

Constructing a paper-based binary tree

Construct a **paper-based binary tree** using a set of 2D and 3D shapes.

Prepare some strips of paper for recording the questions.

Use the set of **red** arrows for 'no' answers and **green** arrows for 'yes' answers.

Use the pictures of shapes and arrows provided in the help file if necessary.

Using a set of shapes, select two of the shapes, e.g. a square and a sphere.

Ask a question to distinguish between them. The answer must be yes or no, for example:

Is it a flat shape?

Put down a **red** and **green** arrow leading from the question strip.

Put the square at the end of the **green (yes)** arrow and the sphere at the end of the **red (no)** arrow.

Now choose another shape, such as a cube. Ask the first question again.

This time the answer will be 'no'.

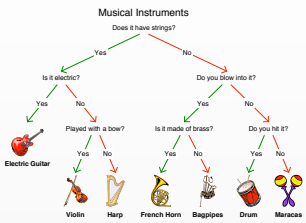
Follow the **no** arrow and construct a question to distinguish between the sphere and the cube. The question might be:

Does it roll?

Position this question strip at the end of the red arrow, with a **red** and **green** arrow leading from it.

Repeat this process with each shape in turn.

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Is it a flat shape?

Does it have 4 or more sides?

Does the shape roll?

Are its sides the same length?

Does it have 3 corners?

Does it have flat faces?

Does it have six faces?

Does it have 5 sides?

triangle

circle

Does it have 2 flat faces?

sphere

Are all the faces the same size & shape?

pyramid

pentagon square

cylinder

cone

cube

cuboid

