

FOUR-COLOUR EXERCISE

To use flood fill techniques with accuracy.

†† *Individuals or pairs.*

🕒 *30 minutes at the computer; 10 minutes demonstration.*

Previous skills/knowledge needed

Little IT knowledge and few skills are necessary.

Key background information

Graphics applications usually incorporate a 'flood fill' tool which fills a specified area with a selected colour. The icon on the button for this tool is often marked as a tilting can of paint with a stream of paint pouring out. It is a satisfying technique for children to use and is effective in filling both small and large areas with a variety of colours.

The idea in this activity is to use the flood fill tool to produce a variety of patterns according to certain rules which limit the number of colours that can be used. In this case, only four colours are allowed and the same colour should not touch both sides of any line or 'boundary'. This limitation is taken from what is known as the 'Map Colour Problem' – what is the least number of colours that can be used to colour a map without two different countries sharing the same colour across a boundary? The answer is four!

Vocabulary

Flood fill, palette, selected colour, boundary.

Preparation

Make one copy of photocopiable page 132 for each child.

Resources needed

A computer, graphics software with flood fill tool, colour printer, paper, photocopiable page 132.

What to do

Introduce photocopiable page 132 to a selected group of children who will later undertake a similar task on the computer, or use it as a whole class activity. Ask the children to colour the pattern on the sheet using as few colours as possible, making sure that no colour meets the same colour on either side of a line or boundary. Attempting this exercise on paper first will help the children to appreciate how much easier it is to do the same task on the computer using IT graphics tools.

Now show the children how to use the computer graphics program to 'take a pencil for a walk', filling the screen with a squiggly pattern containing many enclosed areas created with thin 'pencil' or 'brush' lines. Then demonstrate how to colour the pattern with the fill tool. Explain to the children that you want them to repeat this task on the computer, but emphasise that only four colours can be used and the same colour must not appear on both sides of any line or 'boundary'. If they find being limited to four colours too difficult, you may have to relent and allow them to use additional colours!

When all the spaces are filled in the children's patterns, including the background, let the children make colour printouts, perhaps using them to embellish a folder or an exercise book. Changing the colour selection on the same pattern looks effective when displayed beside the original, and the children could produce several versions using different colours.

Suggestion(s) for extension

More confident children could explore the use of the colour palette more fully. Using a range of different tones within a single colour can look very effective; but this will obviously depend on whether your software has this facility. If it does not, the children could try using different shades of grey or a variety of patterned fills.

Suggestion(s) for support

Allow less confident children to use as many colours as they wish when filling in their pattern initially; then go on to limit their choice of colours as suggested in 'What to do'.

Assessment opportunities

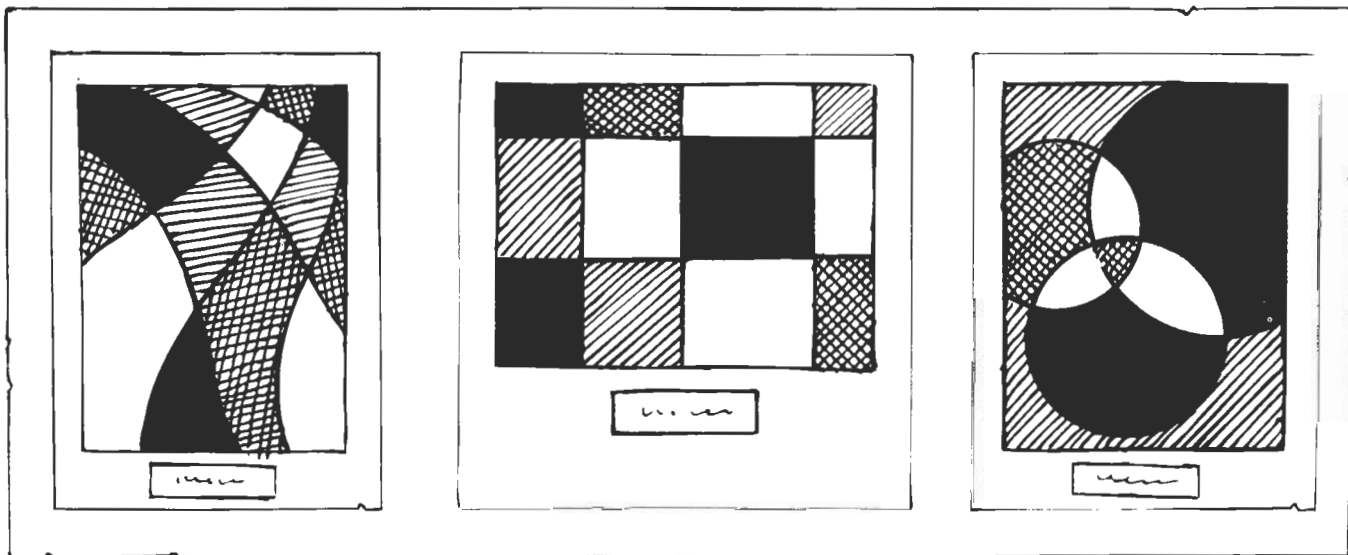
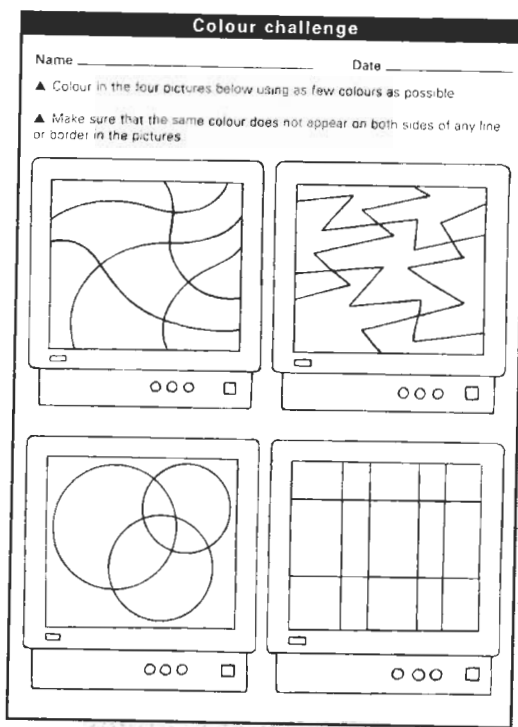
This activity will allow you to assess the children's ability to use IT equipment and graphics software while carrying out the above task. The links to the art curriculum can also be exploited for purposes of assessment.

Display ideas

The children's patterns offer exciting opportunities for a display and, when imaginatively mounted, will enhance any area of the school. Ask the children to think up some unusual titles for their work.

Reference to photocopiable sheet

Photocopiable page 132 contains a variety of simple patterns. The children must fill in the patterns using as few colours as possible, making sure that the same colour does not appear on both sides of any line or 'border'.



Colour challenge

Name _____

Date _____

▲ Colour in the four pictures below using as few colours as possible.

▲ Make sure that the same colour does not appear on both sides of any line or border in the pictures.

