NPL

Measurement At Home

Launch and land

Can you fly a piece of A4 paper exactly 3 metres?

- Design and build equipment to make this happen
- You will need a launcher – this could be wood, card, Lego,....
- Your piece of paper can be flat or folded
- Maybe you want it to fit in a rocket or be in the shape of a paper dart
- Can you repeat this challenge three times?

Estimated time: 2 hours
No experience needed

RULES AND INFORMATION

Watch the video **(YouTube: NThrynB4qIA)**

1. The activity must be done safely with adult supervision.
2. The challenge is to launch and land an A4 piece of paper as close as possible to 3 metres from start position three times.
3. The mass of the paper plus whatever's carrying it should not exceed 30 g.
4. The paper, and whatever's carrying it, must not be connected to anything as it flies.
5. Team and individual entries welcome.
6. Please share photos and videos of your attempt with us via **#NPLRocketChallenge** or email to Outreach@npl.co.uk.
7. There are no limits to the number of launches you do – though we only want to see your most spectacular.
8. You can have as many different engineering solutions as you wish – multiple entries are fine.

Equipment required

- An A4 sheet of paper.
- The launcher and carrier of your own design and construction.
- Tape measure to mark 3 metres

Safety

- Mass of paper and carrier should be less than 30 g.
- People remain behind, not in front of the firing line.
- Take care when filming to be at a safe distance.
- Do not use sharp objects or glass in your design.

SI measurement units

- metre (m) for length

Challenge Topics

Engineering, Measurement Science, Maths, Physics

Thoughts, tips and information

- By taking care to adjust and control the launch power and angle, you have much better chance of repeatable performance. Measurement is key to success!
- Avoid gusts of wind which affect flight.
- As you will repeat many times, make sure your equipment is robust enough not to change performance.
- The NPL Water Rocket Challenge (which inspired this activity) has been running for over 20 years.

npl.co.uk/measurement-at-home/launch-and-land

Adult direction or supervision is required. All experiments are carried out at your own risk.
For more experiments, visit NPL Measurement at Home.