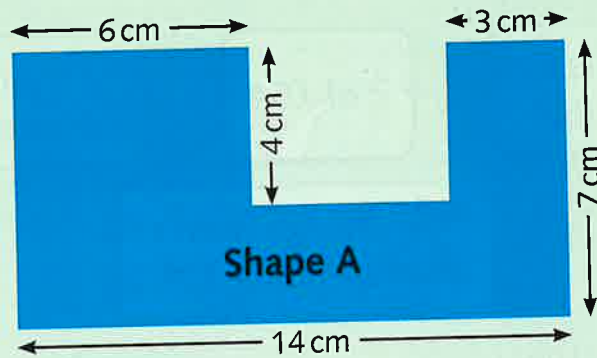## Challenge

Eve, Sofia and David each worked out the correct area of Shape A. On the right are the calculations that the pupils did to work out the shape's area.

You will need:
- squared paper
- ruler

Shape A (with labels: 6 cm, 3 cm, 4 cm, 7 cm, 14 cm)

Eve
$(6 \times 7) + (5 \times 3) + (3 \times 7)$
$= 42 + 15 + 21$
$= 78 \, cm^2$

Explain how each pupil worked out the area.

Sofia
$(6 \times 4) + (3 \times 4) + (14 \times 3)$
$= 24 + 12 + 42$
$= 78 \, cm^2$

David
$(14 \times 7) - (5 \times 4)$
$= 98 - 20$
$= 78 \, cm^2$

Think about ...

If necessary, use a sketch to help describe how each pupil worked out the area and perimeter.

For the second 'What if?' task, draw and label your shapes as accurately as possible.

What if?

The three pupils also calculated the perimeter of Shape A. However, they each got a different answer.

Who worked out the correct perimeter?

How did the other two pupils work out the perimeter?

Eve
$6 + 7 + 6 + 7 + 5 + 3 + 5 + 3$
$+ 3 + 7 + 3 + 7 = 62 \, cm$

David
$6 + 3 + 14 + 4$
$+ 7 = 34 \, cm$

Sofia
$6 + 4 + 5 + 4 + 3 + 7 + 14 + 7 = 50 \, cm$

The area of Shape A is $78 \, cm^2$. Draw a shape that also has an area of $78 \, cm^2$, but where the perimeter is different from Shape A.

Now draw a shape that has the same perimeter as Shape A, but a different area.