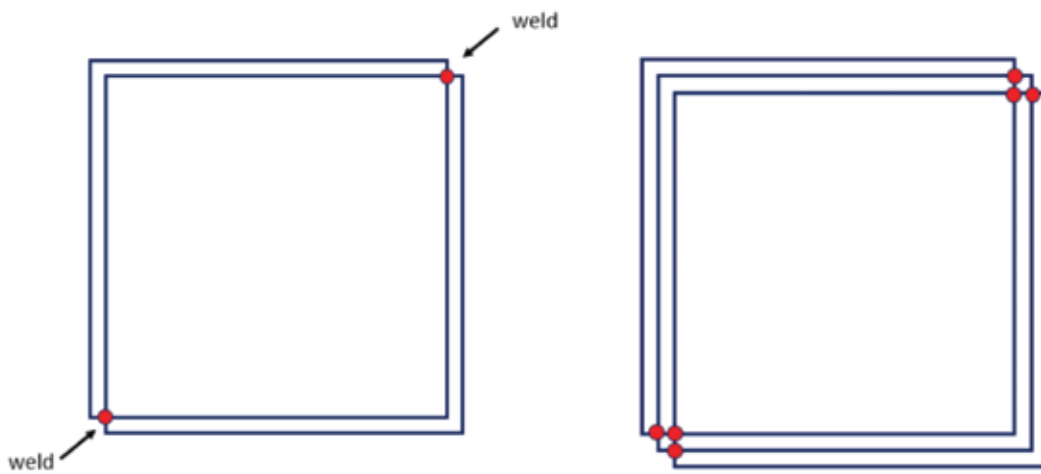## Problem One

Wendy is a metalwork sculptor. She makes this design from square frames. In each place where squares meet, she spot-welds the squares together. That gives the sculpture strength.
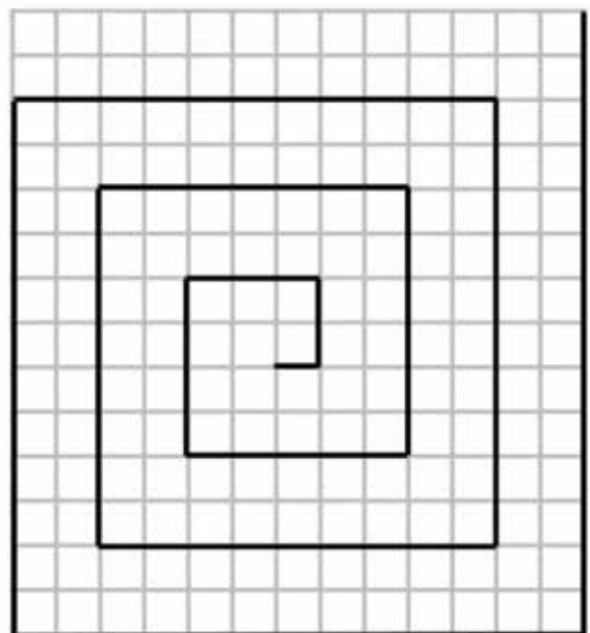
With two squares there are two spots to weld.
With three squares there are six spots to weld.

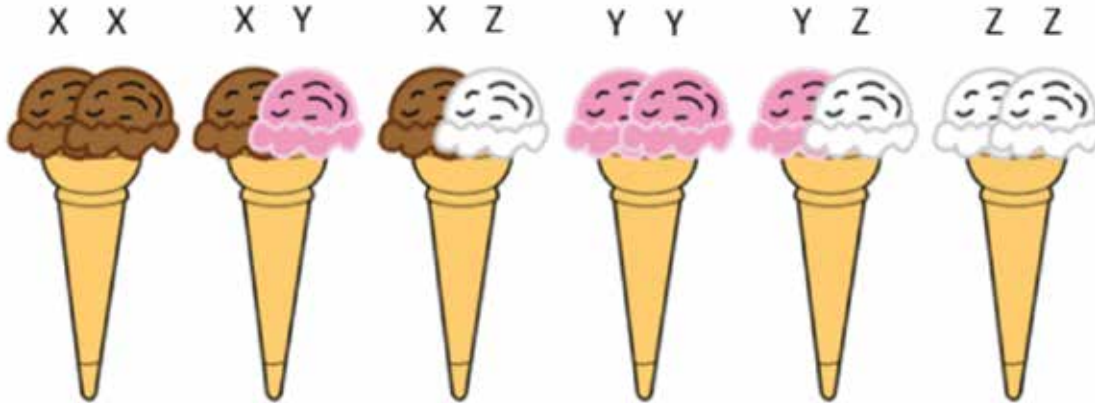The whole sculpture has ten squares. How many spots will Wendy weld?

Problem Two

Each square in the grid is 1 cm x 1 cm.
How long is the spiral?

Problem Three

At the ice cream parlour there were only three flavours of ice cream, **X**cel, **Y**um, and **Z**oosh. That meant that only six different double scoop ice creams were possible:

X X   X Y   X Z   Y Y   Y Z   Z Z

The parlour owners brought in three extra flavours, **U**ncool, **V**ex, and **W**icked. How many different double scoop ice creams were possible then?
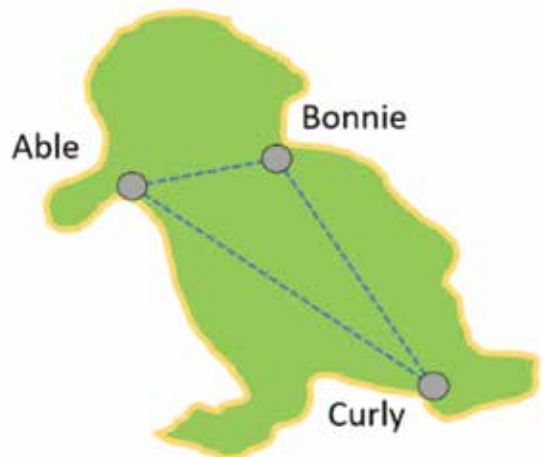
Problem Four

On Penguin Island each town is joined to every other town by a single road. That was fine when there were only three towns, Able, Bonnie, and Curly:

Now on the island there are four new towns, making seven altogether.

Each town is connected to each other town by a single road.

How many roads are on the island then?

Bonnie

Able

Curly

Problem Five

Every Thursday night the table tennis club meets for their singles tournament. There are ten players in the club:

Lou   **Quentin**
Matiu   **Riha**
Nel   **Samona**
Owen   **Tim**
Pene   **Una**

If every player plays each other player once, how many games will be played in the tournament?

Problem Six

Each shaded square has an area of 1 square unit.

What is the area inside the figure that is **not** shaded?