

THE  
**ULTIMATE**  
Summer Science  
**EXPERIMENTS**



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# The Ultimate Summer Science Experiments

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# Ultimate Summer Science Experiments

What to do with the kids in the summer? Fun science experiments of course! The *Ultimate Summer Science Experiments* has everything you need!

Let's get started!

*Mad Marc*



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## WARNING: (legal type stuff)

### WARNING No 1:

You and your child may have the most awesome summer ever and learn loads of science too!

### WARNING No 2:

All these experiments are reasonably low risk however things can (and will) sometimes go wrong! Please follow the instructions carefully, make sure you have an adult on hand to help out and note that I or Sublime Science expressly disclaim all liability for any occurrence, including, but not limited to, damage, injury or death which might arise as consequences of the use of any experiment(s) listed or described here. Therefore, you assume all the liability and use these

science experiment projects at your own risk!



**Mad Marc Says:** Get a sane and sensible adult to help you - get stuck in - have a go and enjoy doing it!

## INTRODUCTION:

### What's it all about?

So many parents have asked for awesome experiments so they can keep the kids occupied, have fun and keep the learning coming over those summer months.

I'm honoured to be able to share The Ultimate Summer Science Experiments with you!

### Who wrote this thing?

Hi! I'm Mad Marc (Marc Wileman on more sensible occasions!) and I founded Sublime Science to show children just how awesome science can be!

I'm best known as that guy who faced the Dragons on Dragons' Den, firing smoke rings and making slime!

I'm proud to say we've made science awesome for more than 500,000 kids and have even received the Queen's Award from Her Majesty the Queen!

- Enough about me - Let's get started!



## 1. Ultimate Egg Drop Challenge

When the sun is shining there's one absolute classic science experiment that's guaranteed to get the children egg-cited (sorry!)... The Egg Drop Challenge.



**What do I need:**

- A plastic bag
- Some paper (scrap paper is perfect)
- Sellotape
- String
- Scissors

**How do I do it?**

**STEP1** - Roll a piece of paper into a tube about the thickness of a pencil and sellotape it in place.



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**STEP2** - Repeat that process so you've got around 7 paper tubes.

**STEP3** - Let's build our egg protection contraption! Tape your paper tubes around your egg so that it sits protected in the centre of a paper tube snowflake.



**STEP4** - Connect the parachute! Thread your string through one of your best attached paper tubes and tie the ends of your string to the handles of your plastic bag.

**STEP5** - Test it out! From how high can you drop your contraption without breaking your egg.



## What's going on?

This is a brilliant way to get children thinking all about forces. When we drop our egg from a great height we've got the force of gravity pulling it down to the ground.

Our parachute is our egg's first line of defence. As our egg starts to fall the parachute fills up with air and this air resistance causes it to fall more slowly.

Finally, we've got our paper-protectors. It's the sudden impact into the ground that might cause our egg to break. The flexible paper tubes slow the egg more gently (hopefully!) stopping it from breaking.

## More Fun Please - Experiment like a real scientist!

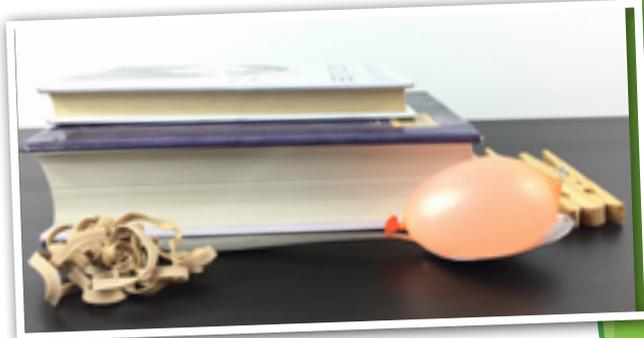
- What difference does not using a parachute make? (You may need a spare egg or two!)
- How high can you drop your egg from and it still survive?
- Use your creativity. What designs do you have for the Ultimate Egg Drop Challenge?

## 2. Water Bomb Catapult

On a sunny day as the BBQ is cooking what could be better than firing off a Water Bomb Catapult. Oh, and we can learn a thing or two about forces while we're at it!

What do I need?

- 2 books
- 4 clothes pegs
- 4 elastic bands
- Spoon
- Water bomb! (or ping pong ball or even paper, if you don't have a water bomb!)



How do I do it?

**STEP1** - First we need to assemble the arm of our catapult. Simply wrap an elastic band around your spoon and clothes peg so they are connected.



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**STEP2** - Connect your clothes peg (with spoon) to your book. Use two elastic bands to really make sure that it's nice and tight. Make sure **NOT** to use your favourite book (even though I did!)



**WARNING:** Never, never, never fire your catapult at anyone.

**STEP3** - Carefully pull your water balloon down before releasing it into the air. (Do this outside!)



**STEP4** - Now you've made a low-powered catapult - slide an extra clothes peg under the existing clothes peg to increase your range!

## What's going on?

As you push down on your catapult you're storing potential energy within the springs. When you release your catapult this potential energy is transferred into the kinetic energy of the 'arm' of your catapult.

One the arm gets to the top it stops but as the water bomb is in motion it continues and so goes flying!

The reason that your catapult goes higher with more clothes pegs is that by adding clothes pegs you're able to store more potential energy. There's more energy available to be transferred into kinetic energy to launch your water bomb even further.

## More Fun Please - Experiment like a real scientist!

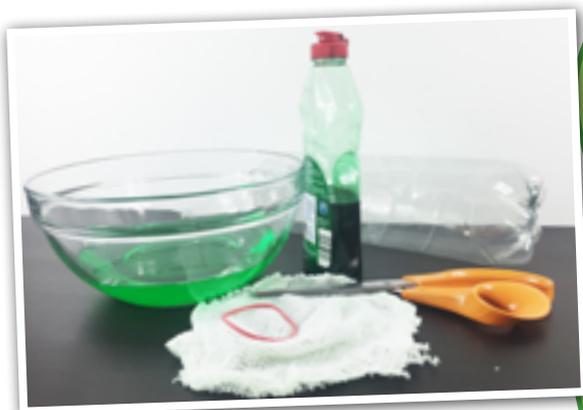
- Test out some ideas to find the optimal (safe) ammunition for your catapult!
- What's the maximum number of clothes pegs that you can safely use?
- What's the maximum height and range you can get?

## 3. Bubble Worms

Bubbles are awesome all year round but there's something particularly awesome about bubbles on a summer's day. If you like bubbles then you'll love your Bubble Worm!

### What do I need?

- Bowl
- Washing up liquid and water
- Food colouring
- Empty drinks bottle
- Scissors
- A dish cloth (clean!)
- Elastic band



### How do I do it?

**STEP1** - Mix 1 part washing up liquid with 4 parts water and stir gently in your bowl to make the perfect bubble mixture.

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**STEP2** - Get an adult to help out with flattening out the edge of your bottle and cut round so you have a large bubble blower as shown.

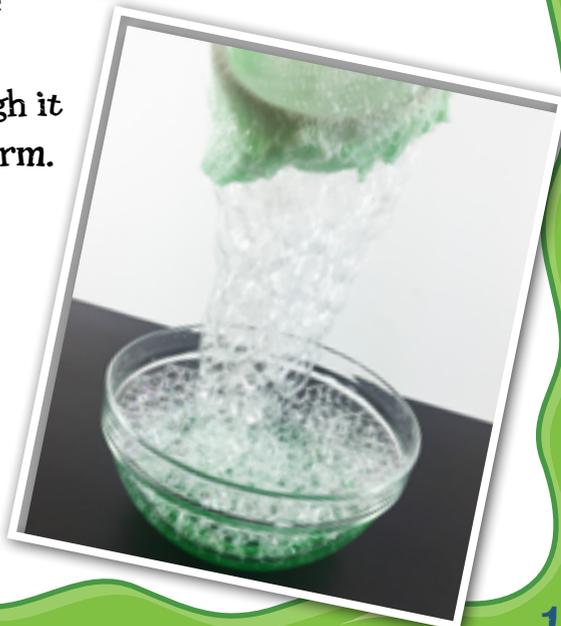


**STEP3** - Wrap your clean dishcloth over the edge of your bubble blower and secure it in place with an elastic band.



**STEP4** - Dip your bubble blower in your bubble mixture and blow through it to make your Bubble Worm.

**STEP5** - Discover how awesome your Bubble Worm is!!!



## What's going on?

Hope you had a blast making your Bubble Worm but how does it work?

The surface of your dish cloth is filled with small holes and each of those holes is acting as an individual bubble blower.

Each small hole is wrapping up a little bit of air in a layer of soap and combining together to make your beautiful Bubble Worm.

## More Fun Please! - Experiment like a real scientist!

- Could you make a giant Bubble Worm maker?
- What would happen if you added some food colouring? (WARNING: This will get messy!)
- Does using warm water make a difference?
- What's the longest Bubble Worm you can make?