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|  | Year 8 Forces work from home |
| Week | Learning objective | Tasks to do | Success criteria |
| W/B1st June 2020 | To identify contact and non-contact forces. | 1. Define what a force is?
2. Find out and list as many forces as you can.
3. Find out the difference between a contact and non-contact force.
4. Order your list of forces into contact and non-contact forces.
5. Use diagrams to explain how these forces act upon objects.
 | To list some forces.To distinguish between contact and non-contact forces.To investigate how different forces act. |
| W/B8th June2020 | To identify and measure forces. | 1. List as many forces as you can. For each force, give an example of where you might find it.
2. Define the following three key words **Balanced, Unbalanced** and **Equilibrium.**
3. Explain how we can show if forces are balanced, unbalanced.
4. Use the internet to help you draw force arrow diagrams for the following situations. a) a parked car. b) sailing ship moving forwards. c) a bouncing ball.

d) a runner speeding up. e) the moon orbiting the Earthf) a person sitting in a chair.5) Research how we can measure forces.  | To identify forces.To use force arrows in diagrams.To compare balanced and unbalanced forces. |
| W/B 15th June 2020 | To investigate what happens to mass and weight on different planets.https://dryuc24b85zbr.cloudfront.net/tes/resources/11736677/image?width=500&height=500&version=1519314568504 | 1. Define the following Key Words **Gravity, Mass, Newton** and **Weight.**
2. Research the factors that affect the force of gravity. Use labelled diagrams to support your answers.
3. Find out your mass and then using gravitational field strength **10N/Kg** of the earth work out your Weight.
4. Research why your Weight will be different on the various planets of the solar system. Try and calculate your weight on the planets (**hint** you will need to know the Gravitational field strength of each planet) you could plot your findings in a results table.
 | To accurately measure weight using a newton meter.To calculate weight and gravitational field strength.To explain the difference between mass and weight. |
| W/B22nd June 2020 | To investigate air resistance in parachutes.

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| Length of parachute side (cm) | Time taken to drop (s) |
|  | Repeat 1 | Repeat 2 | Repeat 3 | Mean |
| 30 |  |  |  |  |
| 25 |  |  |  |  |
| 20 |  |  |  |  |
| 15 |  |  |  |  |

 | 1. Research and create biography of the life and works of Galileo.
2. Define the following Key Words **Dependent Variable**, **Independent** **variable** and **Control variable**
3. Use the following link to watch a video on a moon landing

[**https://moon.nasa.gov/resources/331/the-apollo-15-hammer-feather-drop/**](https://moon.nasa.gov/resources/331/the-apollo-15-hammer-feather-drop/). Explain why the feather and hammer fall at the same time on the moon and at different times on earth. Use labelled diagrams to support your answer.1. Carry out a parachute investigation

**How does the size of a parachute affect the time it takes for a paperclip to fall?****Step 1: Preparing Your Parachutes**Use a ruler to draw a 30cm × 30cm square on a piece of material.Cut out the square.Cut four lengths of string 30cm in length.Tape a piece of string to each corner of the square.Attach the other end of each string to the paperclip.Repeat for squares with sides of 25cm, 20cm and 15cm.**Step 2: Collecting Your Data**Drop your parachute from a height and start the stopwatch.Stop the stopwatch when the parachute hits the ground.Repeat three times from the same height.Repeat for the other parachute sizes.**Step 3 Results table** Complete the table with your results**Step 4 Write a conclusion**What did you find out?How does the size of the parachute affect the time taken for the object to fall?How do you know this? (Use your data to support the pattern you have identified.)Why does this happen? (Explain the results using your scientific knowledge.)**Step 5 Evaluation**What was the independent variable in your investigation?What was the dependent variable in your investigation?What were the control variables in your investigation?Can you explain any anomalous results? (An anomalous result is one that doesn’t fit the pattern shown by other results.)Were the results of your investigation valid? How do you know?How could you improve the validity of your results? (How could you overcome any weaknesses with your method?) | To describe the effect of air resistance on an object.To investigate how the size of a parachute affects the time taken for a paperclip to fall.To evaluate an investigation. |
| W/B 29th June 2020 | To investigate the amount of friction caused by different surfaces.

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| Material | Force (N) |
|  | Repeat 1 |  Repeat 2 | Repeat 3  | Mean  |
|  |  |  |  |  |
|  |  |  |  |  |
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|  |  |  |  |  |

 | 1. Research the resistive force of Friction. Explain why Friction is useful (use diagrams to support your findings)
2. **Investigating Friction**

The amount of friction depends on the materials that the two surfaces are made from. **You are going to investigate which material provides the most resistance to the movement of an object**. Write a prediction for your investigation.Feel the different materials.Think about any materials you use that increase friction (e.g. shoe soles, bike tyres, nail files, gaming thumb pads).**Equipment** a variety of materialswooden block newton meter (luggage scales will do)**Method**Set up the wooden block on top of the first material. Hold the newton meter horizontally and pull slowly until the block starts to move.Reset the block in the starting position and repeat the measurement twice more with the same material.Repeat steps 1-3 with the other materials.**Variables**What is the independent variable in your investigation?What is the dependent variable in your investigation?What are the control variables in your investigation?**Results** Complete the results table**Conclusion**Which surface provides the greatest frictional force?How do you know this? (Use your data to support your answer.)Why does this happen? (Explain the results using your scientific knowledge.)  | To describe the effect of friction on an object.To investigate how friction varies on different surfaces. To evaluate an investigation. |
| W/B 6th July 2020 | To investigate how to reduce resistive forces. (friction drag) | 1. Define the following key words **Friction, Drag, streamlined, streamlined** and **Lubrication**
2. Create a research poster show how normal cars and racing cars have changed. You might want to answer the following questions

How have these cars changed over time?Why have they changed?Why do the racing cars have a different shape to the road cars? | To describe methods for reducing drag. |
| W/B 13th July | To investigate how the force added to a spring affects the extension of the spring. | 1. Define the following Keywords **Extension, Compression, Bending, Deformed, Elastic, Inelastic and Elastic limit**
2. Create a poster by researching **HOOKES LAW.**  Answer the following questions in your poster use labelled diagrams and graphs

Why is an understanding of Hookes law important to engineers?Describe what happens to a spring when it reaches its elastic limitExplain why Hookes Law is important for sports people, Muscians, crane drivers | To describe how forces can affect the shape of objects.To investigate the relationship between force and extension |