Key Stage 2 Science Competition

Our theme for the Science Fair this year is 'Inventions'. During the fair we will have the Rubber Band Car Distance Challenge – How far can you make one travel? The challenge will be held during the Key Stage 2 Science Fair after school on Wednesday, 4th March. The winner will receive a Science Kit with prizes for second and third places.

There are many ways to make a Rubber Band Car – below is one version but the internet has lots of different kinds any of which can be used for the competition. We ask only that **no motors or 'mousetrap motors'** are used – the rubber band needs to be the main source of power.

We have a simpler version called a 'cotton reel car (or tank)' for which we can provide the cotton reels as well as the more complicated version below.

- ***2 straws*** (this will be the frame of the car) – available from the school
- ***4 toothpicks*** (or wooden skewers) – available from the school
- ***4 container lids*** (e.g. from a milk container)
- ***Rubber band/bands*** (or Rainbow Loom Bands-great way to use the millions that are just lying around) – available from the school
- ***Glue***
- ***Drill*** (with small drill bits) or something to make holes (with adult supervision)

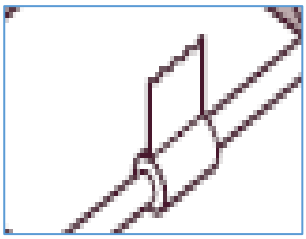
- First use a ruler to figure out where the holes go on the straws, because this is where the toothpicks are going to go.
- Each straw has four holes. Two holes are made at each end of the straw.
- The first hole will be used for your wheel axles. These holes should be made a little larger and will allow your wheels to move freely.
- The second set of holes will be used for the structure supports. These holes should be a bit smaller and the toothpick should fit sung into each straw.
- Now that you have the structure built, you can move to the wheels. Most of the caps that you will find have a mark in the center. This is a great and perfect place to drill the hole to make the axles for your cars.
- You will want to make the hole in the center of each lid just large enough for the toothpick to fit snug into.

For the rear axle you can use one of the three following ways to attach the rubber band:

On one of the toothpicks, drill a very small hole in the center. Once the hole is drilled, you will place the toothpick ends *(or a pin)* that you cut off to make a peg *(see picture)*.

The peg will help when winding up the car to make it go. This toothpick will be your rear axle. Make sure to attach the larger caps to this one if using different sizes for the wheels.

OR



In the middle of this axle, wrap a small piece of tape to make a "catch" for the rubber band.

OR

In the middle of this axle loop the band through itself. This is more likely to slip but is a quick and easy alternative.

Then tie the other end of the elastic band to the other 'strut'. Now as you pull back the car the rear axle should wind up the band and when you let go the car should then move forward. You can also wind the rear axle up by hand if this is easier. Experiment with different elastic band lengths and strengths to get the best outcome.

We have a simpler version called a 'cotton reel car (or tank)' for which we can provide the cotton reels. Please ask for the instructions. There are also lots of alternate designs on the internet.