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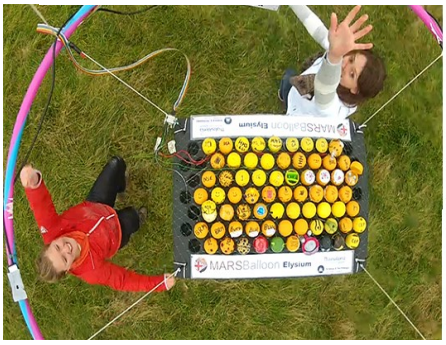
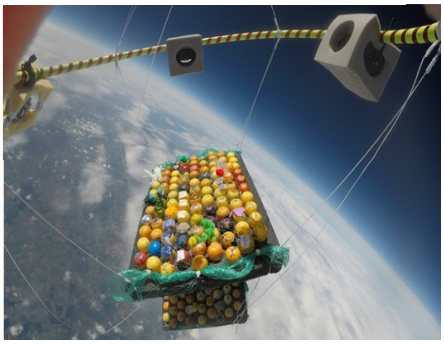




Dear Parents/Carers,

This term, Kingfisher Hall will be taking part in the Mars Balloon Project. This very exciting project will take over 100 experiments to an altitude of 30km, where they will be above 99% of the Earth's atmosphere and experience air pressure, temperature and radiation very similar to the surface of Mars. Mars is the subject of many robotic exploration missions; however, scientists are hoping that one day, we will be able to send humans to Mars. This project will allow students to test how various items would respond to the Martian environment, many of which have never been tried before, to potentially make new scientific and engineering discoveries. Many of these discoveries could help make future manned missions to Mars possible!

This year, we have an amazing opportunity to design and send 3 experiments with the balloon. To support this in school, the children will be spending some time learning all about the "Red Planet" and recent scientific developments. However, at Kingfisher, we are very fortunate to have a wonderful parent network and we would really like as many families as possible to be involved in this exciting opportunity. Therefore, we are asking for your help at home to design our experiments!

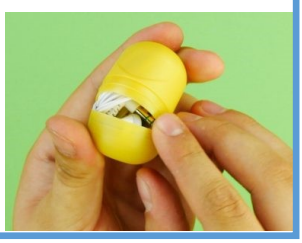
If you would like to take part, please provide a brief description on the next page, of what your child's/family's idea for the experiment is and why you would like your idea to be selected. You may also like to include a picture/diagram in the box provided. You can complete this as a family, or older children may like to complete this individually.

Importantly, your experiment **must not contain:**

-live animals or insects

-anything that degrades quickly e.g. live cultures, perishable food and some plants (plant seeds are fine)

-poisonous or hazardous materials that pose a risk to us or anyone else on the ground



It must also be small enough to fit inside a kinder egg shell - these will be used as

Experiment Ideas

Would water freeze or boil?
- The melting/freezing temperature of liquids change with pressure.

Is there an easy way to detect cosmic rays? Can you count them?
- Cosmic rays leave marks on undeveloped photographic film.

Can you feel the wind?
- The low pressure means that wind is much weaker on Mars, but could you feel it?

Will MP3 players work?
- The low pressure means that sound doesn't carry as far.
- Radiation can corrupt electronic memory.

Would you get a sunburn?
- There is less atmosphere to protect you from ultraviolet light.
- Is there an easy way for astronauts to detect it?

What happens to the rubber in tyres?
- Cold temperatures and pressure have big effect on some materials.
- What happens to the Young's Modulus (elasticity)?

Does the calorific value of food change?
- Some oil based foods, e.g. peanuts, could lose energy to evaporation. Can you measure the loss?

What happens to lubricants/sealants/adhesives?
- Gas bubbles escaping from viscous materials can dramatically change their properties.

How do you get rid of heat?
- Low air pressure makes convective (air) cooling much harder.

Does cold effect watches?
- Digital clocks can speed up or slow down in response to changes in temperature.

Can you recharge a battery with a solar panel?
- There are no fossil fuels on Mars, so renewable energy is very important.

Can you grow crystals?
- Do they grow larger or smaller?
- Are they a different colour?

Please return by Friday 28th May 2021.

Investigation question:

_____

_____

Our idea for the experiment is:

_____

_____

_____

_____

_____

_____

_____

_____

A picture of our experiment:

Family name/surname: _____

Child 1:_____ **Class**_____

Child 2:_____ **Class** _____

Child 3:_____ **Class** _____

Child 4:_____ **Class** _____