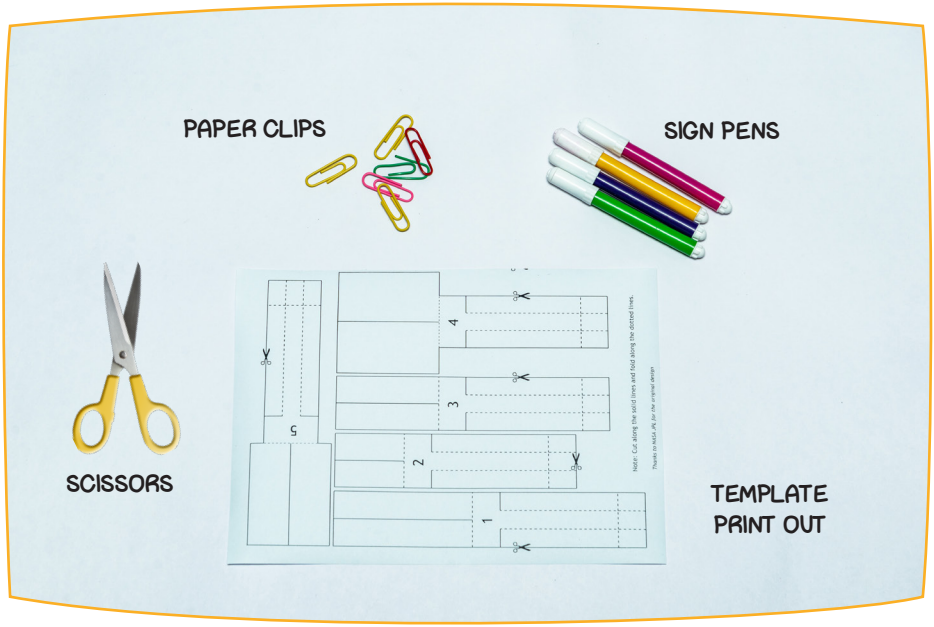
LESSON 7

Paper Helicopter

You must have seen plenty of helicopters that fly. But what about helicopters that descend? A paper helicopter is a contraption that descends slowly while spinning.

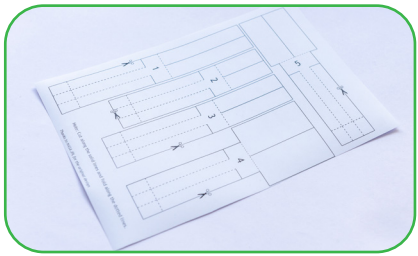
WE WILL NEED THESE MATERIALS



LET'S FOLLOW THESE INSTRUCTIONS TO CREATE OUR PAPER HELICOPTER.

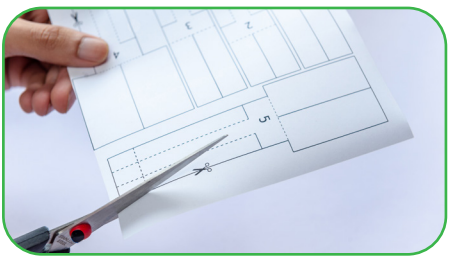
1

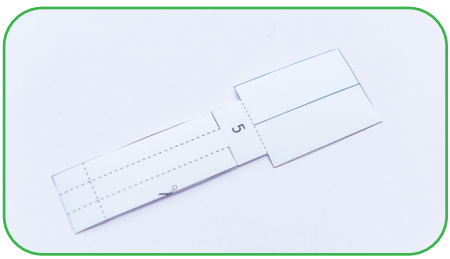
Get your paper helicopter template sheet. Each template sheet can be used to create 9 helicopters of different dimensions.



2

Cut along the solid lines to extract the helicopter templates of different sizes. Scissors icons are shown to guide you.



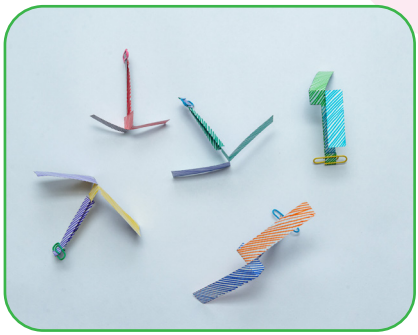


3

Color the cutouts to make the helicopters look more beautiful. You can simply draw hatching lines with sign pens to do so.

4

Fold along the dotted lines and attach a paper clip at the bottom. Your paper helicopter is ready to play with.



5

Launching the helicopter

Hold the bottom of the helicopter's tail between your thumb and index finger, and throw it angling upwards the way we throw darts. You can also release it from height. Enjoy observing how beautifully your helicopters descend.

WATCHING THE PAPER HELICOPTER SPIN MAKES ME WONDER IF WE CAN CHANGE ITS MOTION. I WANT TO BUILD HELICOPTERS THAT ROTATE SLOWLY AND FALL TO THE GROUND. BUT WHAT CONTROLS ITS MOTION?

I WONDER IF CHANGING THE WING LENGTH MAKES A DIFFERENCE. WHAT DO YOU THINK?

LET'S CONDUCT AN EXPERIMENT TO FIND OUT WHAT DIFFERENCE THE LENGTH OF FAN BLADES MAKES TO THE FLIGHT OF A HELICOPTER.

For this experiment, let's take any three templates with the same fan blade width.

Template	Length of the fan blade	Your observation of the flight

WHAT CAN YOU TELL FROM THIS EXPERIMENT?

I HAVE ANOTHER IDEA. WHAT IF WE CHANGE THE WIDTH OF THE HELICOPTER WINGS?

I THINK THAT MIGHT MAKE A DIFFERENCE. WHAT DO YOU THINK?

Let's conduct an experiment to find out what difference the width of fan blades makes to the flight of a helicopter.
For this experiment, let's take any three templates with the same fan blade length.

Template	Width of the blade	Your observation of the flight

WHAT CAN YOU TELL FROM THIS EXPERIMENT?

Let's experiment with the design

You can conduct more experiments on the paper helicopter. Here are some ideas

- What happens if you make the helicopter heavy? (by attaching paper clips to it)
- What happens if you reverse the direction in which its wings are folded?
- Or if the helicopter has a short tail?

DESIGN, CUT AND FOLD YOUR OWN PAPER HELICOPTERS. WHAT KIND OF HELICOPTER WILL YOU MAKE?

Think like a physicist

How can we make the paper helicopter spin faster or slower?

Think like a scientist

The seeds of the sycamore tree have a shape similar to the paper helicopter. How might this shape be useful to the tree?

Reflection

- What design of paper helicopter worked best for you?
- What insights did you get as you worked on your paper helicopters?