Subject: Science	Physics – forces	
Class: T3	**Teacher: Mitch Ware**	**Term: Autumn 1**
Key Vocabulary: forces, contact, non-contact, measuring, gravity, mass, weight, air resistance, Hookes Law, resistive, friction, drag, newton	**Alternative Learning Environments** (eg FREE forest school, field, playground, park, woods, English Heritage, shop, swallow aquatics, garden centre, Rochester Museum): Forest school, field, playground	**Resources:** pencils, whiteboards, whiteboard pens and rubbers, worksheets, workbooks,

Pupil	Pupil Asset Stage at start of term	Pupil Asset Stage end of year target

Milestones
Previous learning - Stage 1
Responds to prompts by making some suggestions about how to find an answer or make observations.
Responds to prompts to talk about what they have found out.
Talks about what they observe.
Begins to record data in simple templates provided for them.
Stage 2
Asks simple questions recognising that they can be answered in different ways.
Uses simple measurements and equipment to gather data and carry out simple tests.
Talks about what they have found out and how they found it out
With help, records and communicates findings in a range of ways and begins to use simple scientific language
Stage 3
Responds to suggestions of how to answer questions about the world around them, and begins to raise their own relevant questions.
Understands what a simple fair test is, and with support helps to set it up.
Talks about how the data may be recorded

Notices that some forces need contact between 2 objects, but magnetic forces can act at a distance.
Stage 4
Talks about how scientific ideas have developed over time.
Recognises when a simple fair test is necessary and helps to decide how to set it up.
Starts to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions.
Compares and groups materials together, according to whether they are solids, liquids or gases.

Week	Weekly key questions
1 Contact and non-contact forces	**Lesson Objective** To identify contact and non-contact forces **Key questions- Main** Can I list different forces? Can I distinguish between contact and non-contact forces? Can I investigate how different forces act? Activity – lesson 1 Starter – read through forces glossary- stick into books Go through powerpoint – 1. How many forces do you know? 2. Complete the key word sorting activity 3, write, answer and mark the exam style q's. Watch - https://www.youtube.com/watch?v=WCPTKRaScgE discuss the differences learnt Lesson 2 Investigation! 4 activities – 1. Can opener and can, 2. cork and water, 3. Hair dryer and pingpong ball, 4. Egg shell and book (look at investigation instruction cards) Complete investigation table – discuss answers
2 Measuring forces	**Lesson Objective** To identify and measure forces **Key questions - Main** Can I identify forces? Can I use force arrows in diagrams Can I compare balanced and unbalanced forces? Activity – lesson 1 - go through powerpoint 1. Recap forces – write as many as you can on whiteboards 2. Draw force arrows on diagrams 1,2 and 3 – discuss using powerpoint 3. Watch video - https://www.youtube.com/watch?v=5eIx6-wJf1c Lesson 2 – get newton meters!!!! 1. Investigate using a newton metre -record in books – measure of an object being hung + pulled – difference forces 2. Discuss results

	3. Spot the mistake on the powerpoint 4. Complete forces worksheet
3 Gravity, mass and weight	**Lesson Objective** To investigate what happens to mass and weight when in space **Key questions – Main** Can I accurately measure weight using a newton meter? Can I calculate weight and gravitational field strength ? Can I explain the difference between mass and weight? Activity lesson 1 1. Go through powerpoint – stop and discuss first thinking question 2. Complete powerpoint 3. Complete mass and weight sorting activity 4. Check answers Lesson 2 – mass and weight on space Power point Worksheet Discuss – do objects weigh more or less in space? Can you explain why? – share ideas and discuss as a group
4 Air resistance	**Lesson Objective** To complete an experiment on air resistance **Key questions - Main** Can I describe the effect of air resistance on an object? Can I investigate how the size of a parachute affects the time for a paperclip to fall? Activity lesson 1 1, powerpoint 2. watch video clip - https://www.youtube.com/watch?v=KV9rvqeR3sU 3. make parachutes for experiments – 30cm squares, 25 cm, 20cm and 25 cm, attached string to each corner then attach a paper clip Lesson 2 –

	1. Complete experiment – throw parachutes off drum upstairs, which parachute fell quickest? 2. Record findings
5 Resistive forces- friction, reducing drag	**Lesson Objective** To investigate the amount of friction caused by different surfaces and how to reduce resistive forces **Key questions** Can I describe the effect of friction on an object? Can I investigate how friction varies on different surfaces? Can I evaluate an investigation? Can I describe methods for reducing drag? Activity- lesson 1 1. Discuss thinking question on powerpoint 2. Read through powerpoint about friction 3. Pick different objects to pull across different surfaces and complete prediction worksheet – what do you notice? 4. Evaluate? Which surface gave more friction e.g. rough. Smooth? How do we know? What went well with investigation? How could we make it better? Lesson 2 1. Thinking Q on powerpoint 2. Discuss reducing drag 3. Complete resistive forces practice q's either individually or as a class
6 Hookes Law	**Lesson Objective** To investigate how a force can affect the shape of objects **Key questions** Can I describe how forces can affect the shape of objects? Can I investigate the relationship between force and extension Activity lesson 1 1. Discuss as class the thinking Q on powerpoint 2. Read through powerpoint 3. Watch video on Hookes law - https://www.youtube.com/watch?v=a8Unbe4K8U4 Lesson 2 1. Investigate how force can change an objects shape – squeezy ball, paper, can, putty(bluetac0 etc.

	2. Write down each object – draw how they started and how they look after force then label whether the object is now deformed, elastic or in elastic