float and some that sink		1 2 3 4 5 6 7 8
3	Write down the equation for calculating fluid pressure		1 2 3 4 5 6 7 8
4	Describe how liquid pressure changes with depth		1 2 3 4 5 6 7 8
5	Explain why some things float and some things sink, using force diagrams		1 2 3 4 5 6 7 8
6	Use the equation for calculating fluid pressure		1 2 3 4 5 6 7 8
7	Explain why liquid pressure changes with depth		1 2 3 4 5 6 7 8
8	Explain why an object will float or sink in terms of forces or density		1 2 3 4 5 6 7 8
9	Use the equation for calculating fluid pressure to explain how hydraulic machines work		1 2 3 4 5 6 7 8

Obj No	Physics - Forces 1.4.3 Stress on solids	Started (/) Completed (X)	Level Achieved
1	State the equation of stress		1 2 3 4 5 6 7 8
2	Use ideas of stress to describe familiar situations qualitatively		1 2 3 4 5 6 7 8
3	Predict qualitatively the effect of changing area and/or force on stress		1 2 3 4 5 6 7 8
4	Calculate stress		1 2 3 4 5 6 7 8
5	Apply ideas of stress to different situations		1 2 3 4 5 6 7 8
6	Predict quantitatively the effect of changing area and/or force on stress		1 2 3 4 5 6 7 8
7	Calculate stress in multistep problems		1 2 3 4 5 6 7 8
8	Compare stress in different situations, explaining the differences in pressure using scientific knowledge		1 2 3 4 5 6 7 8
9	Predict quantitatively the effect of changing area and/or force on stress in a range of situations		1 2 3 4 5 6 7 8

Obj No	Physics - Electromagnets 2.3.1 Magnets and magnetic fields	Started (/) Completed (X)	Level Achieved
1	Describe features of a magnet		1 2 3 4 5 6 7 8
2	Draw the magnetic field lines around a bar magnet		1 2 3 4 5 6 7 8
3	State the Earth has a magnetic field		1 2 3 4 5 6 7 8
4	Record the shape of field lines round a magnet		1 2 3 4 5 6 7 8
5	Describe how magnets interact		1 2 3 4 5 6 7 8
6	Describe how to represent magnetic fields		1 2 3 4 5 6 7 8
7	Describe the Earth's magnetic field		1 2 3 4 5 6 7 8
8	Draw field lines round a magnet in detail		1 2 3 4 5 6 7 8
9	Explain how magnets can be used		1 2 3 4 5 6 7 8
10	Compare magnetic field lines and a magnetic field		1 2 3 4 5 6 7 8
11	Explain how a compass works.		1 2 3 4 5 6 7 8
12	Suggest improvements to an experiment to observe field lines around a magnet		1 2 3 4 5 6 7 8

Obj No	Physics - Electromagnets 2.4.1 Electromagnets	Started (/) Completed (X)	Level Achieved
1	State the main features of an electromagnet		1 2 3 4 5 6 7 8
2	State one difference between permanent magnets and electromagnets		1 2 3 4 5 6 7 8
3	State where the magnetic field due to a wire or solenoid is strongest		1 2 3 4 5 6 7 8
4	Test the effect of changing an electromagnet		1 2 3 4 5 6 7 8
5	Describe how to make an electromagnet		1 2 3 4 5 6 7 8
6	Describe how to change the strength of an electromagnet		1 2 3 4 5 6 7 8
7	Describe how the magnetic field strength due to a current carrying wire varies with distance from the wire		1 2 3 4 5 6 7 8
8	Predict and test the effect of changes made to an electromagnet		1 2 3 4 5 6 7 8
9	Explain how an electromagnet works		1 2 3 4 5 6 7 8
10	Predict the effect of changes on the strength of different electromagnets		1 2 3 4 5 6 7 8
11	Suggest how two wires both carrying currents placed next to each other might behave		1 2 3 4 5 6 7 8
12	Predict the effect of changes made to an electromagnet, using scientific knowledge to justify the claim		1 2 3 4 5 6 7 8

Obj No	Physics - Electromagnets 2.4.2 Using electromagnets	Started (/) Completed (X)	Level Achieved
1	State some uses of electromagnets		1 2 3 4 5 6 7 8
2	State the main parts of an electric bell, circuit breaker, or		1 2 3 4 5 6 7 8
3	Describe some uses of electromagnets		1 2 3 4 5 6 7 8
4	Describe how an electric bell, circuit breaker, or loudspeaker works		1 2 3 4 5 6 7 8
5	From your experiment, pose scientific questions to be investigated		1 2 3 4 5 6 7 8
6	Apply existing knowledge about electromagnets to design a circuit		1 2 3 4 5 6 7 8
7	Compare and contrast electric bells, circuit breakers, and loudspeakers		1 2 3 4 5 6 7 8
8	Suggest investigations about electromagnets used in different applications		1 2 3 4 5 6 7 8

Obj No	Physics - Energy 3.3.1 Work, energy, and machines	Started (/) Completed (X)	Level Achieved
1	State how work is calculated		1 2 3 4 5 6 7 8
2	State that machines change the size of forces or distances		1 2 3 4 5 6 7 8
3	State one way the experiment can be improved		1 2 3 4 5 6 7 8
4	Calculate work done		1 2 3 4 5 6 7 8
5	Apply the conservation of energy to simple machines		1 2 3 4 5 6 7 8
6	Evaluate results from the practical		1 2 3 4 5 6 7 8
7	Compare the work done in different scenarios and by different machines		1 2 3 4 5 6 7 8
8	Explain how conservation of energy applies in one example		1 2 3 4 5 6 7 8
9	Evaluate results (including random and systematic errors) and suggest how the experiment can be improved		1 2 3 4 5 6 7 8

Obj No	Physics - Energy 3.4.1 Energy and temperature	Started (/) Completed (X)	Level Achieved
1	State how energy and temperature are measured		1 2 3 4 5 6 7 8
2	Describe how energy is transferred through solids, liquids, and in air		1 2 3 4 5 6 7 8
3	State what is meant by the term equilibrium		1 2 3 4 5 6 7 8
4	Identify a source of error		1 2 3 4 5 6 7 8
5	State the difference between energy and temperature		1 2 3 4 5 6 7 8
6	Describe what happens when you heat up solids, liquids, and gases		1 2 3 4 5 6 7 8
7	Explain what is meant by equilibrium		1 2 3 4 5 6 7 8
8	Describe how to reduce error in experimental apparatus		1 2 3 4 5 6 7 8
9	Give an example to show that energy and temperature are different		1 2 3 4 5 6 7 8
10	Explain, in terms of particles, how energy is transferred		1 2 3 4 5 6 7 8
11	Give examples of equilibrium		1 2 3 4 5 6 7 8
12	Describe sources of error as systemic or random, and suggest ways to minimise these		1 2 3 4 5 6 7 8

Obj No	Physics - Energy 3.4.2 Energy transfer: particles	Started (/) Completed (X)	Level Achieved
1	Describe simply what happens in conduction and convection		1 2 3 4 5 6 7 8
2	State that thermal insulators reduce energy loss compared to thermal conductors		1 2 3 4 5 6 7 8
3	State the pattern in conduction shown in results		1 2 3 4 5 6 7 8
4	Describe how energy is transferred by particles in conduction and convection		1 2 3 4 5 6 7 8
5	Describe how a thermal insulator can reduce energy transfer		1 2 3 4 5 6 7 8
6	Describe the pattern in conduction shown by results, using numerical data to inform a conclusion		1 2 3 4 5 6 7 8
7	Explain in detail the processes involved during heat transfers		1 2 3 4 5 6 7 8
8	Explain why certain materials are good thermal insulators		1 2 3 4 5 6 7 8
9	Explain the pattern in conduction shown by experimental results		1 2 3 4 5 6 7 8

Obj No	Physics - Energy 3.4.3 Energy transfer: radiation and insulation	Started (/) Completed (X)	Level Achieved
1	State some sources of infrared radiation		1 2 3 4 5 6 7 8
2	State some properties of infrared radiation		1 2 3 4 5 6 7 8
3	Identify some risks in an experiment		1 2 3 4 5 6 7 8
4	Describe some sources of infrared radiation, and how energy is transferred		1 2 3 4 5 6 7 8
5	Describe different ways to insulate in terms of conduction, convection and radiation		1 2 3 4 5 6 7 8
6	Identify risks and explain why it is important to reduce them		1 2 3 4 5 6 7 8
7	Explain how thermal equilibrium can be established		1 2 3 4 5 6 7 8
8	Compare the different ways that energy is transferred		1 2 3 4 5 6 7 8
9	Explain in detail how to reduce risks		1 2 3 4 5 6 7 8

Obj No	Physics - Waves 4.3.1 Sound waves, water waves, and energy	Started (/) Completed (X)	Level Achieved
1	Define frequency and amplitude		1 2 3 4 5 6 7 8
2	Name two parts of a microphone or loudspeaker		1 2 3 4 5 6 7 8
3	State what a sound wave transfers, and what it does not transfer		1 2 3 4 5 6 7 8
4	Describe the link between amplitude or frequency and energy		1 2 3 4 5 6 7 8
5	Describe how a microphone and a loudspeaker work		1 2 3 4 5 6 7 8
6	Describe how sound transfers energy, and how this is linked to generating electricity		1 2 3 4 5 6 7 8
7	Explain, in terms of frequency, why we use ultrasound for cleaning and physiotherapy		1 2 3 4 5 6 7 8
8	Explain the link between a microphone and a loudspeaker		1 2 3 4 5 6 7 8
9	Evaluate locations for the use of waves to generate electricity		1 2 3 4 5 6 7 8

Obj No	Physics - Waves 4.3.2 Radiation and energy	Started (/) Completed (X)	Level Achieved
1	Name some waves of the electromagnetic spectrum		1 2 3 4 5 6 7 8
2	Name the electromagnetic wave with the biggest wavelength		1 2 3 4 5 6 7 8
3	Name an electromagnetic wave that can be harmful to living cells		1 2 3 4 5 6 7 8
4	Describe the electromagnetic spectrum		1 2 3 4 5 6 7 8
5	Describe the link between frequency and energy		1 2 3 4 5 6 7 8
6	Describe the effect of radiation on living cells		1 2 3 4 5 6 7 8
7	Describe all the waves of the electromagnetic spectrum in terms of increasing wavelength or increasing frequency		1 2 3 4 5 6 7 8
8	Explain why only some electromagnetic waves cause ionisation		1 2 3 4 5 6 7 8
9	Explain why ionisation can be harmful to living cells		1 2 3 4 5 6 7 8

Obj No	Physics - Waves 4.4.1 Modelling waves	Started (/) Completed (X)	Level Achieved
1	Define ‘transverse'		1 2 3 4 5 6 7 8
2	Describe a model of a light wave		1 2 3 4 5 6 7 8
3	Define ‘superpose’		1 2 3 4 5 6 7 8
4	Compare transverse and longitudinal waves		1 2 3 4 5 6 7 8
5	Describe how to use a wave model to explain observations of the reflection, absorption, and transmission of waves		1 2 3 4 5 6 7 8
6	Describe what happens when waves superpose		1 2 3 4 5 6 7 8
7	Compare transverse and longitudinal waves with examples		1 2 3 4 5 6 7 8
8	Evaluate different models of waves		1 2 3 4 5 6 7 8
9	Explain why you can add sound waves and light waves and get less than you started with		1 2 3 4 5 6 7 8