

Flexagons

In 1939 Arthur Stone, a Princeton graduate student, discovered *flexagons* - paper puzzles that can change shape.

Research into flexagons will reveal many different types.

The following instructions will assist in constructing one type of flexagon: a *tetratetraflexagon*.

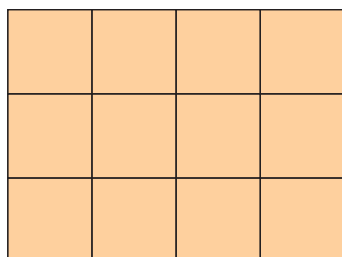
You will need an A4 sheet of paper, ruler, pen, scissors, cutting blade and adhesive tape.

Step 1

Accurately cut a rectangular sheet of paper that is **20 long** and **15 cm wide**.

Step 2

Mark intervals of 5 cm along each side of the rectangle and use these to draw a 4×3 grid.



Step 3

Turn the paper over and draw the grid on the other side.

Step 4

Write the numbers **1, 2, 3** and **4** on the grid in the same positions as shown below.

1	1	2	3
3	2	1	1
1	1	2	3

Front

4	4	3	2
2	3	4	4
4	4	3	2

Back

Step 5

Students may prefer to colour in the squares of each number with a different colour:

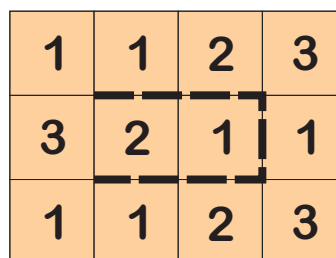
1 = blue, **2** = yellow, etc

Step 6

Fold along the vertical lines a few times to make flexing of the flexagon easier.

Step 7

With the front face up cut a flap along the dotted lines shown below.

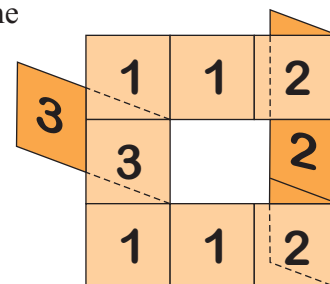


Step 8

Fold the centre flap back and to the left.

Do the same with the right hand column.

See diagram.



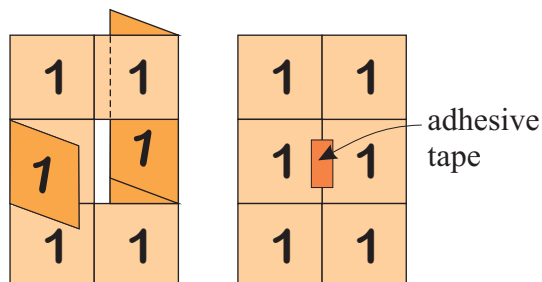
Step 9

Fold the flap around so the **3** on the flap covers the **3** on the front.

Fold the line of **2**'s back behind the **1**'s.

There should be six **1**'s showing.

Place a small piece of adhesive tape as shown below



Step 10

The flexagon should be able to flex to show the **1**'s, **2**'s, **3**'s or **4**'s.