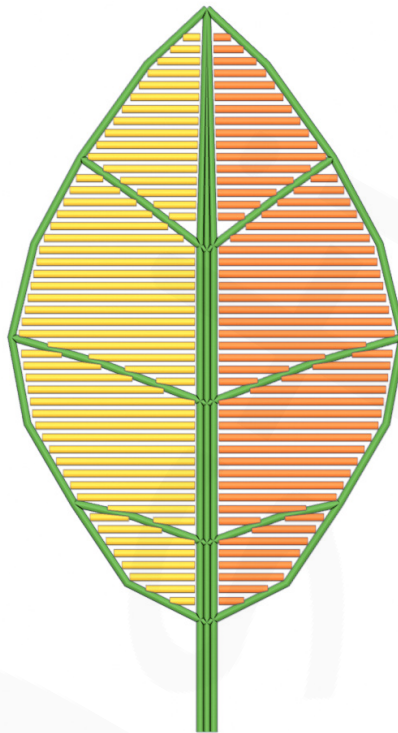


MAKE • DISCOVER • COLLECT

Leaf with its own vein network

Beginners of different ages; assistance matched to skills and device instructions. • Allow about 15–28 min of pen work and 25–42 min total. These are estimates, not physical test results.



Make a lightweight leaf with a stalk, a network of veins and colourful sections. The supplied pattern is about 11 × 6 cm. Learn to connect short strands to the edges of the sections, then choose your own green or autumn colours for the decoration.



Your outcome

Build a light, cohesive branching structure.

Construction illustration. The instructions show the successive stages. Full-size (1:1) templates are supplied on a separate sheet.

What you need

A 3D pen, the selected filament and equipment available in your workspace. See the complete list below.

Equipment

- | | |
|---|-------------------------|
| ☐ PLA-compatible 3D pen | 1 |
| ☐ Clear mat from the kit | 1, minimum 120 × 138 mm |

Materials

- | | |
|---|---------------------|
| ☐ W01 printout on A4 paper | 1 sheet, 100% scale |
|---|---------------------|

Equipment

- | | |
|---|---|
| ☐ Ruler with millimetre markings | 1 |
|---|---|

Filament — prepare with reserve

- | | |
|---|-----------------|
| ☐ PLA 1.75 mm — colour shown in the illustration | 0.5 m · ≈ 1.5 g |
| ☐ PLA 1.75 mm — colour shown in the illustration | 0.6 m · ≈ 1.8 g |
| ☐ PLA 1.75 mm — colour shown in the illustration | 0.6 m · ≈ 1.8 g |

Total filament: 1.7 m · approximately 5.1 g

Quantities include reserve. Grams indicate estimated net filament mass, excluding packaging.

Before you start

- 1 Print W01 on A4 at 100% scale. Use a ruler to check the 20 mm control segment.
- 2 Place the clear mat from the kit over the pattern, with the leaf tip pointing up.
- 3 Choose your PLA colours: the leaf can be green or autumn-coloured. Ask an adult to prepare the pen according to the device instructions. The tip is hot — do not touch it.

Editorial estimate with no physical test. The brief's 25–42 min range has been kept; the time needed for the child's own filling must be reviewed after the correction.



How to read the instructions

The large image shows the completed stage. Small views show the action and current parts. ×N means repeat the whole action N times, cooling and checking each time. Illustrations are not at 1:1 scale.

STAGE 01 / 05 • Session 1

Main vein and stalk



Draw the main vein and stalk

NOW Leaf with stalk

Blue / dark emphasis: the part used in this action. Arrows: visual guides. Illustration not to scale.

PARTS FOR THIS STAGE

1 × Leaf with stalk · PLA | template W01

On the clear mat, draw the stalk and main vein with three adjacent strands following W01, then add the side veins and outline. Make everything in one flat layer.

Draw the main vein and stalk following W01. Add the two adjacent strands marked on the pattern so that the stalk has a wide base.



Check

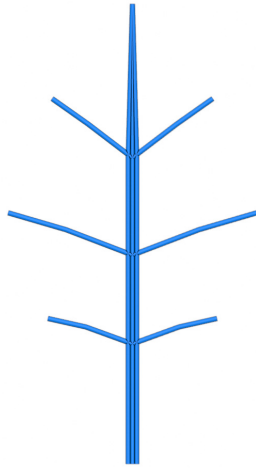
The stalk and main vein form one continuous line.

If it does not work

Join the gap with a short strand of PLA.

STAGE 02 / 05 • Session 1

Branches



Add the left branches

Add the right branches

NOW Leaf with stalk

Blue / dark emphasis: the part used in this action. Arrows: visual guides. Illustration not to scale.

Add three veins on the left side. Start each one on the main vein and draw it to the line of the future outline.

Make three veins on the right side in the same way.



Check

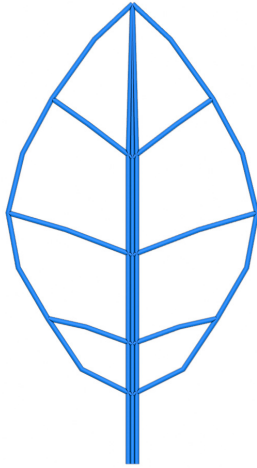
All six side veins reach the outline positions.

If it does not work

Extend a vein that is too short until it reaches the pattern line.

STAGE 03 / 05 • Session 1

Leaf outline



Connect the left edge

Close the outline

NOW Leaf with stalk

Blue / dark emphasis: the part used in this action. Arrows: visual guides. Illustration not to scale.

Draw the left outline from the base of the leaf to the tip. Join the ends of the three veins as you go.

Draw back along the right edge from the tip to the base. Join the ends of the right-side veins as you go.



Check

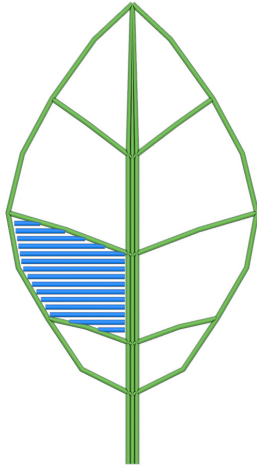
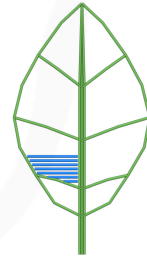
The leaf has a closed outline and eight sections.

If it does not work

Fill in any gap in the outline or beside a vein.

STAGE 04 / 05 • Session 1

Fill one section



Start filling one section

Finish the example section

NOW Yellow section fills

Blue / dark emphasis: the part used in this action. Arrows: visual guides. Illustration not to scale.

PARTS FOR THIS STAGE

1 × Yellow section fills · PLA | template follow the written method

No separate pattern: fill the leaf's existing sections with short PLA strands in one layer. Join both ends of every strand to a vein or the outline. This material is added directly to the leaf.

Choose a PLA colour. Add several short strands in the section between the two lower left veins. Start each strand on one edge of the section and draw it to the other edge.

Add more strands beside the previous ones until the whole section you chose has a colourful fill with small gaps.



Check

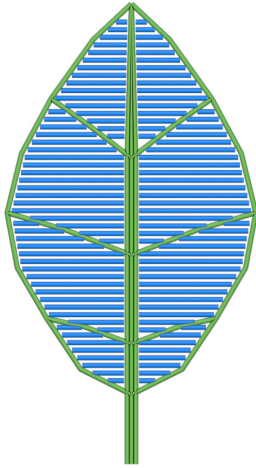
The fill stays between the veins and connects to the edges of the section.

If it does not work

Fill a missed spot with a short strand.

STAGE 05 / 05 • Session 1

Your colours and decoration



Give the leaf your own colours

NOW Orange section fills · Yellow section fills

Blue / dark emphasis: the part used in this action. Arrows: visual guides. Illustration not to scale.

PARTS FOR THIS STAGE

1 × Orange section fills · PLA | template follow the written method

No separate pattern: fill the leaf's existing sections with short PLA strands in one layer. Join both ends of every strand to a vein or the outline. This material is added directly to the leaf.

Fill the remaining sections with similar strands. Choose green or autumn colours and arrange them in your own way. The example has yellow and orange sections with green veins. Wait until the work is completely cool. Use the leaf as a decoration.



Check

The strands connect to the edges of the sections. Your colour arrangement can be different from the example.

If it does not work

Add a short strand of PLA at the missing connection.

Finished — check the outcome



Check

The stalk, veins and outline make one connected leaf.



Check

The short strands fit inside the sections and connect to their edges.



Check

The leaf has the colours you chose and can be used as a decoration.

Storage

Store the model in a cool place away from sunlight and heat. Repair it on a suitable 3D-pen work surface using the same material as the part.