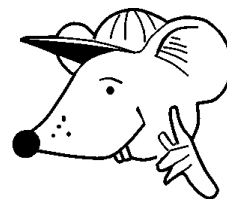




# MATHEMATICS



**N.S. Yr. 4 P.96**

**Measure and calculate the perimeter  
and area of simple shapes.**

## Equipment

Paper, pencil, ruler  
Squared paper, dotted paper useful  
Transparent grid (1cm) useful

# MathSphere

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## **Concepts**

Children often get muddled between working out the area and the perimeter of a shape and it needs to be stressed that perimeter is a measure of length whilst the area is the amount of space inside a shape. A long perimeter does not necessarily mean a large area.

When working out the perimeter of a rectangle they should notice that opposite sides are equal and that it is not necessary to measure all four sides. However to work out the perimeter they need to double the length and the breadth, and this is where the confusion with finding area often starts.

A range of terms need to be understood, including:

***Perimeter, length, distance, area, surface 2D, edge***

and children will be introduced to the square cm ( $\text{cm}^2$ ) sign.

It is a good idea to stress the importance of writing down what the unit of measurement is eg cm, m,  $\text{cm}^2$   $\text{m}^2$  etc and not just to give a numerical answer.

A variety of shapes can be used when finding the area, ranging from squares and rectangles to 'pond' shapes or other random shapes where the best way to find the area is to put a transparent grid over it and count squares.

After a lot of work finding area by counting squares, children can be shown that multiplying the length by the breadth will give the area - think of it as three rows of four squares etc.

## Perimeter

The perimeter of a shape is the path or distance all the way round the outside of it.

How far is the perimeter of each of these shapes. Measure to the nearest whole centimetre.

Shape 1

### Shape 1

Length of side 1 ..... cm

Length of side 2 ..... cm

Length of side 3 ..... cm

Length of side 4 ..... cm

Total perimeter ..... cm

Shape 2

### Shape 2

Length of side 1 ..... cm

Length of side 2 ..... cm

Length of side 3 ..... cm

Length of side 4 ..... cm

Total perimeter ..... cm

Shape 3

### Shape 3

Length of side 1 ..... cm

Length of side 2 ..... cm

Length of side 3 ..... cm

Length of side 4 ..... cm

Total perimeter ..... cm

## Perimeter

The perimeter of a shape is the path or distance all the way round the outside of it.

How far is the perimeter of each of these shapes. Measure to the nearest whole centimetre.

Shape 1

### Shape 1

Length of side 1 ..... cm

Length of side 2 ..... cm

Length of side 3 ..... cm

Length of side 4 ..... cm

Total perimeter ..... cm

Shape 2

### Shape 2

Length of side 1 ..... cm

Length of side 2 ..... cm

Length of side 3 ..... cm

Length of side 4 ..... cm

Total perimeter ..... cm

Shape 3

### Shape 3

Length of side 1 ..... cm

Length of side 2 ..... cm

Length of side 3 ..... cm

Length of side 4 ..... cm

Total perimeter ..... cm

### Finding the perimeter

Use suitable measuring equipment to find the perimeter of these shapes.

Estimate and record your estimate before measuring.

Before measuring each perimeter decide how accurate you need to be. For instance you will not be able to measure the perimeter of the room to the nearest mm or even cm.

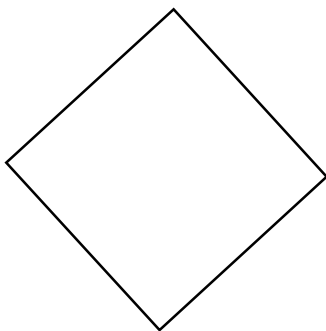
Shape	Estimate	Measure
This paper		
A table top		
The room		
Front cover of a book		
A CD or floppy disk		
Top of a box		
A photograph		

## Perimeter

**How long is the perimeter of:**

1. A 5 cm by 5 cm square.
2. A 5 cm by 3 cm rectangle.
3. A triangle with sides 6 cm, 8cm and 12 cm.
4. An 8 metre square.
5. A rectangle with sides of 7 cm and 10 cm.
6. A triangle with sides 4 metres, 7 metres and 5 metres.
7. Estimate and find the perimeter of this shape (to nearest whole cm):

A 5 cm by 3 cm rectangle means a rectangle with length 5 cm and breadth 3 cm



Clue to help you:  
All the sides are the same length.

Estimate.....cm

Measure.....cm

8. Estimate and find the perimeter of this shape (to nearest whole cm):



Clue to help you:  
Opposite sides are the same length.

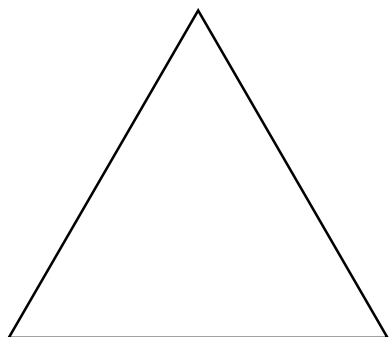
Estimate.....cm

Measure.....cm

## Perimeter

**How long is the perimeter of:**

1. A 6 cm by 6 cm square.
2. A 7 cm by 2 cm rectangle.
3. A triangle with sides 5 cm, 9cm and 11 cm.
4. A 7 metre square.
5. A rectangle with sides of 8 cm and 11 cm.
6. A triangle with sides 5 metres, 5 metres and 8 metres.
7. Estimate and find the perimeter of this shape:

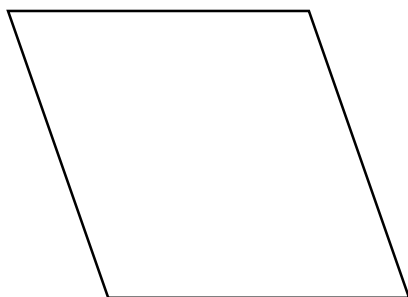


Clue to help you:  
All the sides are the same length.

Estimate.....cm

Measure.....cm

8. Estimate and find the perimeter of this shape:



Clue to help you:  
Opposite sides are the same length.

Estimate.....cm

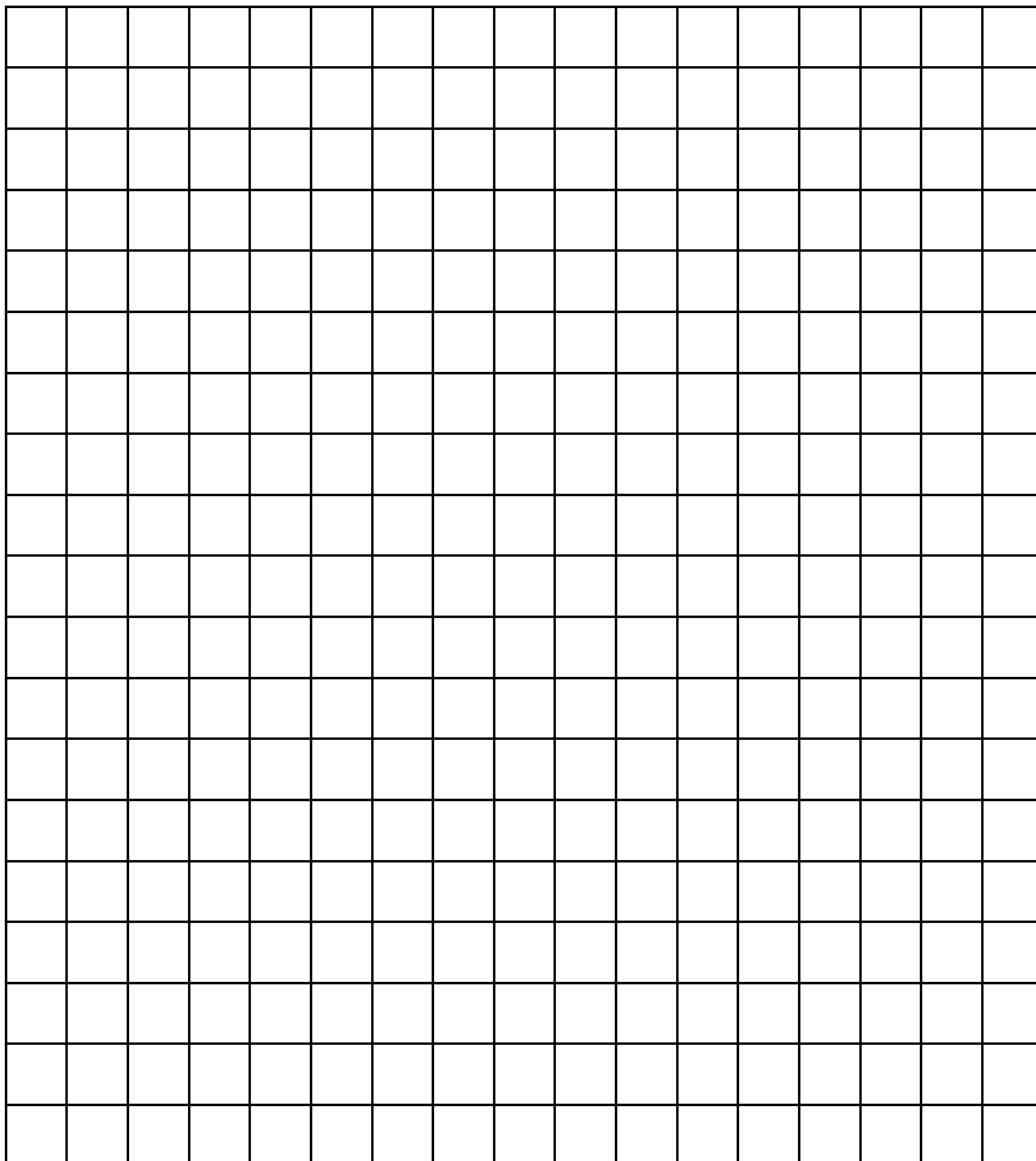
Measure.....cm

A 7 cm by 2 cm rectangle  
means a rectangle with length  
7 cm and breadth 2 cm



### **Drawing perimeters**

**A shape has to have a perimeter of 28 cm. Accurately draw as many different shapes as you can which have a perimeter of 28 cm.  
The 1 cm squares below should help you.**





## Area

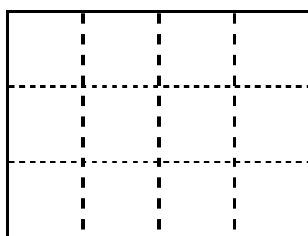
Area is the amount of space inside a two dimensional shape.  
(Area is **not** the distance round the outside of an object.)

We measure area in squares.

For small shapes we usually measure in centimetre squares.

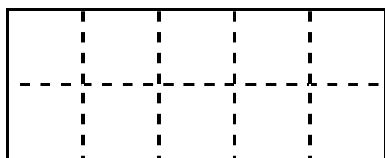
For larger shapes we may use metre squares.

Count the number of centimetre squares in these shapes:



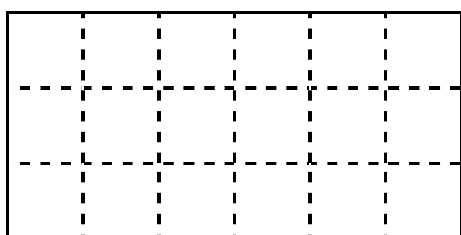
1. Number of squares =

Area = square centimetres



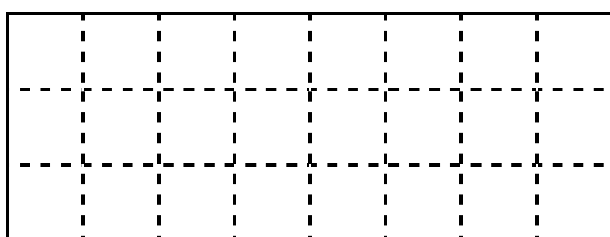
2. Number of squares =

Area = square centimetres



3. Number of squares =

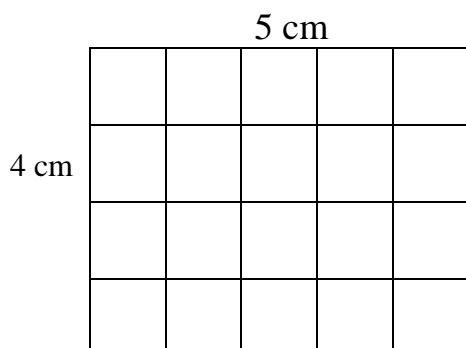
Area = square centimetres



4. Number of squares =

Area = square centimetres

## Area of rectangles



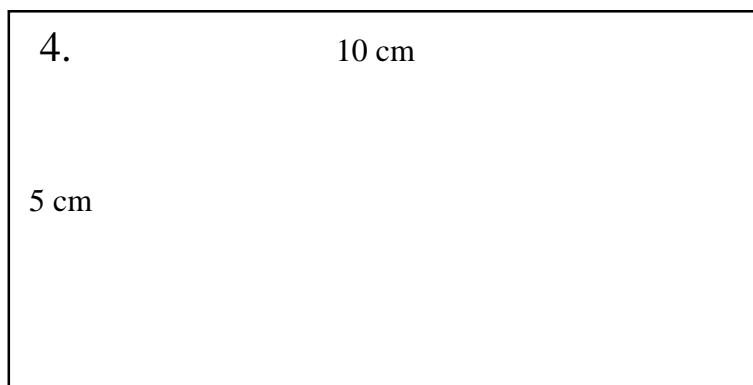
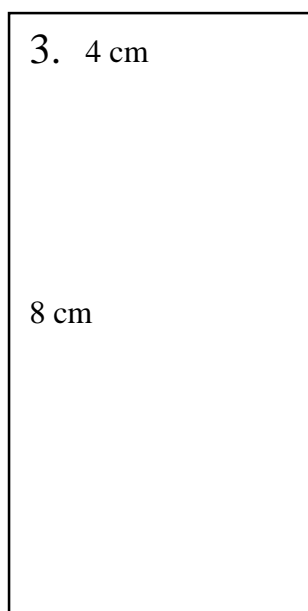
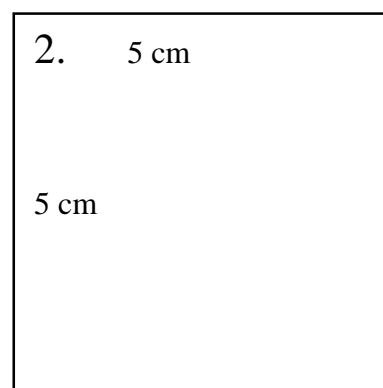
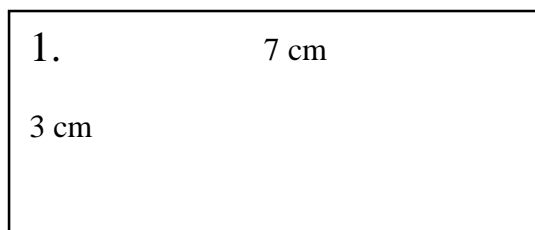
This rectangle has an area of 20 sq cm.

You can count the squares, but there is another way of working this out.

Notice how there are 5 columns and four rows, so that the length is 5 cm and the width is 4 cm.

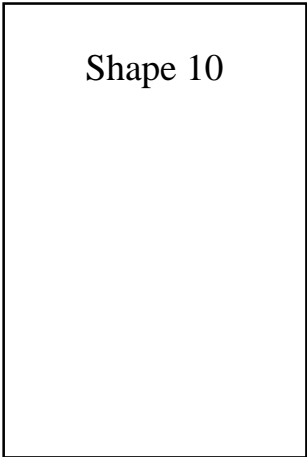
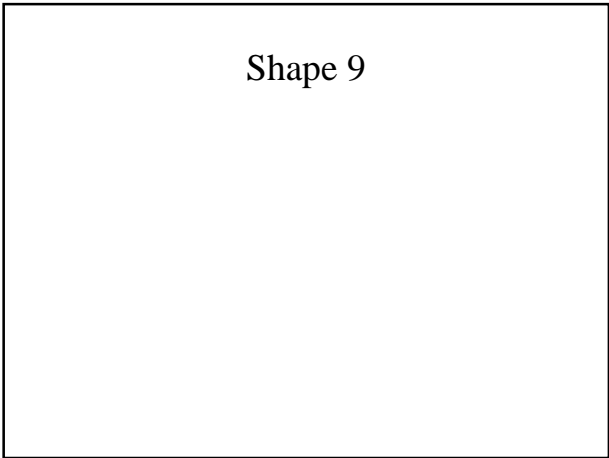
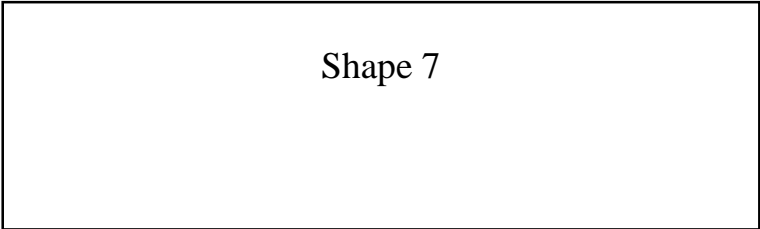
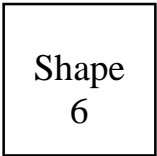
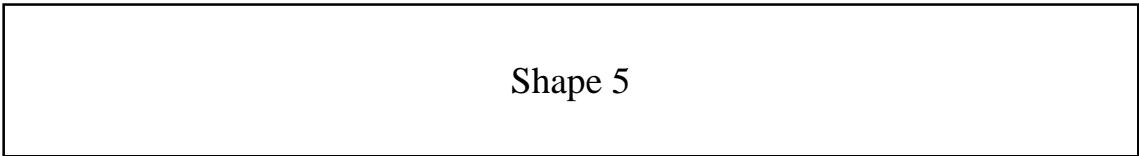
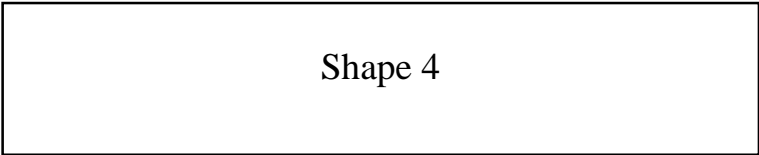
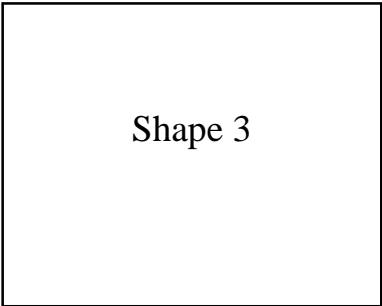
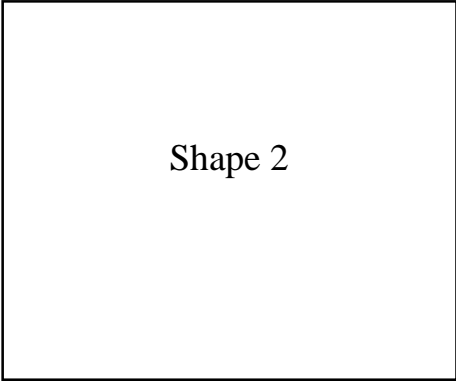
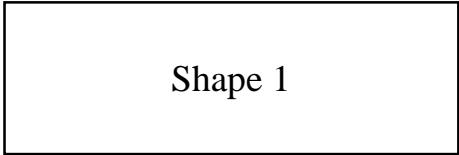
Multiplying the length by the width will give the area - 5 lots of 4 squares.

Find the area of these shapes by multiplying the length by the width.



Area

Find the area of these shapes:



S  
h  
a  
p  
e  
8

**Area**

**Find the area of these shapes:**

Shape 1

Shape  
2

Shape 3

Shape 4

Shape 5

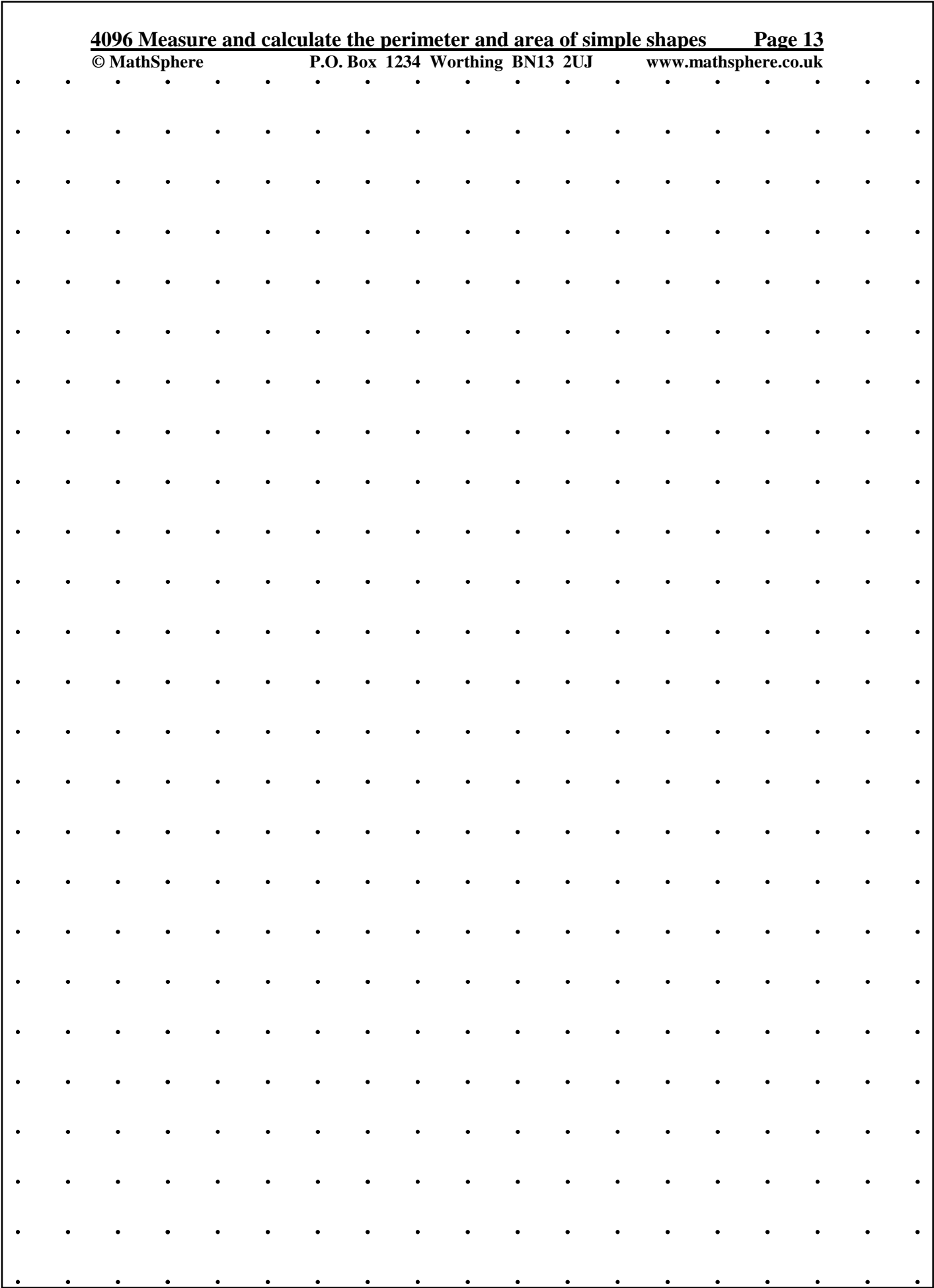
Shape 6

Shape 7

Shape  
8

Shape 9

Shape 10

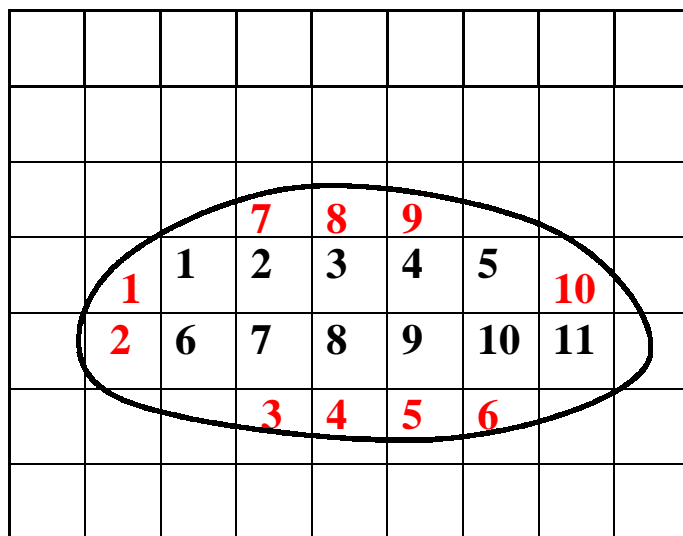


### Finding the area of an irregular shape.



The best way to find the area of a shape like this is:

1. Count up the whole squares inside the shape.
2. Count up how many squares are a half or more inside the shape. Think of each of these as being one whole square.
3. Ignore any that are less than half inside the shape.
4. Add the whole squares to the total of half or more squares.

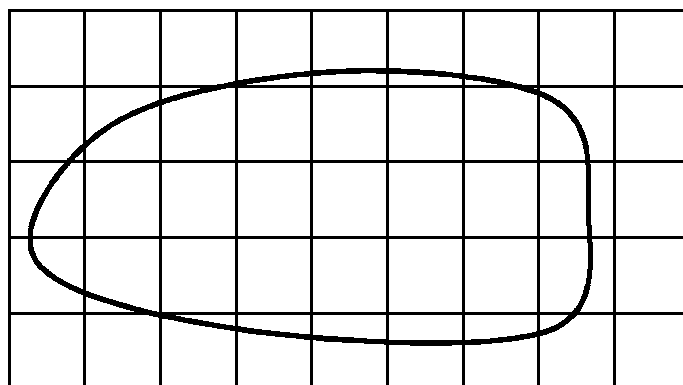


1. 11 whole squares.

2. 10 half or more squares

Total 21 squares

Area is about 21 sq. cm.



In the same way find the approximate area of this shape:

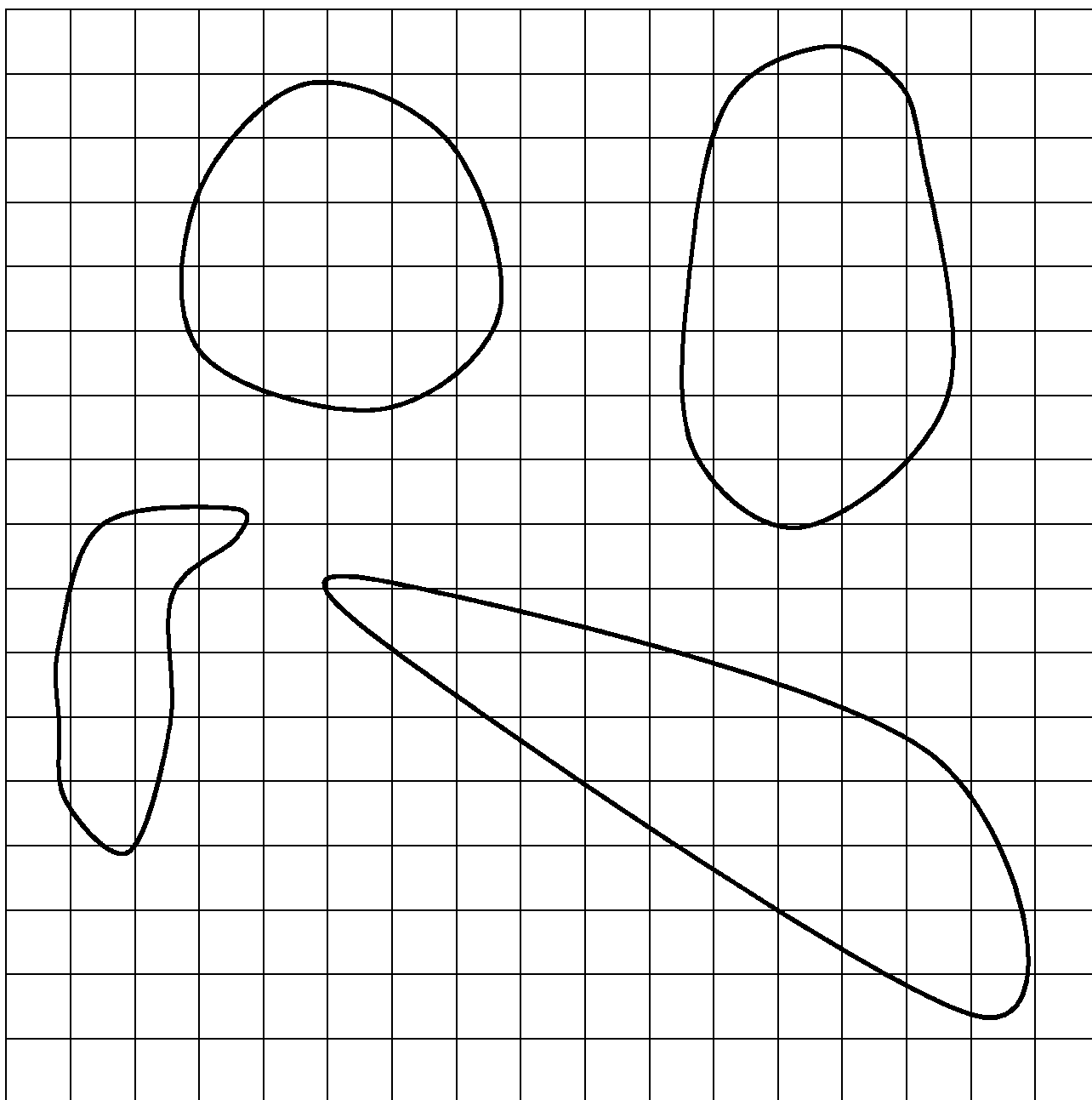
1. Whole squares:

2. 1/2 or more squares:

Total:



Try finding the area of these shapes.  
Remember what to do with the less than  
whole squares.



## **Answers**

### **Page 3**

Perimeter of shape 1 = 16 cm    shape 2 = 18 cm    shape 3 = 24 cm

### **Page 4**

Perimeter of shape 1 = 16 cm    shape 2 = 18 cm    shape 3 = 26 cm

### **Page 6**

1. 20 cm    2. 16 cm    3. 26 cm    4. 32 m    5. 34 cm    6. 16 m    7. 12 cm    8. 16 cm

### **Page 7**

1. 24 cm    2. 18 cm    3. 25 cm    4. 28 m    5. 38 cm    6. 18 m    7. 15 cm    8. 16 cm

### **Page 9**

1. 12 sq cm    2. 10 sq cm    3. 18 sq cm    4. 24 sq cm

### **Page 10**

1. 21 sq cm    2. 25 sq cm    3. 32 sq cm    4. 50 sq cm

### **Page 11**

1. 12 sq cm    2. 30 sq cm    3. 20 sq cm    4. 20 sq cm    5. 30 sq cm  
6. 4 sq cm    7. 30 sq cm    8. 13 sq cm    9. 48 sq cm    10. 24 sq cm

### **Page 12**

1. 17 sq cm    2. 10 sq cm    3. 72 sq cm    4. 2 sq cm    5. 36 sq cm  
6. 21 sq cm    7. 27 sq cm    8. 8 sq cm    9. 18 sq cm    10. 32 sq cm

### **Page 14**

Whole squares = 14    1/2 or more squares = 7 (approx)    total approximate area = 21 sq cm

### **Page 15**

1. whole squares = 11    1/2 or more squares = 9 (approx)    total approximate area = 20 sq cm  
2. whole squares = 16    1/2 or more squares = 7 (approx)    total approximate area = 23 sq cm  
3. whole squares = 3    1/2 or more squares = 5 (approx)    total approximate area = 8 sq cm  
4. whole squares = 13    1/2 or more squares = 15 (approx)    total approximate area = 28 sq cm