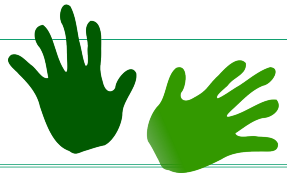
Investigation

Investigating area and perimeter

Things you will need:

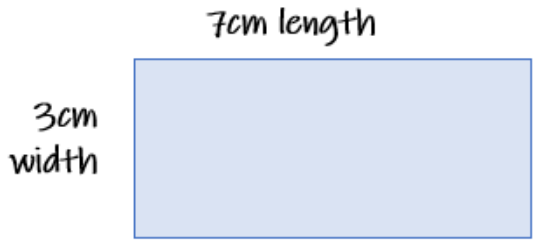
- Centimetre squared paper



Remember

The perimeter is the distance around all sides of a 2-D shape.
To find the perimeter of a rectangle, add the length and width, then double.

e.g.



Perimeter is (7cm + 3cm) doubled
so, perimeter= 20cm
Area is 3cm x 7cm = 21cm^2

- Use the squared paper to draw a rectangle 16cm by 8cm.
- What is its perimeter?
- Now draw as many rectangles as you can with a perimeter of 48cm.
- Each side should be a whole number of centimetres.
- Find the area of each. Which has the largest and which the smallest area?
- List the rectangles systematically, starting with the one with the longest length, what do you notice?
- What is the maximum and minimum possible areas for a rectangle with a perimeter of 48cm?

Challenge

A farmer has **60m** of fencing in 1m pieces. What is the largest rectangular area he can create for his chickens?

For a perimeter of 48cm, where each side is a whole number of centimetres, the greatest area is 144cm^2 (for a 12 × 12 square); the least is 23cm^2 (for a 1 × 23 rectangle).
For a perimeter of 60m, the largest rectangular area is a square measuring 15m x 15m (225m^2).
The largest area ***possible*** with 60 x 1m straight pieces of fencing is actually a 60-sided regular polygon!