Science – How does that work?

Over the summer holidays, your Science teachers would like you perform a scientific experiment. You can test balloon car racers, a rubber band cannon or a colour quest. You can test one, two or all three, but you **MUST** bring your results into school so we can compare with the rest of your new class. If you are interested in Science, there are numerous other experiments on the website that you can try at home as well!

After you have completed your experiment, complete the questions below that belong with your experiment.

All of the experiments can be done with items that you have at home already and there is a step by step instructional video to watch before you perform your experiment as well as additional information sheets about the experiment. Should you wish to perform any of the other experiment on the Royal Institution website (**https://www.rigb.org/families/experimental**), we would like to hear about them (and see if you can bring them in!)

Balloon Car Racers

https://www.rigb.org/families/experimental/balloon-car-racers

To perform this experiment you will make a car which is propelled by balloon power. You can experiment with your design and see what factors affect how fast or how far your car goes. You will learn how a balloon car works just like a rocket.

Questions:

1. Why does the car go forward if the balloon is blowing backwards?
2. Do you think the size of the wheels will affect how far it goes?
3. Do you think the size of the wheels will affect how fast it goes?
4. What can you change about the design to make a better car?
5. How can we measure how far the car goes?
6. How can we measure how fast the car goes?

Rubber Band Cannon

https://www.rigb.org/families/experimental/rubber-band-cannons

To perform this experiment you will make a cannon, or catapult, using elastic bands, and plastic drink bottle and a crisp tin. You can make changes to your cannon and explore how things fired from it move through the air. You will learn about energy and what affects the motion of a projectile (the thing flying through the air).

Questions:

1. What makes a good cannon? How far it fires something? How high?
2. How could we measure those things?
3. What do you think will affect how far we can fire something?
4. What effect do you think it will have if we fire the cannon at a steeper angle?
5. What if we use a more or less stretchy elastic band?

Colour Quest

https://www.rigb.org/families/experimental/colour-quest

To perform this experiment you will make beautiful pictures called chromatograms, that show the hidden colours in inks. You will be able to experiment with different pens to see what colour dyes are in their inks. You will learn about the scientific technique of chromatography and how it can be used to solve mysteries.

Questions:

1. Look closely at the paper. What do you see happening?
2. What does this tell you about the ink when it spreads out and we see different colours or when we don't get different colours?
3. How do you think different coloured pens are made?
4. Can you predict which of the colours in a pack of felt-tips will separate out into different colours like this?
5. If we put dots from two felt tips on top of each other, what will we see?
6. Put dots from two different coloured pens next to each other, are any of the separated colours the same? What could this mean?