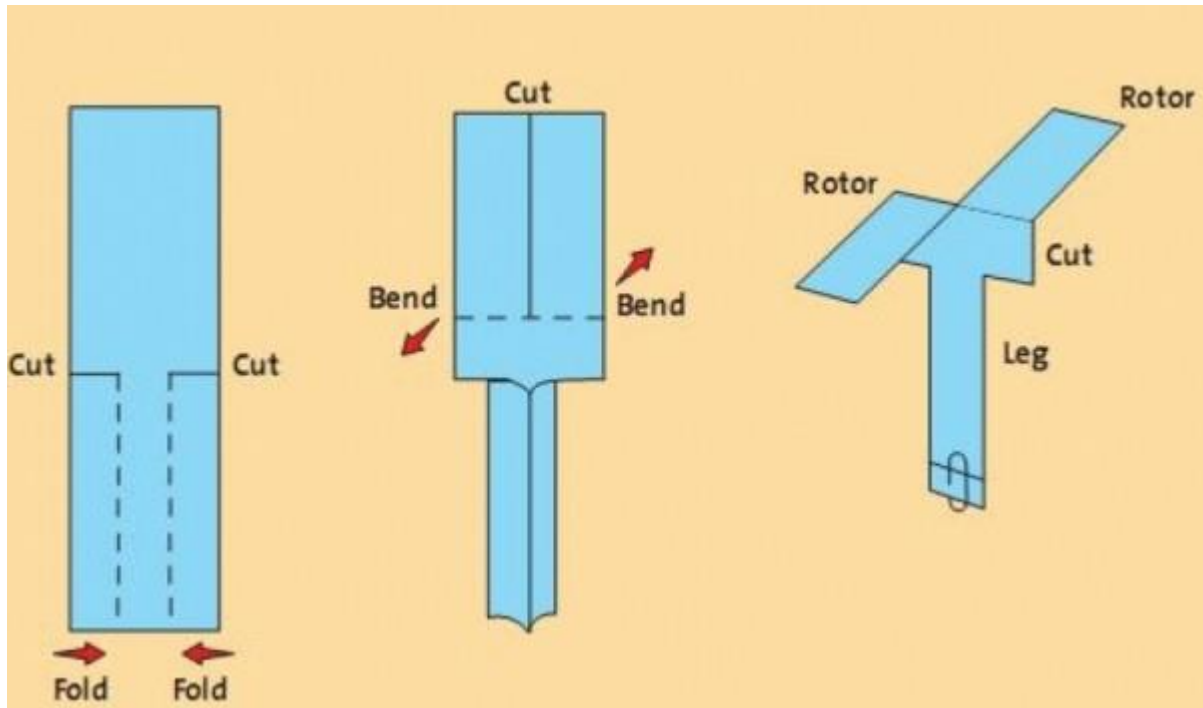


Home experiment: Paper Helicopters.

Materials needed:

- several sheets of paper or thin card
- several paper clips
- scissors

A simple paper helicopter can be made by following the instructions below.



Your task is to build and test several paper helicopters to investigate how each of the following changes affects the time it takes to fall to the ground:

- changing the number of paper clips (keeping everything else the same)
- changing the length or width of the rotors (keeping everything else the same)
- changing the length of the leg

Finally, design and build a helicopter that takes the maximum time to fall from a fixed height (about 2.0 m) to the ground.

Record your experimental results and any observations and conclusions in the spaces on the other side of this sheet.

Interesting fact: *sycamore seeds are shaped like paper helicopters. Why do you think it is an advantage for them to take a long time to fall to the ground?*



Experimental results and conclusions

1. **Changing number of paper clips**

Conclusion:

.....
.....

2. **Changing length of the rotors (start long and cut them down gradually)**

Conclusion:

.....
.....

3. **Changing width of the rotors (start wide and cut them down gradually)**

Conclusion:

.....
.....

4. **Changing the length of the leg (start long and cut it down gradually)**

Conclusion:

.....
.....

Describe your final design (including any special modifications you made):