Science - Friction and Air Resistance
Week beginning 20th April 2020

Re-watch the videos:
What is friction? https://www.tigtagworld.co.uk/film/what-is-friction-PRM00084/
Skydiving https://www.tigtagworld.co.uk/film/skydiving-PRM00085/

These can be accessed via your Glow account or via https://www.tigtagworld.co.uk (you will need to use your Glow log in details).

Watch the video and work through the activities on
https://www.bbc.co.uk/bitesize/topics/zsxxsbk/articles/zxqrdxs
https://www.bbc.co.uk/bitesize/topics/zsxxsbk/articles/zxw6gdm

Questions:
Ensure you answer in full sentences and use correct punctuation!

1. What is friction?
2. What types of surfaces create less friction?
3. Make two lists or draw a table.
   One list/table should identify times when friction is useful.
   The other list/table should identify times when friction is unhelpful.
4. What is air resistance?
5. What do you notice about the things that have less air resistance?

Activity 1:
Look at the three pictures below. Which vehicle do you think would have the least air resistance? Why do you think that?

Picture A	Picture B	Picture C
		

Do you know what vehicle is in picture A? Do you know why it was famous?

Activity 2:
Design a vehicle that would travel on land, in water or under water with very little friction. If possible label your design.
* This can be a drawing on paper or the computer, or can be a model made from construction toys or recycled material.

Additional Activities: We appreciate you may not have these materials at home or help might not always be at hand, so please don't worry if you can't do these additional activities ☺

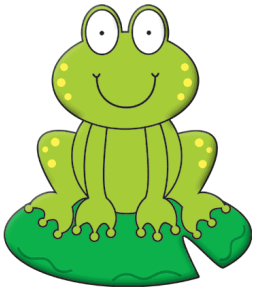
Climbing Frogs!

This activity uses the power of friction to create a climbing frog.

You will need:	Instructions:
• Matchstick • Card (4x8cm) • Paper (plain or coloured, approximately 10x10cm) • Needle and thread (around an arm's length) • Coloured pencils/pens • Sticky tack • Glue	1. Fold the ends of the card, around 5mm from the edges. 2. Stick the matchstick in the centre of the card with sticky tack. 3. Draw a large frog head on the piece of paper. This should be larger than the piece of card. Decorate the head and cut it out. 4. Glue the card onto the back of the frog's head, so the matchstick is horizontal and around the middle of the frog. Take care to leave the folded edges unglued and at right angles to the frog. 5. Use a needle to thread the cotton through the middle of the folded card edges, near to the fold line at both the top and the bottom. 6. Hold the thread at each end, so the frog is held vertically. Watch what happens when you hold the thread tight, then loose.

Explaining the Science!

When the thread is tight, it passes over the matchstick, which creates friction to prevent the frog falling under the force of gravity. When the thread is loose, there is much less friction, and so the frog can slide easily.



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Egg Drop Challenge!

This activity is an extension of the parachute activities carried out previously.

Challenge: Can you drop an egg without it cracking?
Use the FORCE (of resistance) to make it happen!
You can maybe challenge a family member to see who can create the best parachute.

You will need:	Instructions:
• Boiled egg • Bubble wrap • 2 elastic bands • Sheet of newspaper • Carrier bags of different sizes • String • Sticky tape • Scissors • *Any other additional materials that you think will help e.g. tissues/kitchen roll, paper/plastic cup, cling film…*	1. Make a plan that will allow your boiled egg to have a soft landing. 2. Gather the materials you are going to use. 3. Draw and annotate a diagram of your parachute. 4. Attach the parachute safely to the egg and drop from an agreed height. 5. Observe and discuss the landing of your egg. 6. Adapt: What could have gone better? What worked well? Re-design your parachute on paper. 7. Re-test (optional)