**Year 7 Science Unit 2 – Tutorial 6**

**Investigating gravity using a robocopter**

A robocopter is a paper construction that spins as it falls when it is dropped from a height. Your task is to make a robocopter and then investigate how changing one variable or factor affects the time that it takes to fall. The design of a robocopter is shown in Figure 1.

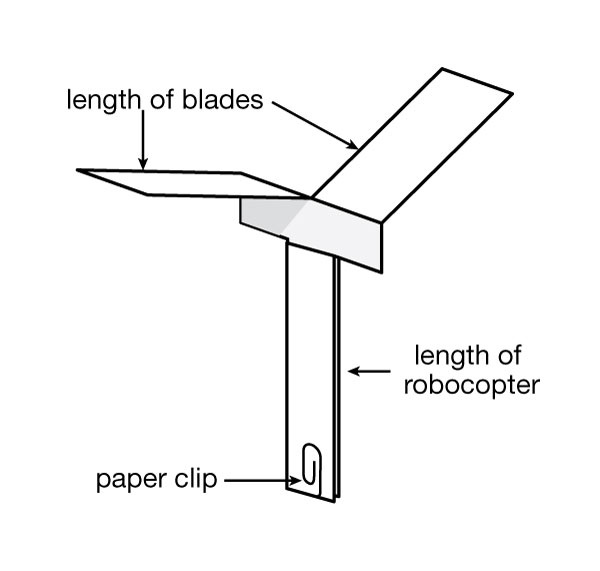


Figure 1. A completed robocopter

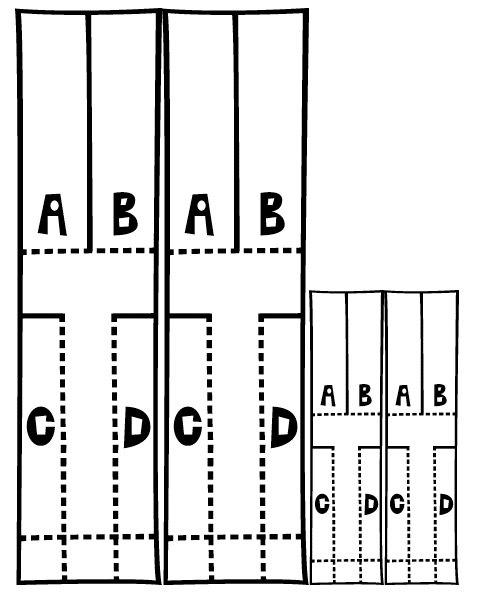
To build your robocopter, cut a copy of the template shown in **Figure 2** onto a piece of paper or cardboard. Cut along solid lines and fold along dotted lines, as shown by the arrow. Place a paper clip at the base as shown in **Figure 1** and you are ready for a spin. Full instructions are found in **Figure 3**.

Once you have built your robocopter, you need to drop it from a **set height** and **time how long it takes to fall to the ground**..

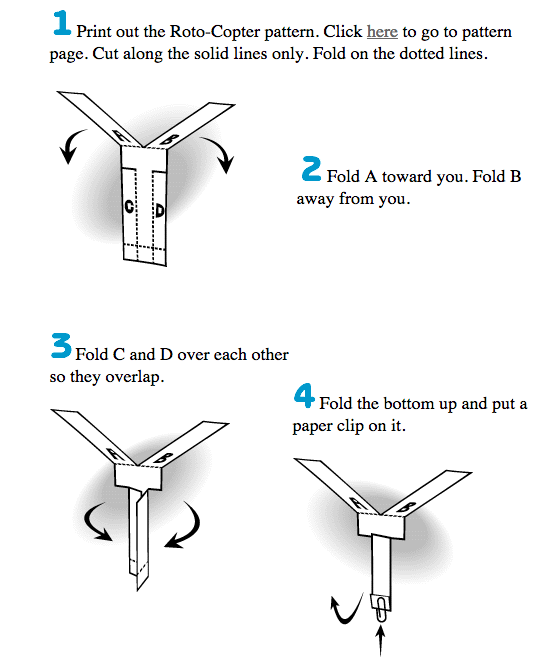
**Each group should make at least two different designs!**

**What you could change in your designs:**

* changing the length of its blades
* adding more paper clips to its base
* making different-sized robocopters
* making robocopters from different thicknesses of paper or cardboard.



**Figure 2:** Robocopter design template. Create your robocopter by drawing this lines on a piece of paper and following the instructions on the next page.



**Figure 3:** How to build your robocopter once you have used the template.

Your Task by the end of the lesson:

1. Write an **Aim** for your investigation
2. List the **Materials** needed and the **Methods** you followed.
3. Record your **Results** in a table. You should drop your robocopter from a set height and time how long it takes to hit the ground.
4. Make sure you write about what you observed in your **Discussion**.
5. Any problems that you found in a C**onclusion** that summarises your findings.

**Your experimental report:** Use the headings on the next page to create your report.

**Title:**

**Aim:**

**Materials:**

**Methods:**

**1.**

**Results:**

|  |  |  |
| --- | --- | --- |
| **Explain your design (e.g. Size, weight)** | **Height Dropped From**  **(Should always be the same)** | **Time taken to reach the ground** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Discussion:**

**What was the difference in the time it took to fall to the ground between your different designs?**

**What forces caused the difference in drop times? Think about what changes you made to your design.**

**Conclusion:**

**What went well in this experiment?**