

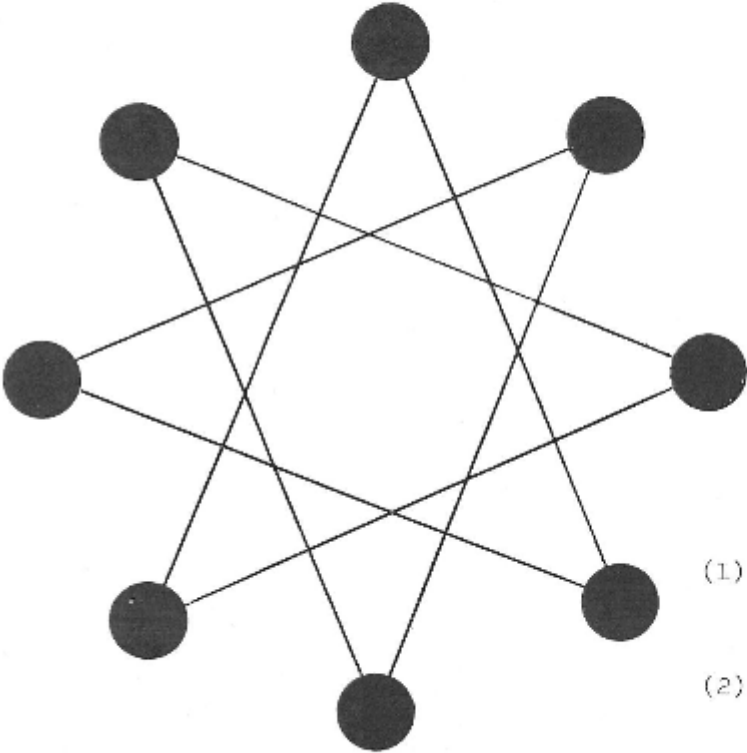
Patterns and Generalisations part 2

Whether you are a parent, teacher or home school educator, we've compiled examples of activities, games and puzzles which can be used to support the learning of algebra.

These examples are taken from the 'Patterns and Generalisations' packs found in our SMILE resource collection. The mathematical demand increases as you work through the packs. There are lots more ideas in the complete packs, which can be downloaded at <https://www.stem.org.uk/rxzee>

Answers to cards can be found at <https://www.stem.org.uk/rxxo5>

You will need: 7 counters



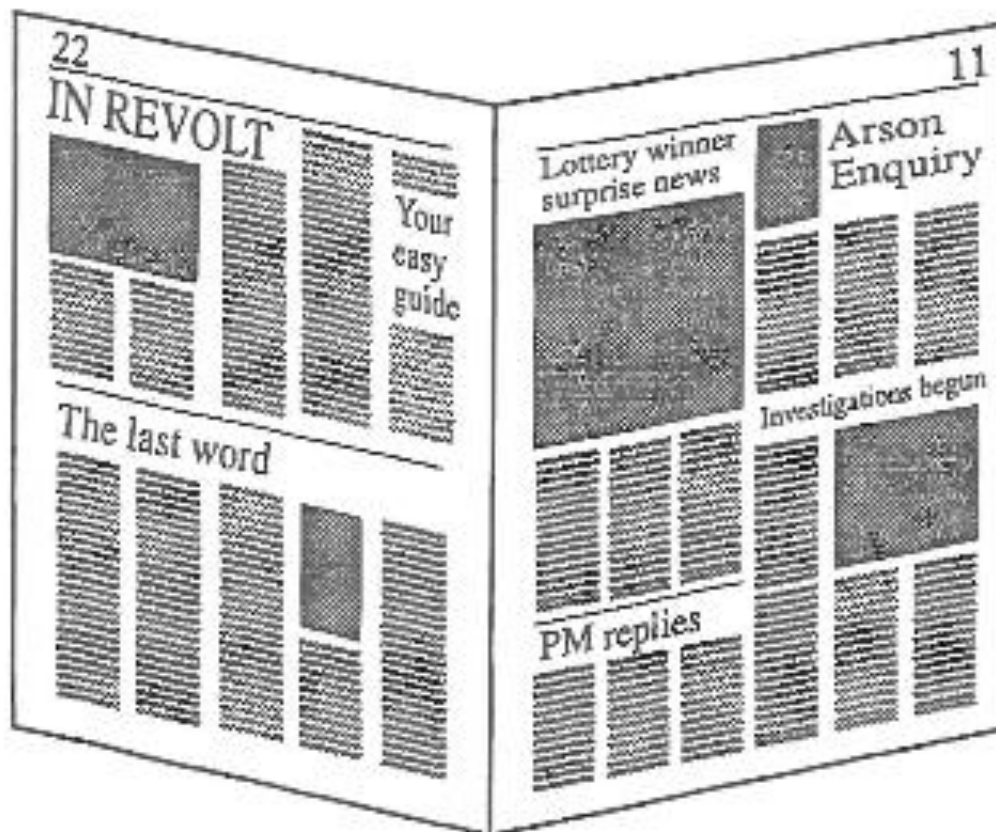
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STAR
PUZZLES

- (1) Put a counter on any circle and slide it along a line to another circle.
- (2) Put a 2nd counter on a free circle and slide it along a line to another free circle.
- (3) Repeat until you have used 7 counters.

Numbering the Pages

This shows one sheet from a newspaper.



- How many pages were there in the complete paper?
- Make a small newspaper with 6 sheets of scrap A4 paper. Number the pages. What patterns do you notice in the page numbers?
- *Investigate page number patterns for other newspapers.*

0784

SMILE

142 857 times table

- (1) Use your calculator to complete the first seven rows of this table.

x	142 857
1	
2	
3	
4	
5	
6	
7	
.	
.	
.	
.	
.	
.	
.	

- (2) What do you notice about your answers so far?
- (3) Use your calculator to extend your table for the next two rows.
- (4) Investigate your table for number patterns and fill in the next five rows of your table without using a calculator.
- (5) Check your results if you wish.
- (6) Now use your calculator to work out

$$\frac{1}{7}, \frac{2}{7}, \frac{3}{7}, \text{-----}$$

Any comments on your results?

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You will need: 10 counters

Counter Hopping Puzzle

Put 10 counters in a row.



You may move any counter over the 2 nearest counters and onto the 3rd nearest.



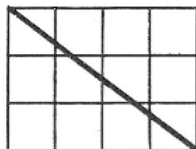
Your first 2 moves could be the ones shown.

You must finish with 5 pairs of counters -
equally spaced like this:

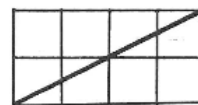


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Rectangle Diagonal



A 4 x 3 rectangle
The diagonal passes through 6 squares.



A 4 x 2 rectangle.
The diagonal passes through 4 squares.

Do some more.

A table of results?..... Any rules?.....