

Week 8

Odd Squares

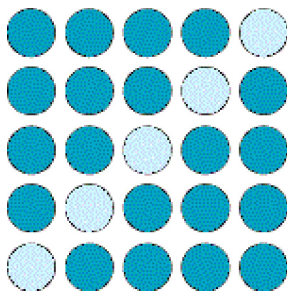
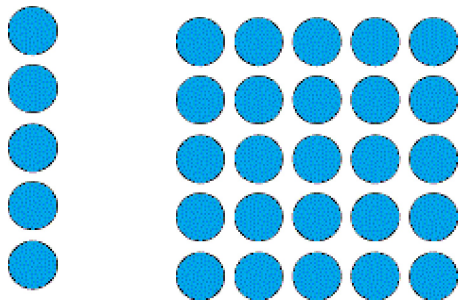
Think of a number.
Square it.
Subtract your starting number.

Is the number you're left with odd or even?

Try with other numbers.

What do you notice?

How do these images help you explain your observations?



Key questions

What do you notice about the result each time?

Is this always going to be the case? How do you know?

Can you describe what is happening in the images?

What can you say about the pattern of dots on each side of the red line in the third image?

If there was a fourth picture, what could it look like?

What is the starting number in the picture?

Can you draw a similar series of pictures for different starting numbers?

This could help you

You might find it useful to use counters or cubes to represent the numbers and therefore to build up a picture of what is going on in this way. This will also allow you to physically to take away the diagonal line which is crossed out in the third image if that helps.

Possible extension

Picturing Triangle Numbers is another problem which focuses on visual proof. Although it leads into algebra, you might be able to write proofs.