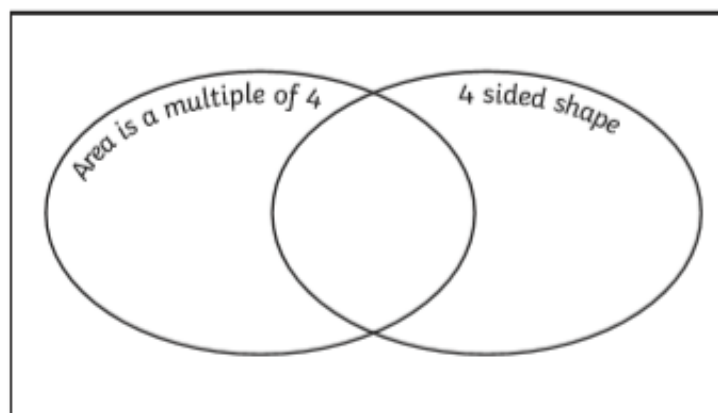
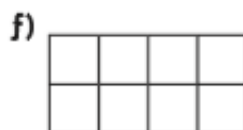
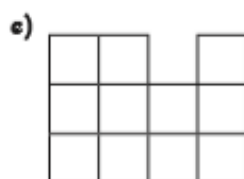
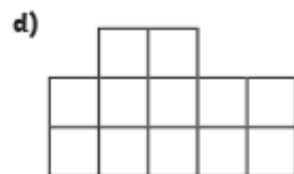
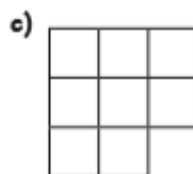
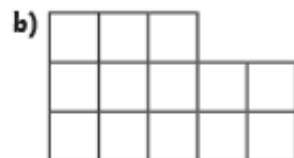




- 1) a) Give the area for each shape then complete the Venn diagram with the correct letters for each shape.



- b) What do you notice about shapes c and f?

- 2) Using cm^2 paper, investigate by drawing as many rectangles as possible with a variety of different length sides. All the lengths need to be a whole number and the rectangles must have an area of:

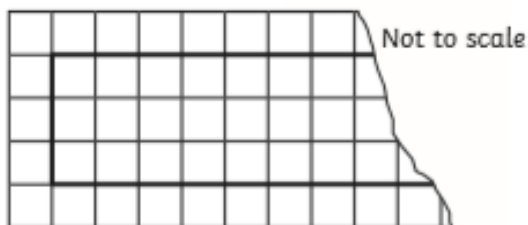
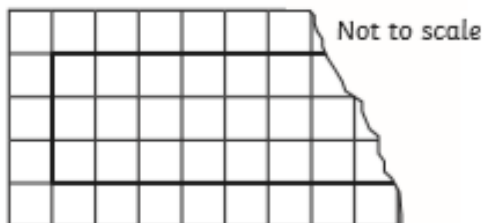
a) 12cm^2

b) 11cm^2

- c) Did you draw more rectangles for a or b?
Why do you think you were able to do this?



- 1) Hardeep was measuring the area of two rectangles with sides that are a whole number of centimetres long, before they were ripped.



Read these statements about Hardeep's rectangles. Decide if they are definitely true, definitely false or could be true.

- a) Both of these rectangles have the same area.
- b) The smallest possible area of one of these rectangles is 24cm^2 .
- c) One of these rectangles has an area of 32cm^2 .

- 2) Ola is drawing different rectangles with sides that are a whole number of centimetres long.

Ola

It is impossible to draw a rectangle with an even area if the side lengths are odd.

Investigate below, using drawings and/or words, to prove whether Ola is correct or not.



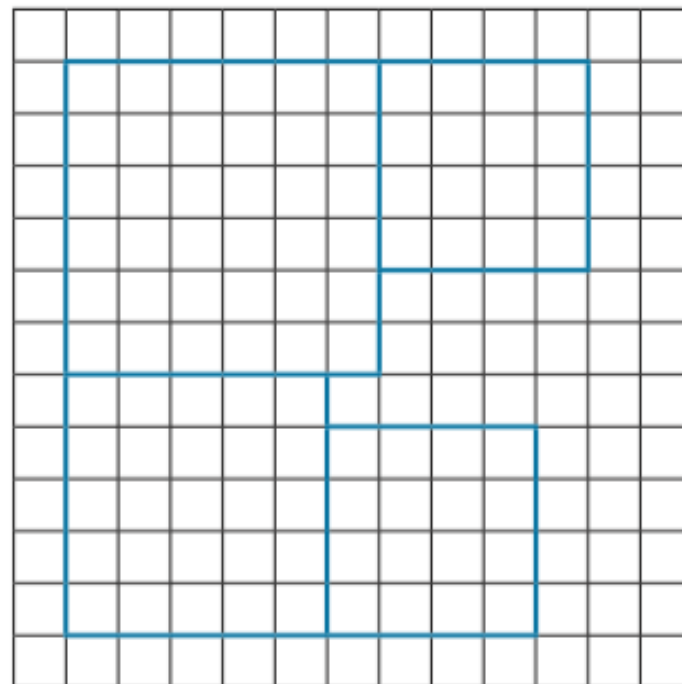


- 1) On cm^2 paper, draw two rectilinear shapes that fulfil all of the statements below:

- a perimeter of 24cm
- an area not greater than 40cm^2
- the shortest side measures 3cm



- 2) a) When complete, this rectilinear shape is made up of 9 squares of different sizes.



Not to scale

- The longest side of the shape measures 15cm .
- The shortest side measures 11cm .
- The largest squares have an area of 36cm^2 .
- The smallest squares have an area of 1cm^2 .

Use the clues to help you complete the shape by drawing the remaining 5 squares.

- b) Give the total area of the shape.

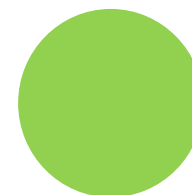
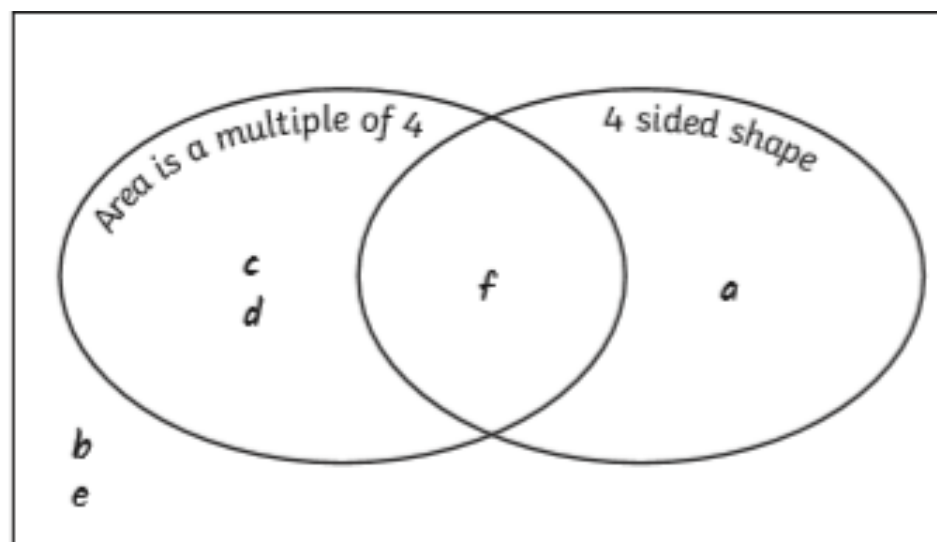
ANSWERS


- 1) a) 10cm^2 d) 12cm^2
b) 13cm^2 e) 11cm^2
c) 8cm^2 f) 8cm^2

b) They are in different parts of the Venn diagram. Although they have the same area, they have different numbers of sides.

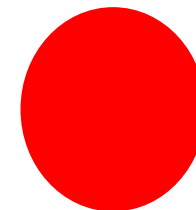
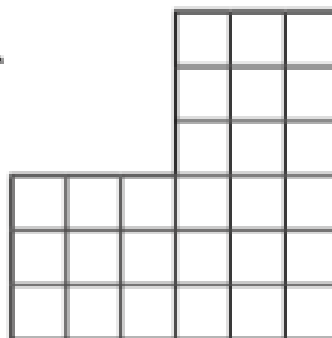
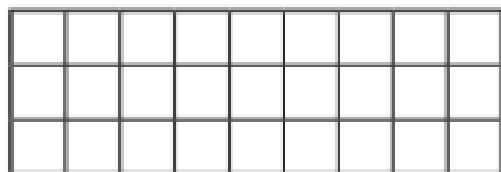
2) Accept rectangles in any orientation.

- a) Rectangles that measure $12\text{cm} \times 1\text{cm}$; $6\text{cm} \times 2\text{cm}$; $4\text{cm} \times 3\text{cm}$.
b) One $11\text{cm} \times 1\text{cm}$ rectangle with an area of 11cm^2 .
c) 11 is a prime number - therefore, it only has two factors: 11 and 1. This means you can only draw a rectangle that measures $11\text{cm} \times 1\text{cm}$ when using whole numbers.

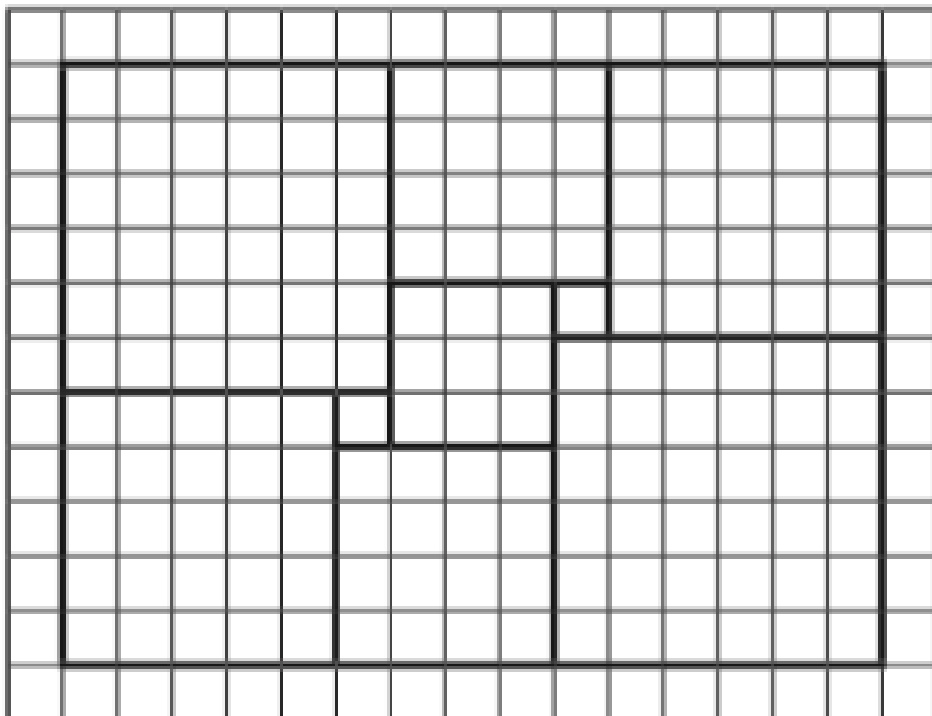


- 
- 1) a) This statement could be true. Although one of the rectangles has a visible length of 10cm and the other rectangle has a visible length of 8cm, this may just be where the paper was ripped. Because both rectangles share a definite width of 3cm, both rectangles could have once had the same area.
- b) This statement is true. In the first rectangle, one of the sides measures 3cm. We can also see that there are at least 8 fully visible or part-visible 1cm squares along the longest side. The smallest area this shape could be is therefore $8\text{cm} \times 3\text{cm} = 24\text{cm}^2$
- c) This statement can not be true. The shapes have a side length of 3cm. All of the possible areas for the shapes would need to be multiples of 3 and 32 is not a multiple of 3.
- 2) Ola is correct. When we find the area of a rectilinear shape, we need to multiply the side lengths together. When an odd side length is multiplied by another odd side length, we will always get an odd number area. Children may use the 1cm^2 grid to investigate the statement and to help them come to this conclusion.

1) *Example shapes given. Answers will vary.*



2) a)



b) 165cm^2