



# The Recursive Photocopier





The FMSP photocopier has an interesting and mathematical glitch.


It has two settings, neither of which works correctly.

**Setting 1** divides **any** rectangular area into four equal parts. It only copies the top left hand quarter and bottom right hand corner. The other two corners are 'blanked out' in white.

So, this shape:  ends up looking like this: 

**Setting 2** also divides **any** rectangular area into four equal parts. It is slightly better in that it only 'blanks out' the top right hand corner.

So, this shape:  ends up looking like this: 

The MEI office staff decided to experiment one day. They fed a completely filled A4 rectangle  into the photocopier using setting 1. They then fed the new copy *back* into the copier. They kept on doing this until they could guess what it would end up looking like.

They then did the same using setting 2.

Sketch out the first few copies for each setting. Can you guess what the pattern will look like after thousands of copies?