# Balloon Rockets

A balloon provides a simple example of how a rocket engine works. The air trapped inside the balloon pushes out the open end, causing the balloon to move forward. The force of the air escaping is the "action"; the movement of the balloon forward is the "reaction" predicted by Newton's Third Law of Motion.

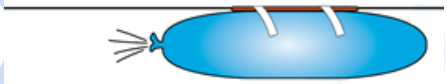
**Aim:** To create a rocket balloon which travels the furthest.

## Equipment:

- A drinking straw
- Different shapes and sizes of balloon
- Stop watch
- Washing up liquid
- A peg
- Sticky tape
- Two chairs
- A metre ruler / measuring tape

## Instructions:

1. Blow up the balloon, fold over the neck and secure it with the peg it to stop the air coming out.
2. Thread the string through the straw.
3. Tie the string to two chairs about 2 metres apart.
4. Stick the balloon to the straw as illustrated in the diagram.



5. Remove the clip from the neck of the balloon and watch your rocket zoom away.
6. Measure the distance the balloon travels and time how long it takes the balloon to travel to a stop. Make a note of the time taken / distance travelled.
7. Repeat the experiment but cover the string in washing up liquid. (This reduces the friction).

## Report:

1. Take a photograph of your experiment. Then write a brief report.
2. Why did certain balloon rockets travel further than others? What could you have done differently to make your rocket travel further?

## Things to think about:

- The friction between the balloon rocket and the string.
- The shape / weight of their balloon rocket.
- The position of the 'mouth' of the balloon in relation to the string guide line.

Name_____

Report: Balloon Rockets

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| Why did certain balloon rockets travel further than others? |
| What could you have done differently to make your rocket travel further? |
| Draw a diagram showing the forces acting on the balloon as it moves. |
| Explain why you need to reduce friction. |