

# SMILE WORKCARDS

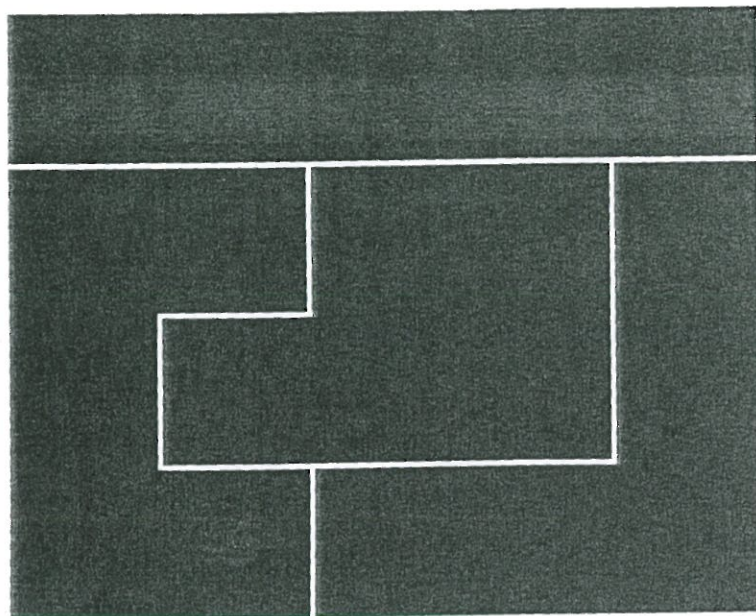
## Area and Perimeter Pack Two

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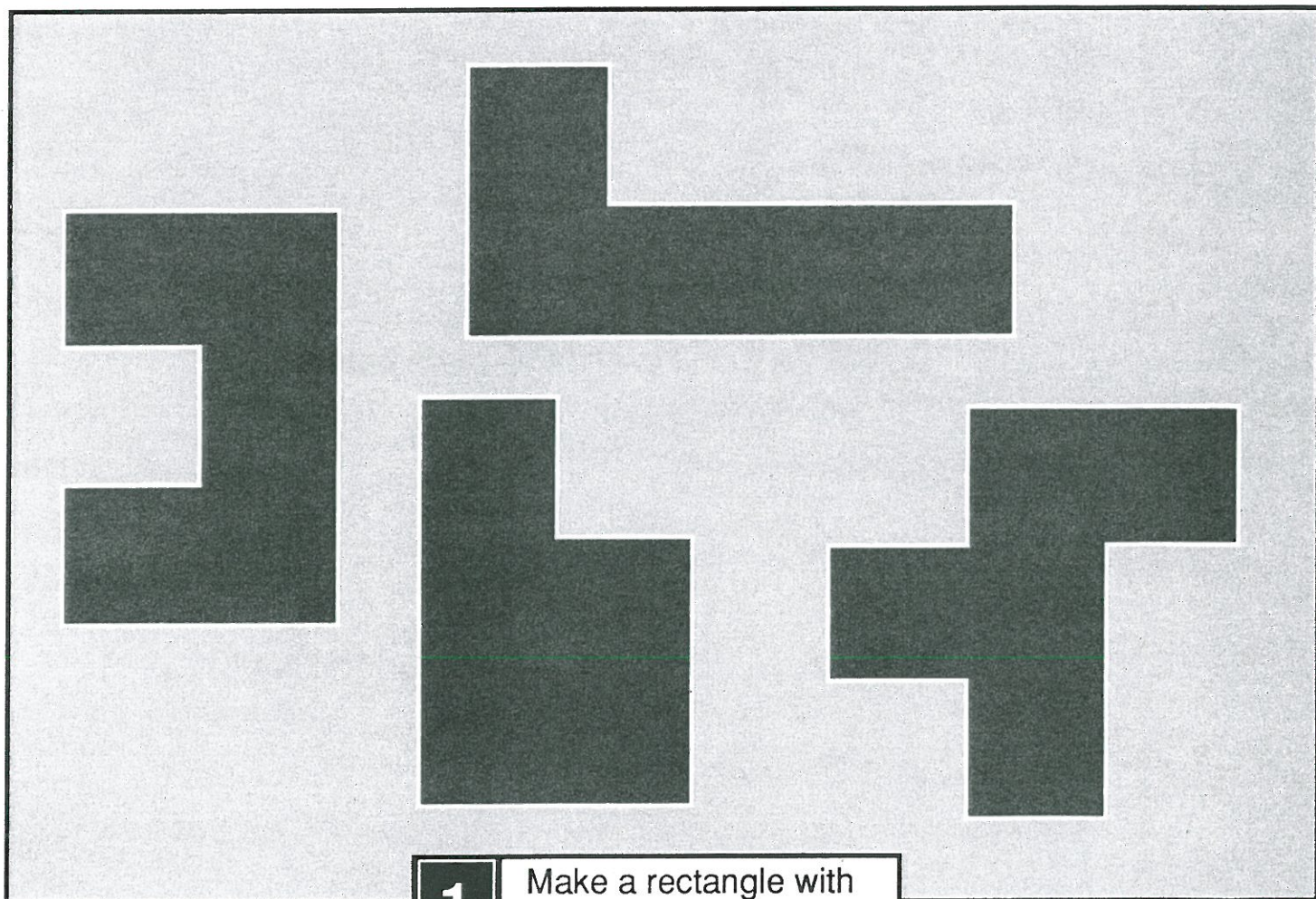
You will need a set of 12 wooden pentominoes.

# Pentomino Puzzles



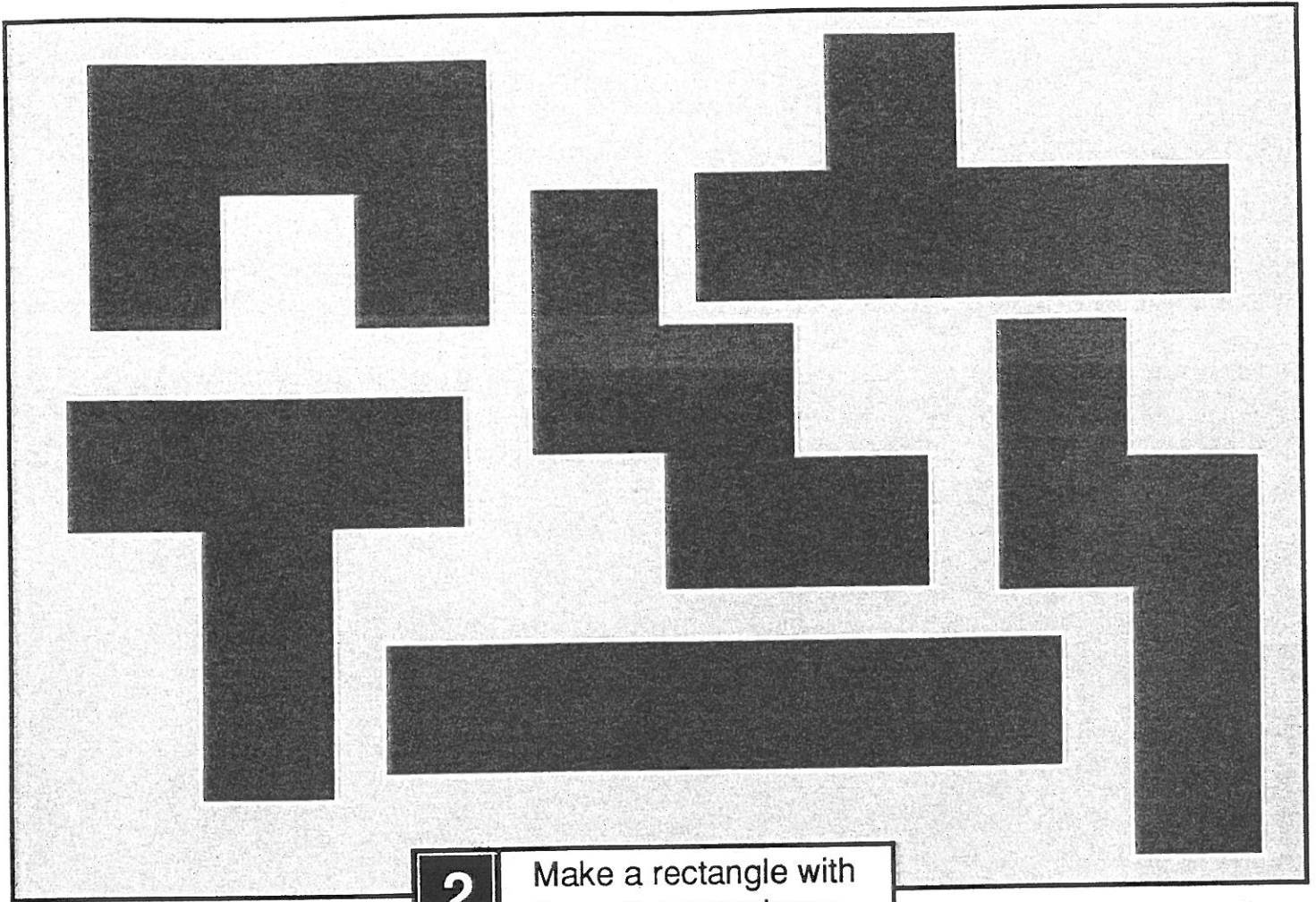
This 4 x 5 rectangle has been made using four of the pentominoes.

Use 2cm squared paper to show how you solved the three puzzles inside.



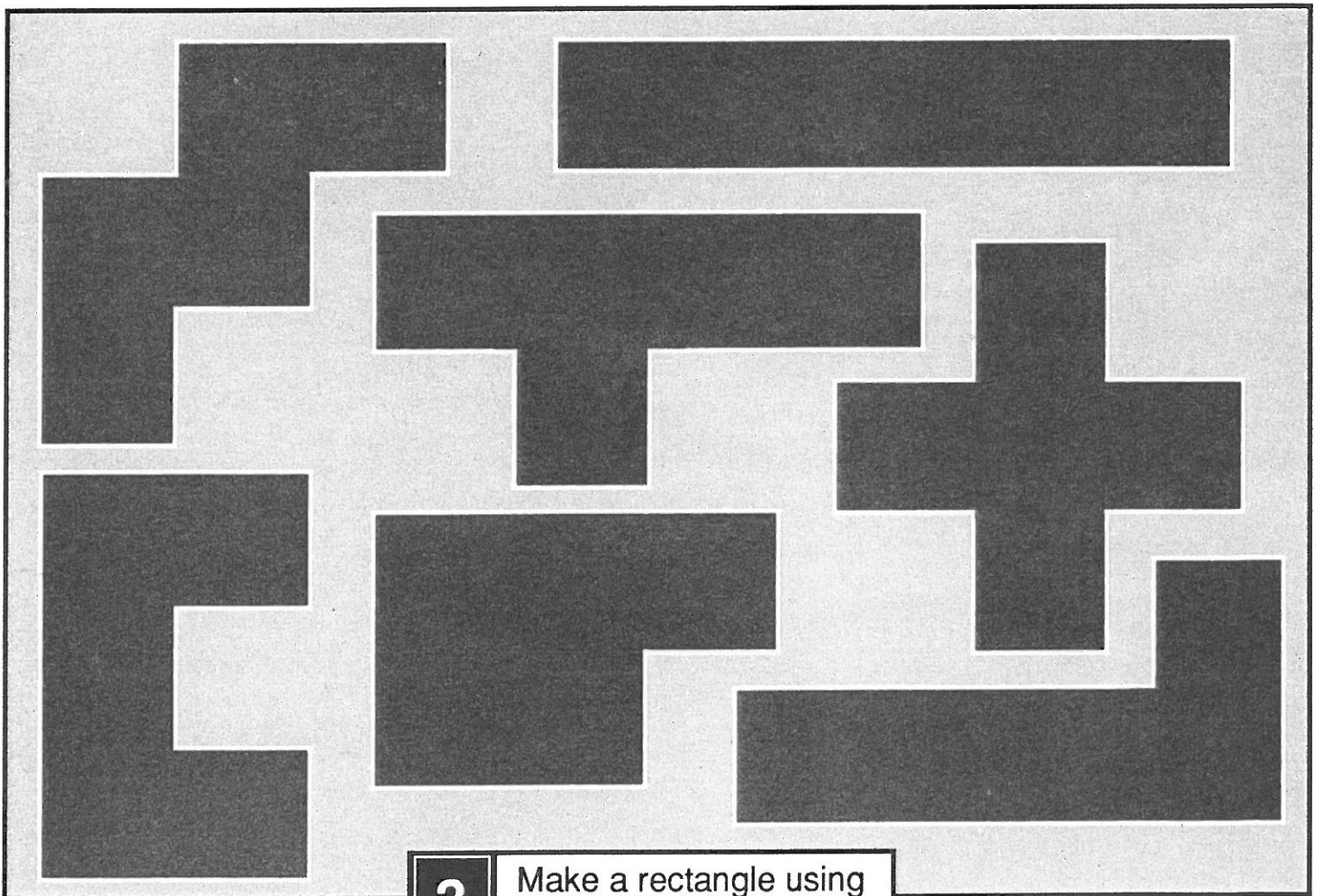
**1**

Make a rectangle with these 4 pentominoes.



**2** Make a rectangle with these 6 pentominoes.

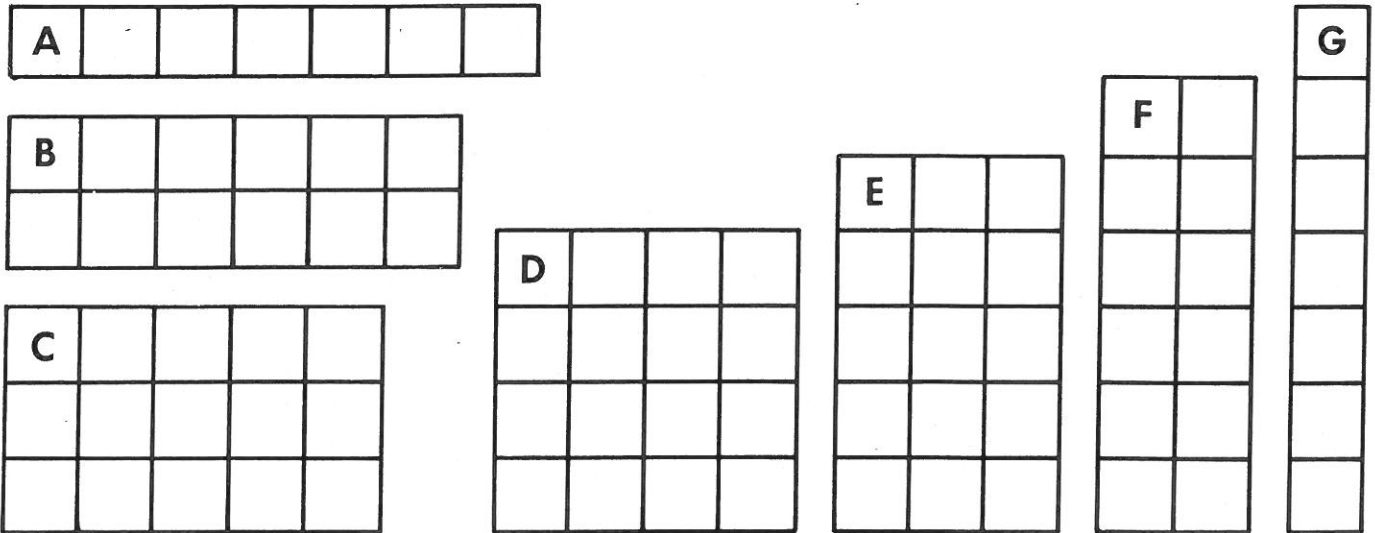
Turn over



**3** Make a rectangle using these 7 pentominoes.

# Area and Perimeter 1

- (1) Using cm squared paper draw each of these rectangles. Label each one with the letter shown.



- (2) Copy and complete this table.

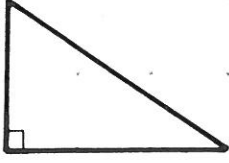
Rectangle	Height cm	Width cm	Area cm <sup>2</sup>	Perimeter cm
A				
B				
C				
D				
E				
F				
G				

- (3) What do the rectangles have in common?  
 (4) Which rectangle has the largest area?  
 (5) Which rectangle has the smallest area?

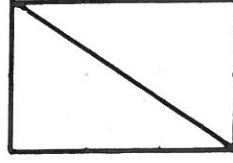
You will need a pinboard, rubber bands and dotty paper.

# Right-Angled Triangles

Make this right-angled triangle on a pinboard.



Add another triangle to make a rectangle.

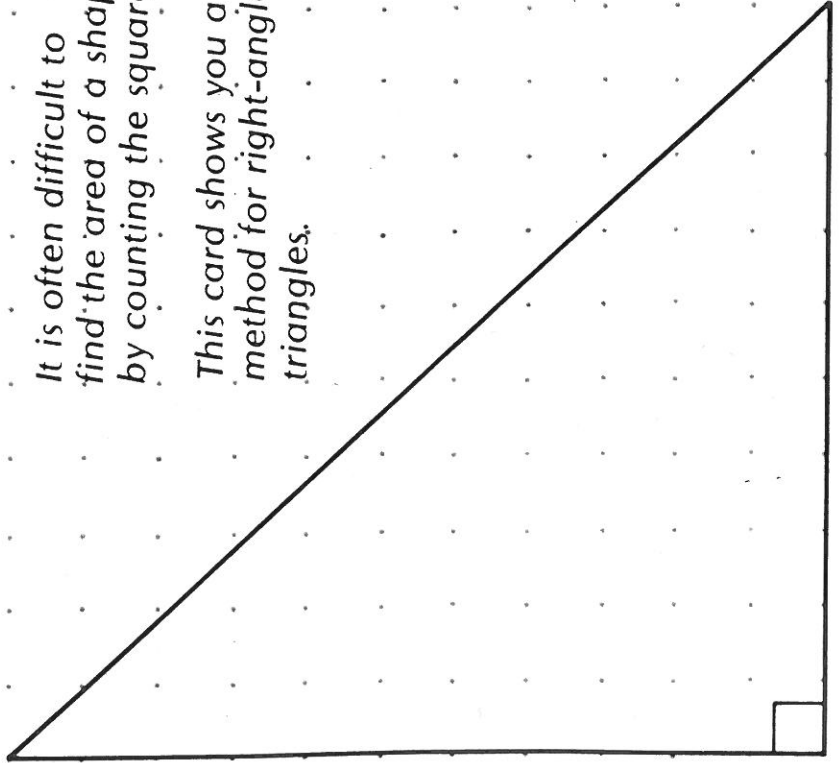


The area of the rectangle is 6 squares.

So, what is the area of the triangle?

It is often difficult to find the area of a shape by counting the squares.

This card shows you a method for right-angled triangles.

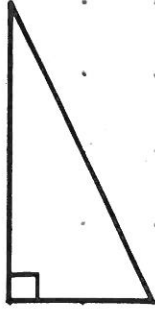


- 1) Make this right-angled triangle on a pinboard.  
Add another triangle to make a rectangle.  
What is the area of the rectangle?  
So, what is the area of the triangle?

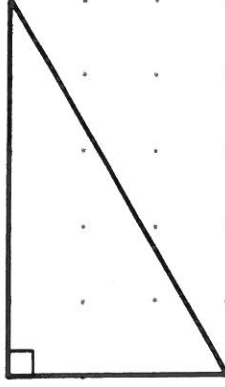


Find the areas of these right-angled triangles:

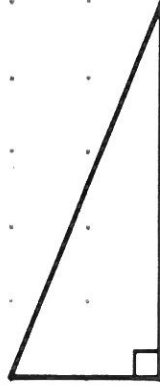
2)



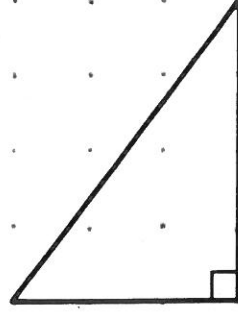
3)



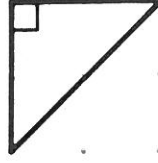
4)



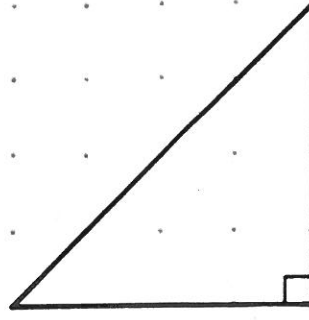
5)



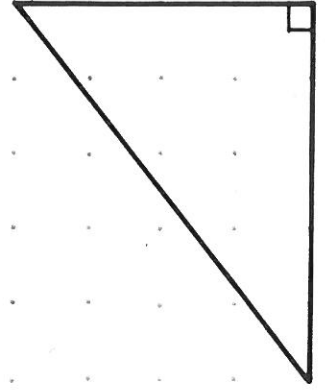
6)



7)



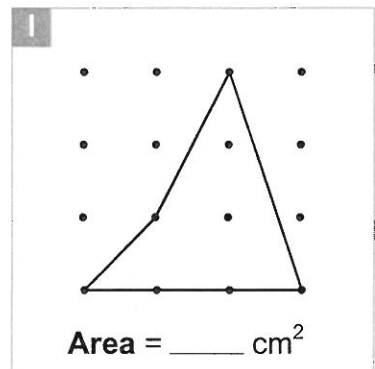
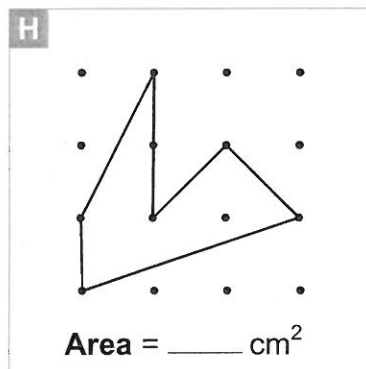
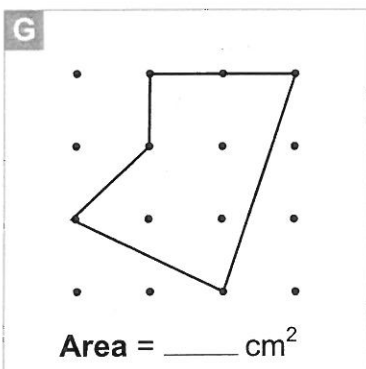
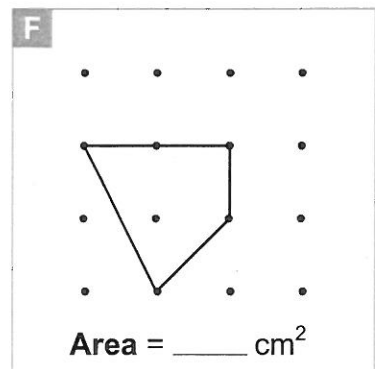
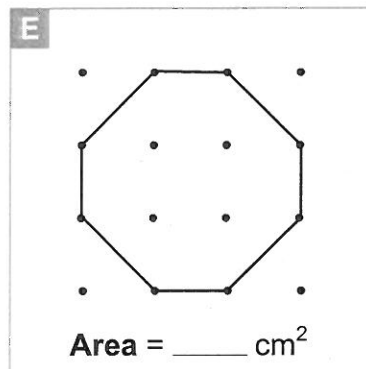
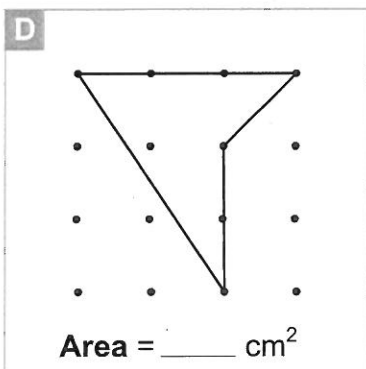
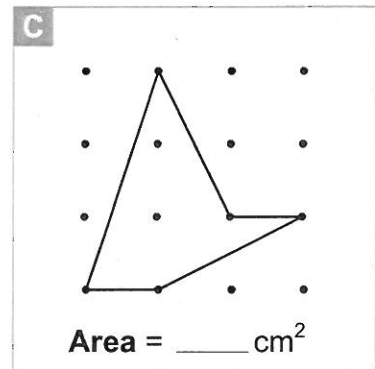
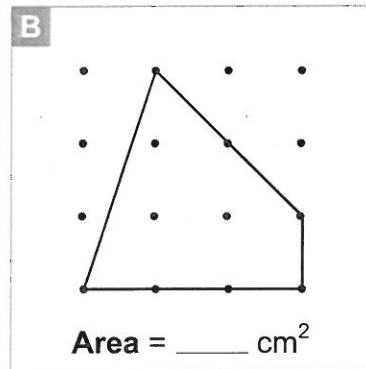
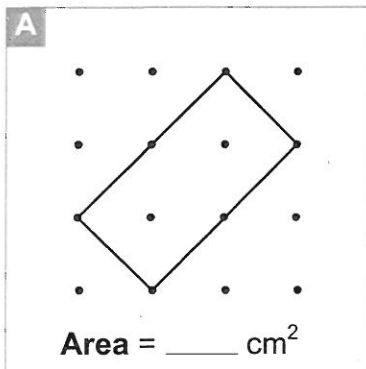
8)



Record the shapes on dotty paper and write the areas alongside.

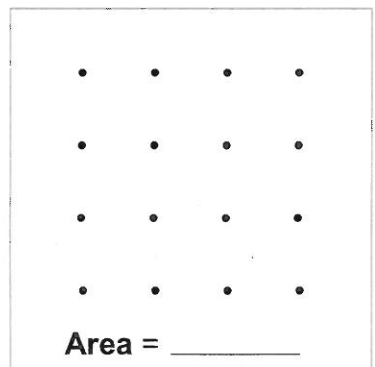
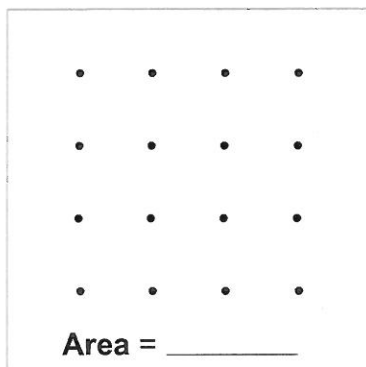
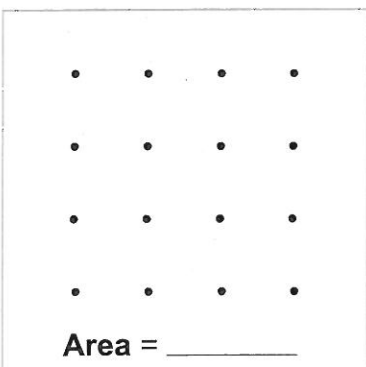
# Areas of Polygons

1. Calculate the areas of the polygons below.



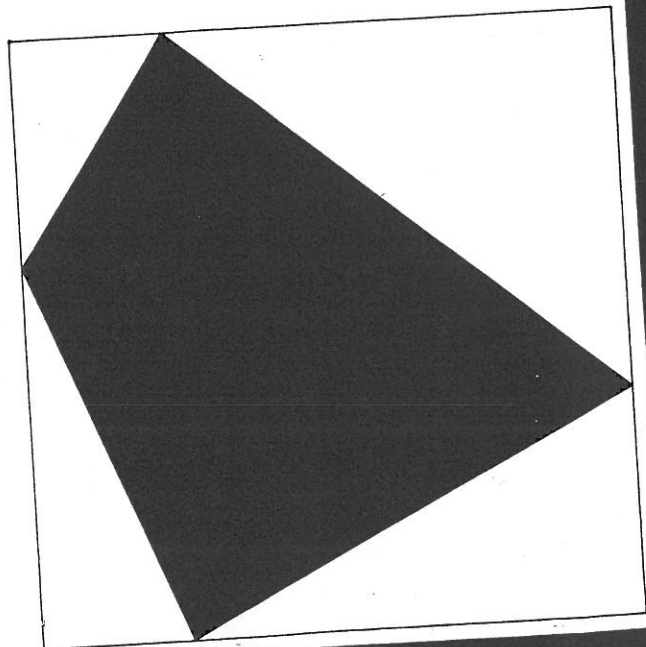
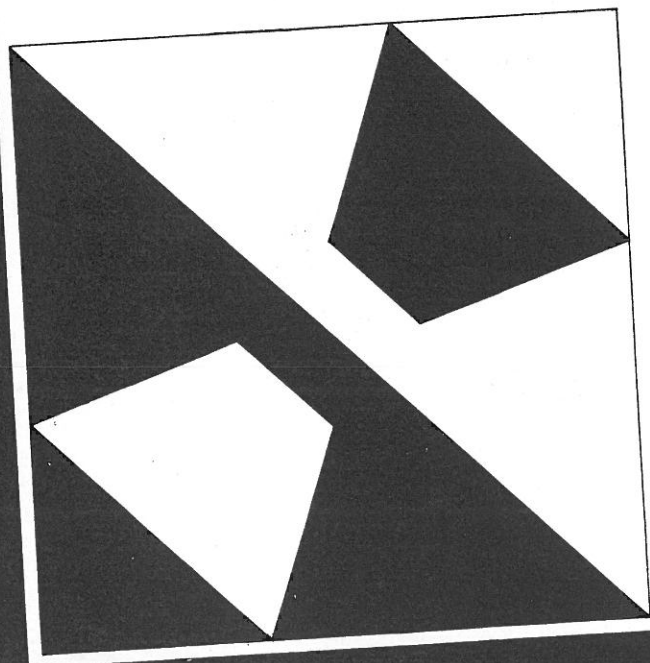
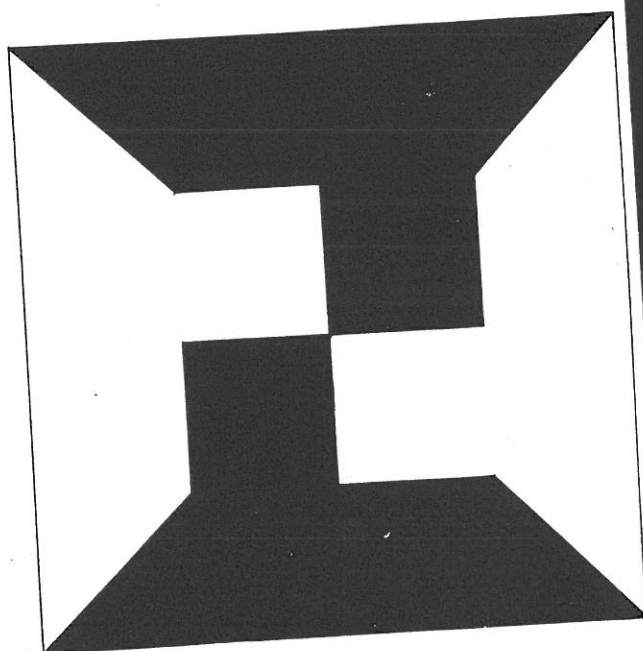
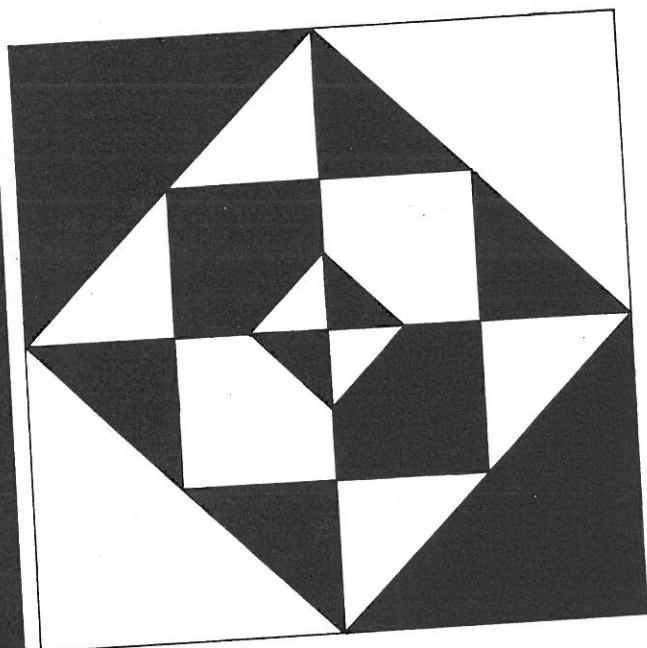
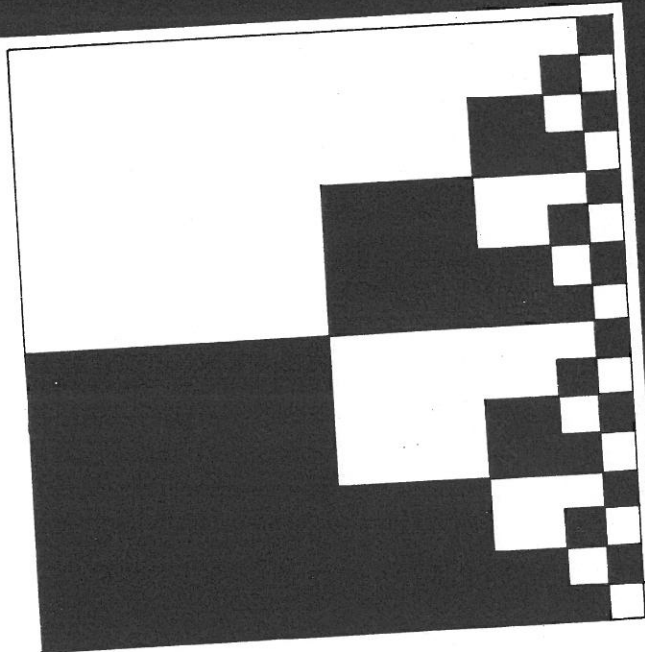
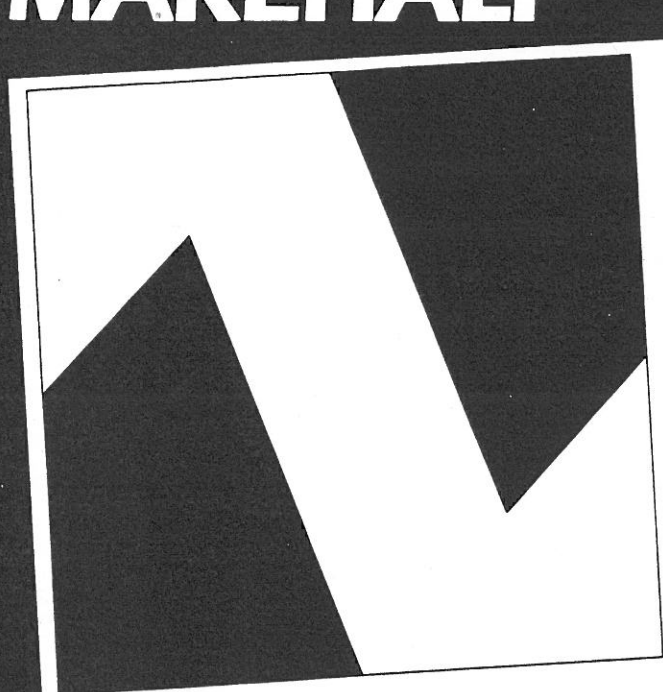
2. Sort the polygons in order of area, largest first.

3. Design 3 more polygons on the 4 x 4 grids below and find their area.



# MAKEHALF

Smile 1741

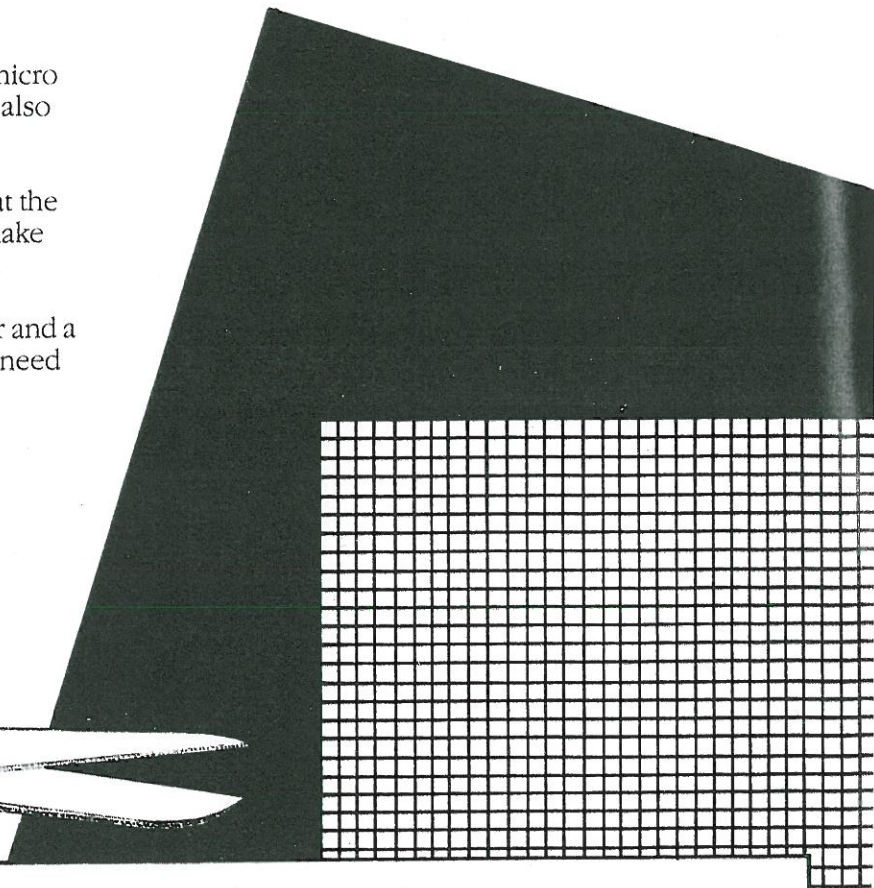
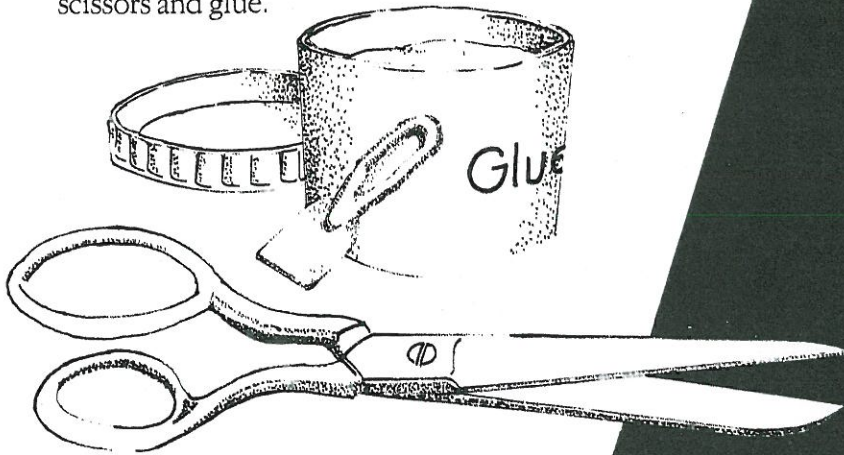




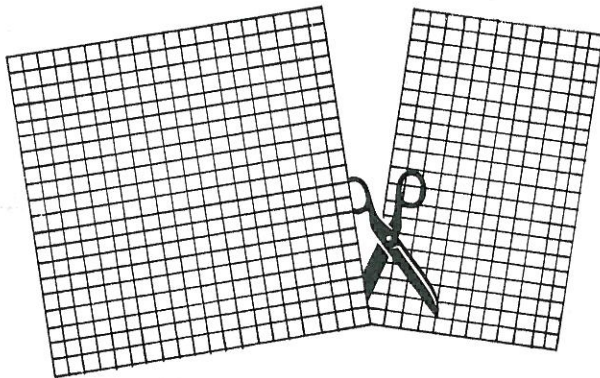
This activity is designed to be used with the micro program TAKEHALF. A set of nine posters has also been designed to accompany this material.

When you have seen TAKEHALF and looked at the posters, this card will show you one way to make your own designs.

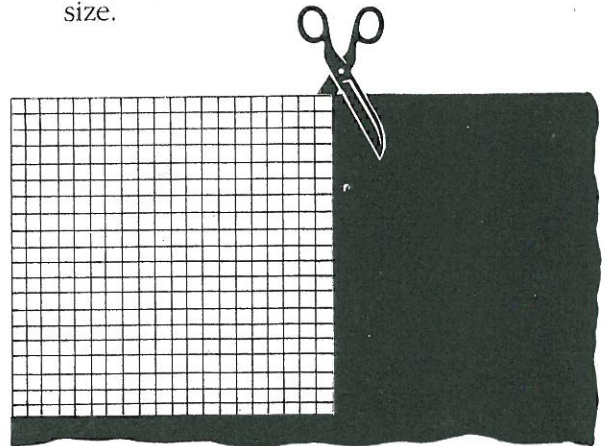
You will need a large piece of coloured paper and a smaller sheet of squared paper. You will also need scissors and glue.



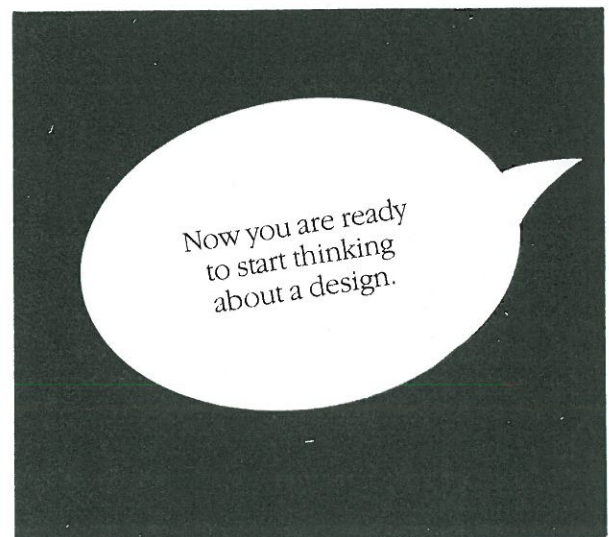
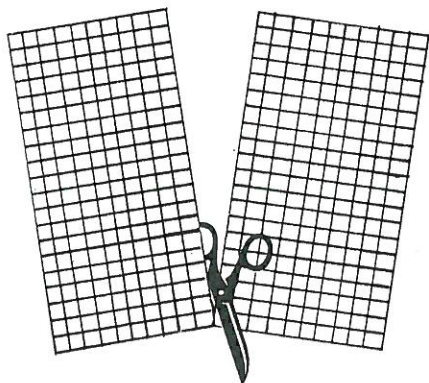
1. Start by cutting the largest square you can out of the squared paper.



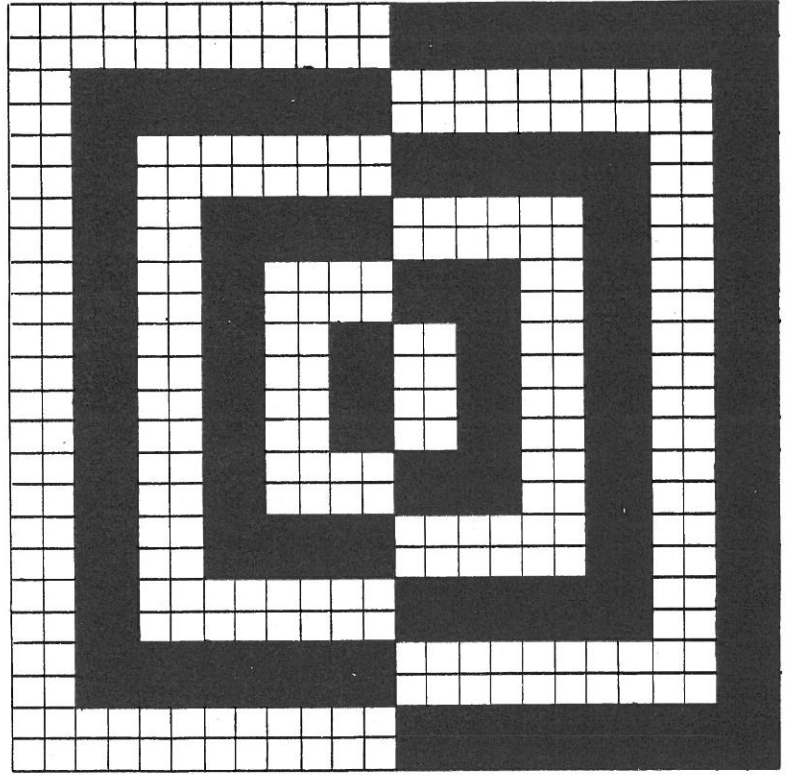
2. Put the squared paper on top of the coloured paper and cut a coloured square of the same size.



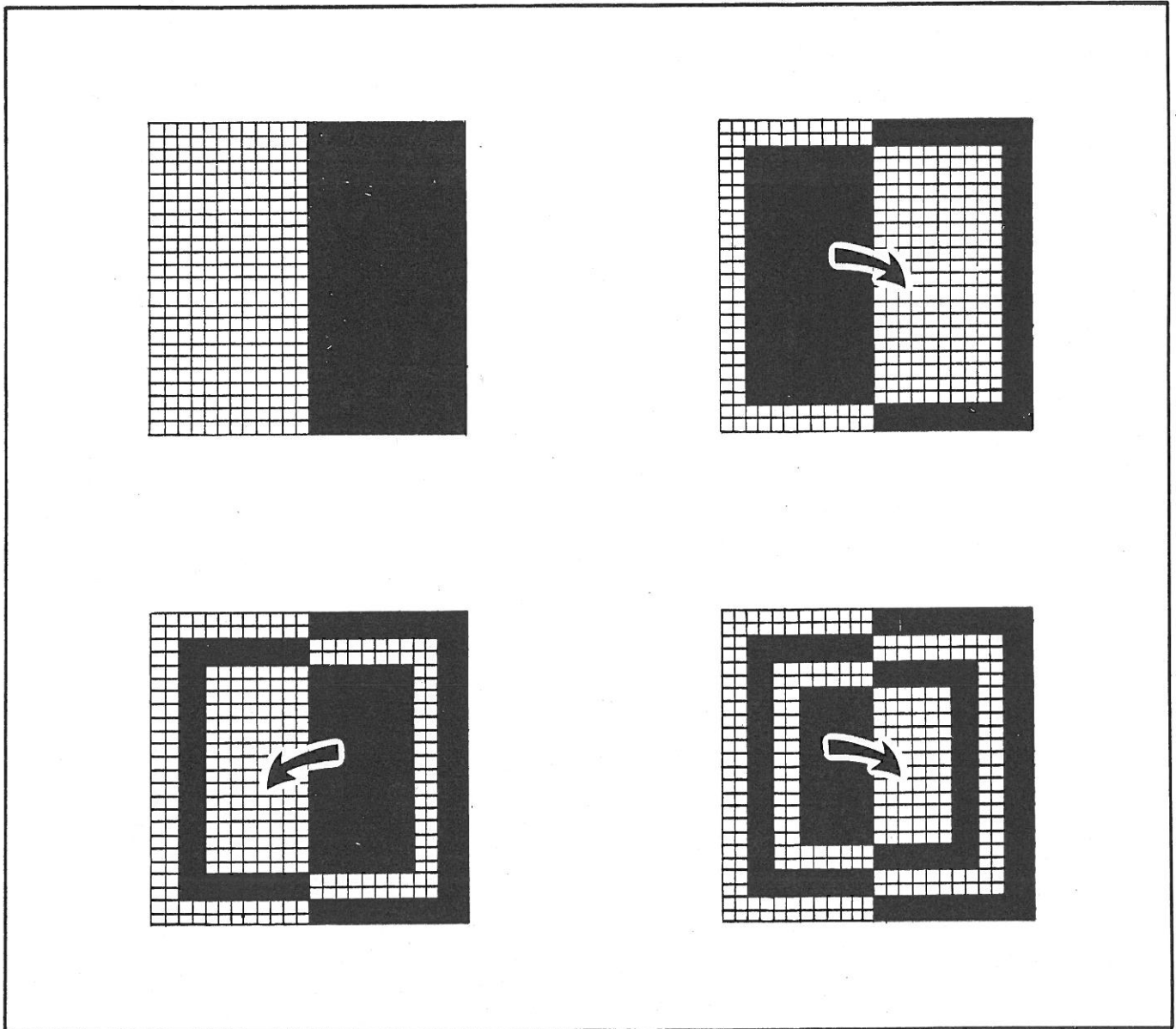
3. Then cut the squared paper in half.



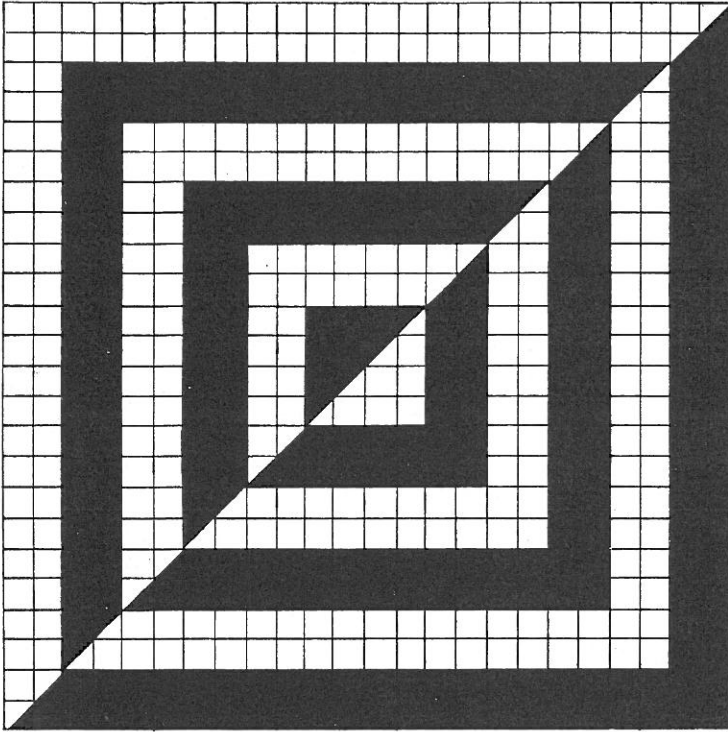
This design is not too difficult.



This is how to make it.

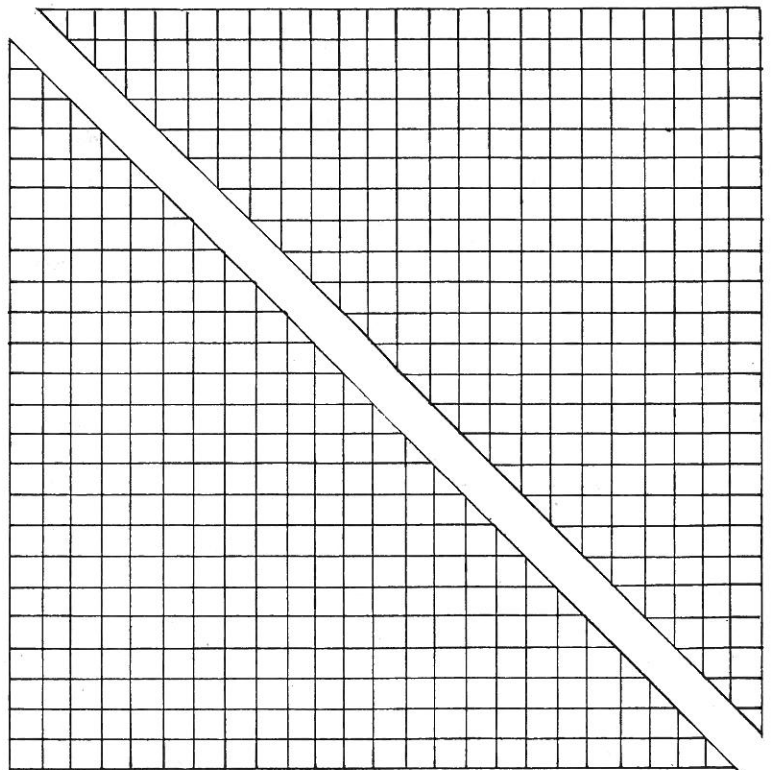


*Turn over*



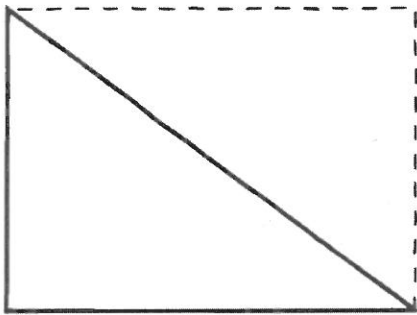
This design is like the last one ...

... but you will need to start by cutting the squared paper along a diagonal

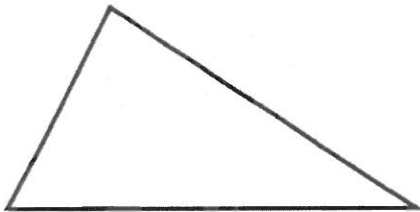


# Half a Rectangle

You will need dotty paper.

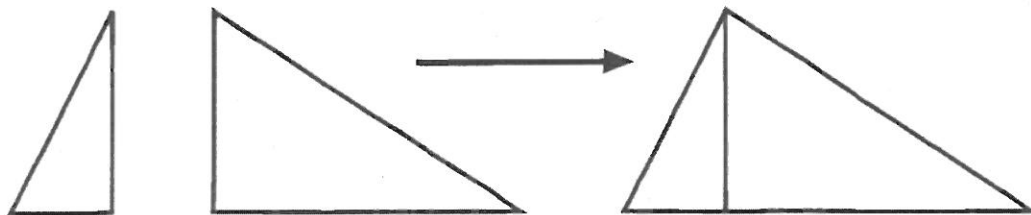


The area of this triangle  
is  $\frac{1}{2}$  of 12 squares  
= 6 squares



How would you find  
the area of this  
triangle?

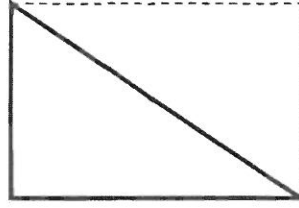
It's just 2 triangles put together.



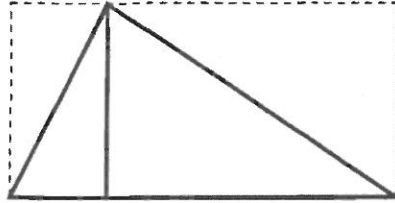
*turn over*

Here is one way to do it.

Area is  
 $\frac{1}{2}$  of 2 squares  
= 1 square

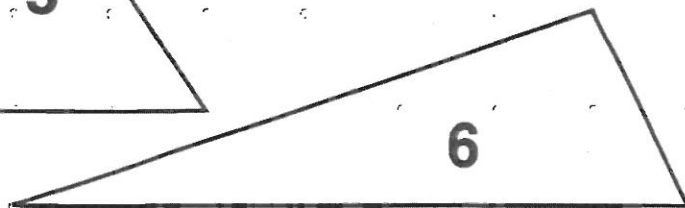
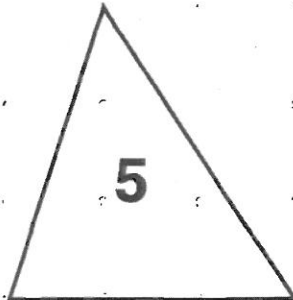
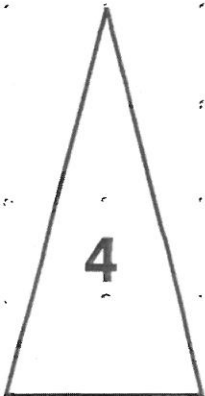
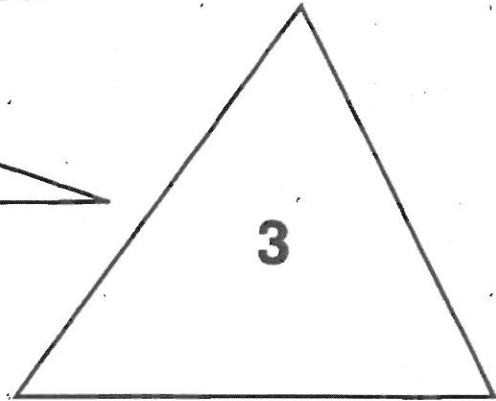
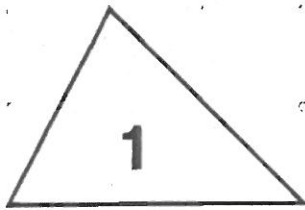


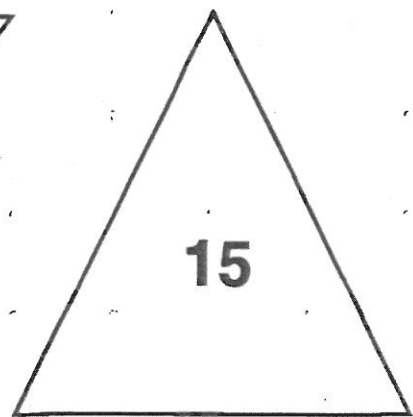
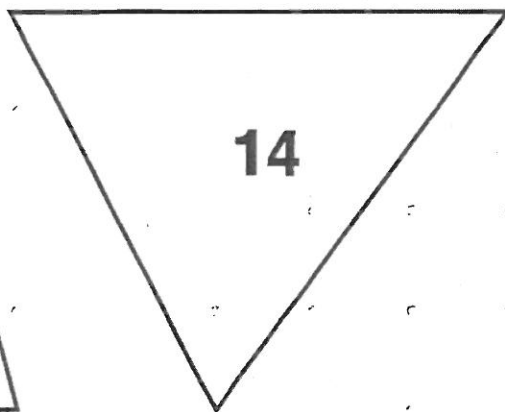
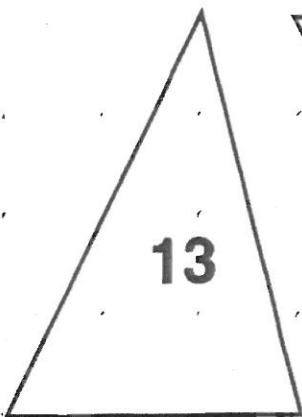
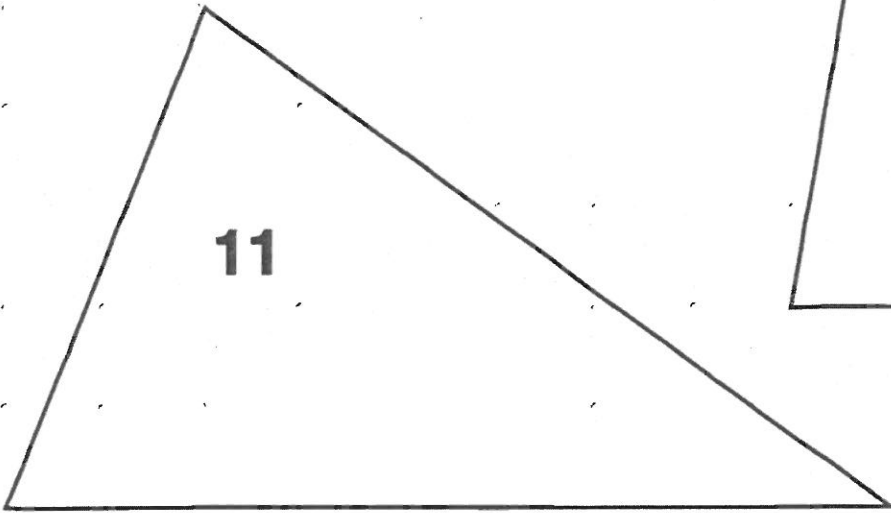
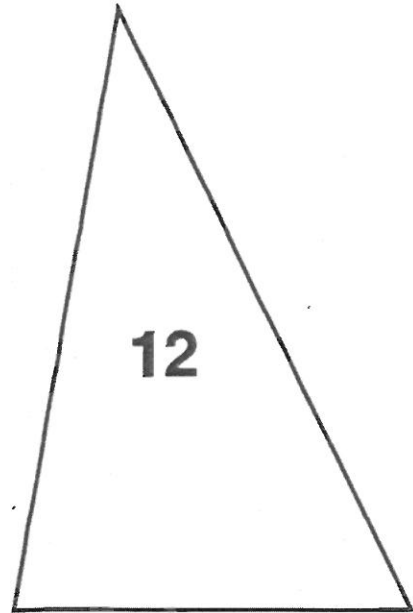
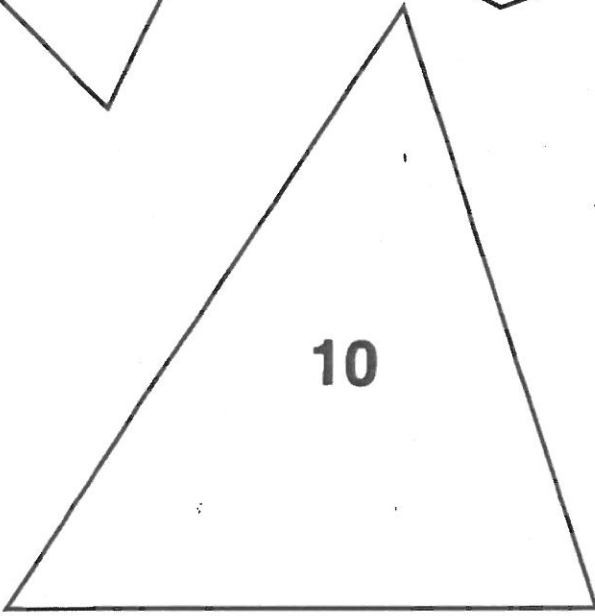
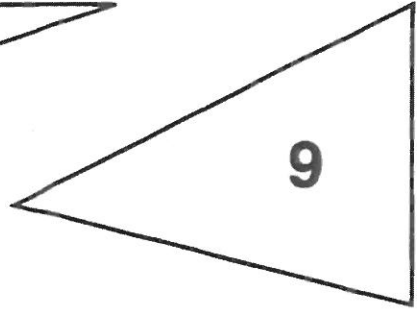
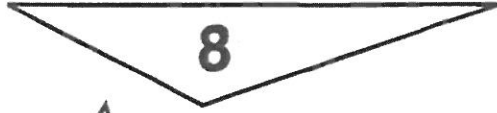
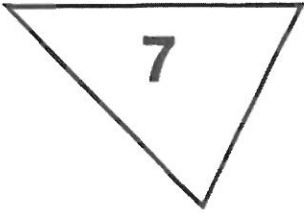
Area is  
 $\frac{1}{2}$  of 6 squares  
= 3 square



Area is  
1 square + 3 squares  
= 4 square

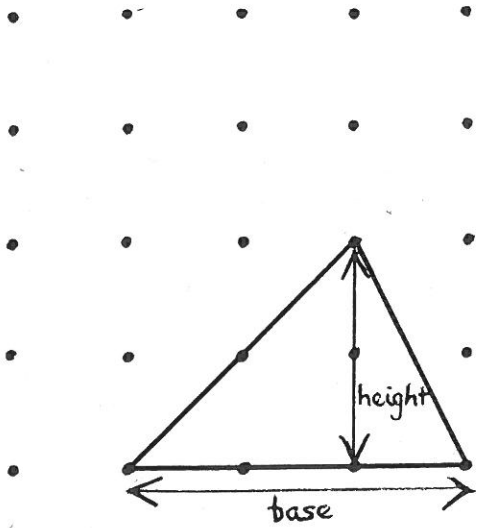
Find the area of these triangles:





You will need: Pinboard, rubber bands.

## AREA OF A TRIANGLE



Make this triangle on your pinboard.

- (1) How long is the base?
- (2) What height is the triangle?
- (3) Count the squares to work out the area.

(4) Make 5 more triangles and do 1), 2) and 3) for each one. Make a table like this for your results.

base	Height	Base x Height	Area
3	2	$3 \times 2 = 6$	3

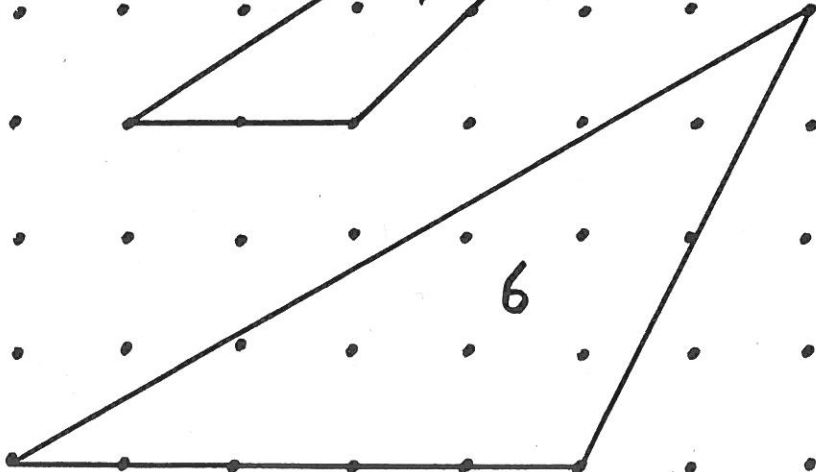
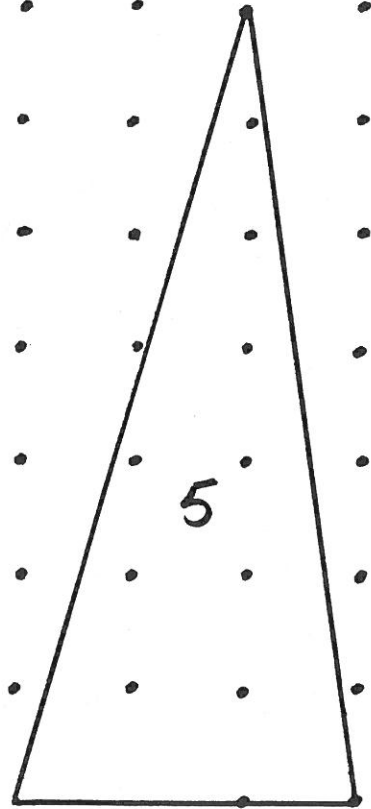
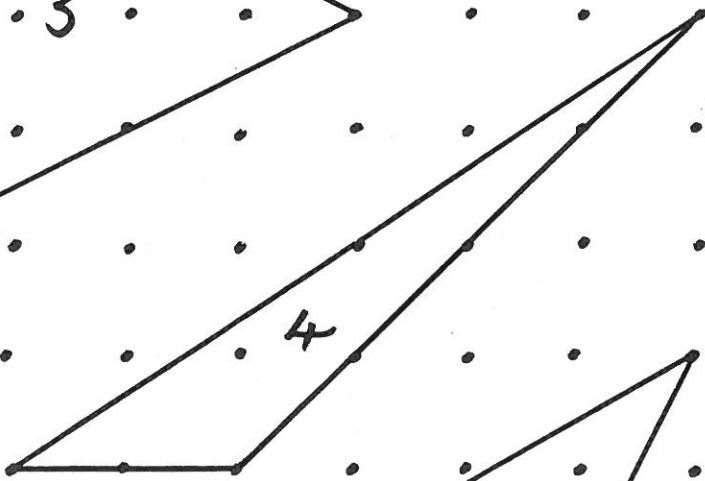
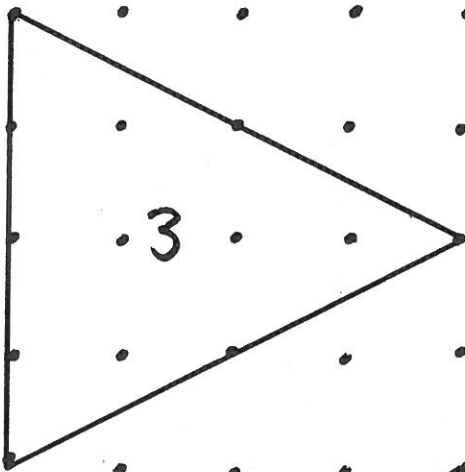
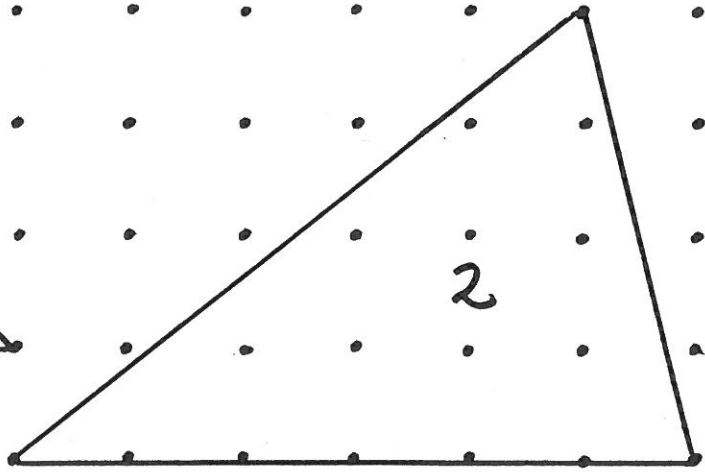
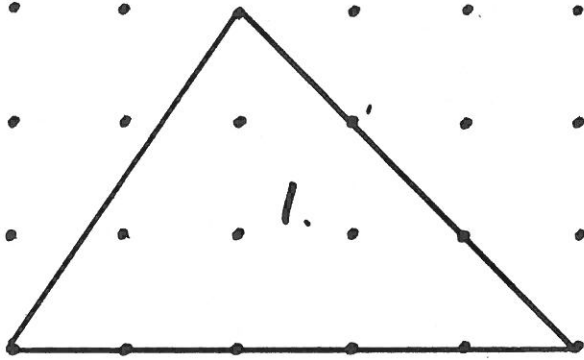
What does the table suggest about the area of a triangle?

Turn over

Copy and complete:-

The area of a triangle is always half of the base x height.

Measure the base and height of these triangles and work out their areas.





Smile 1886

# WORLD VIEW



...an activity for a small group.

This pack contains 4 cards.  
You will also need a Peters  
Projection world map.

You may also like to use a globe.

## COUNTRIES

How many countries are there in Africa ?

Which of these is the largest ?

How many countries are there in South America ?

Which of these is the smallest ?

HOW MANY ?

How many "Britains"

fit in Zaire ?



How many "Britains" fit in India ?

Can you find a country which is 5 times as big as Morocco?

How many "Nicaraguas" are there in South America ?

WHICH IS BIGGER ?

United States of America or China ?

Bolivia or South Africa ?

Iceland or Cuba ?

Bangladesh or Portugal ?

Can you find pairs of countries which are about the same size ?

## ANOTHER COUNTRY

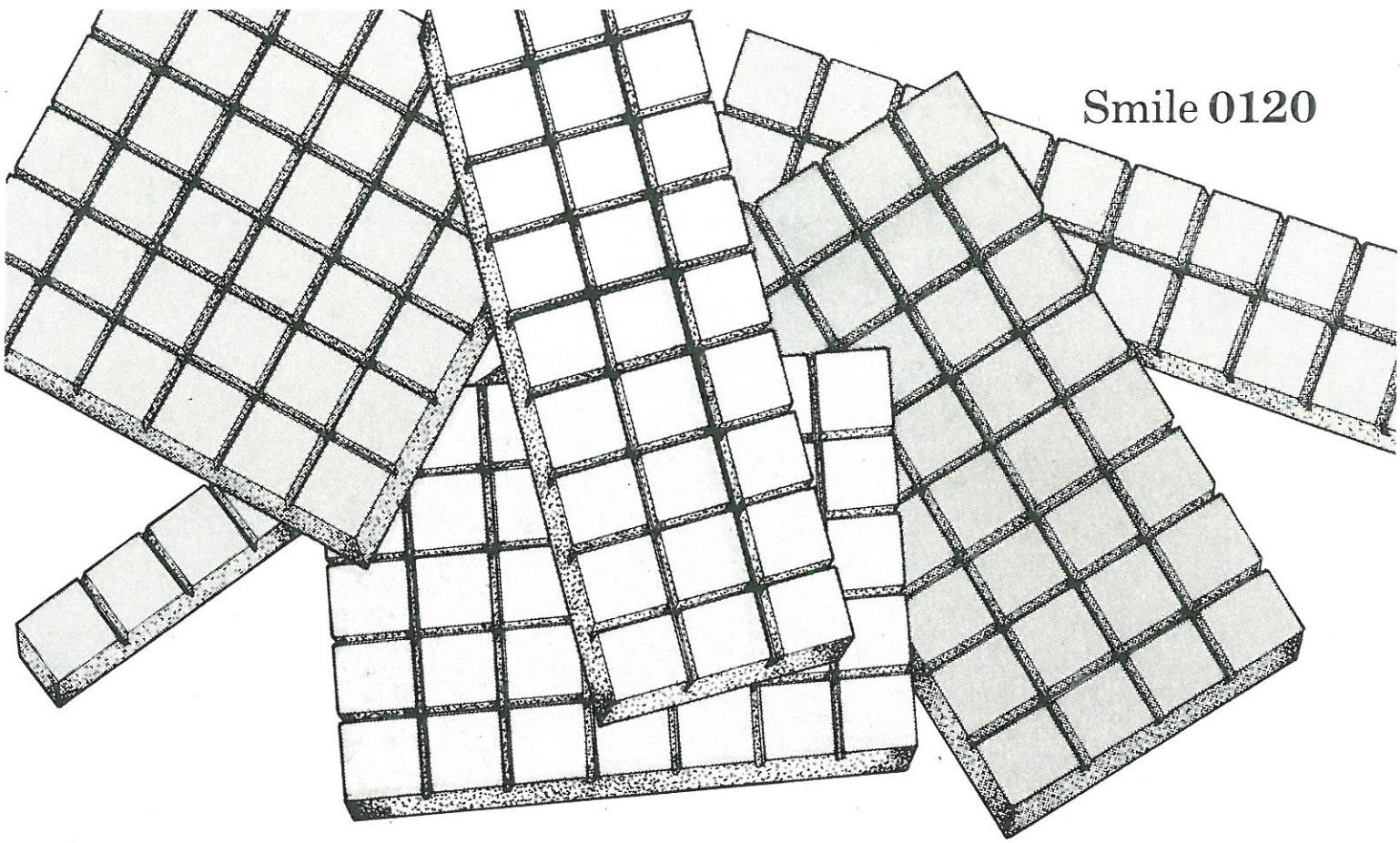
Can you find another country which is the same size as Britain

..... in Africa ?

..... in South America ?

..... in South East Asia ?

..... in Europe ?



## Chocolate Areas

These 6 bars of chocolate all have the same thickness.

Each bar is rectangular and has a perimeter of 24cm.

Do you think the 6 bars have the same amount of chocolate?

Which bar of chocolate would you choose?

If you had to choose the largest rectangle with a perimeter of 20cm...

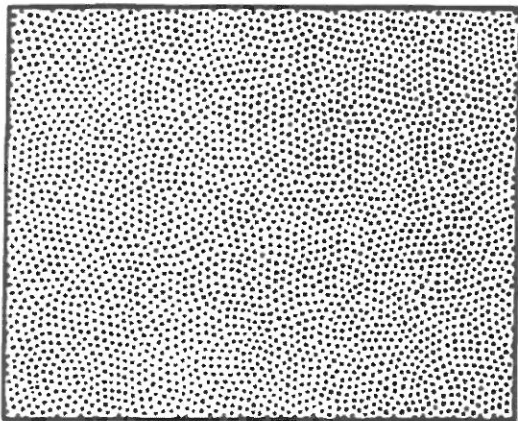
... what shape would you choose?

... what would be the length of its sides?

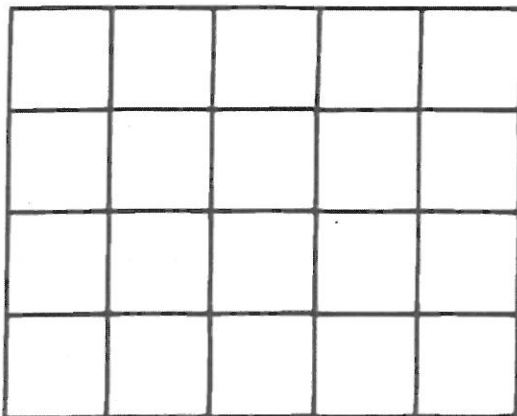
... what area would it be?

Cut out or draw some rectangles to check your answers.

# Rectangle Areas



To find the area of a rectangle . . . . .



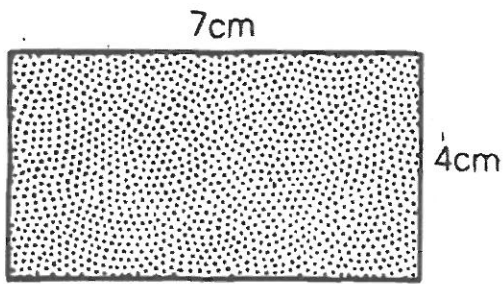
. . . . . you could draw cm squares.

There are 4 rows of 5 squares. So area =  $4\text{cm} \times 5\text{cm}$   
=  $20\text{cm}^2$

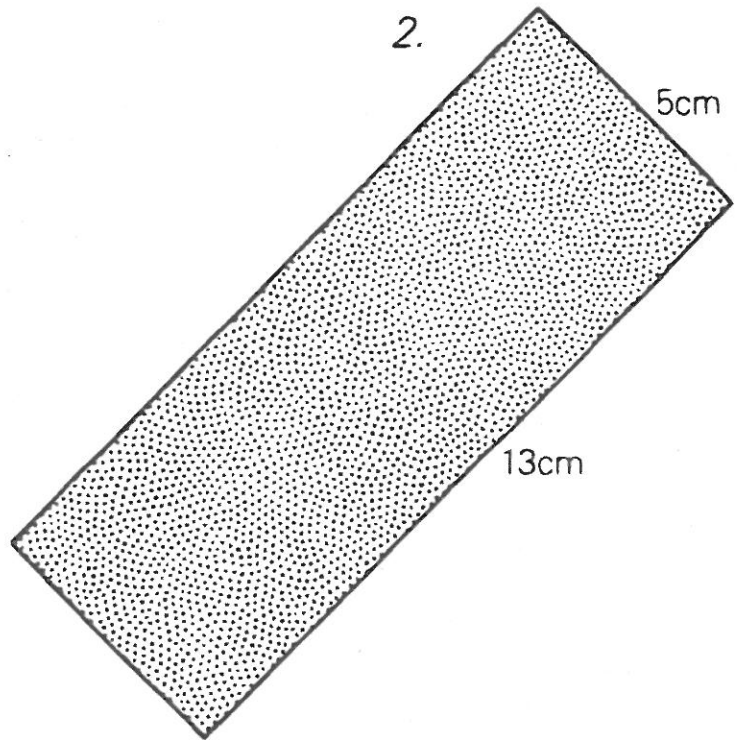
To find area of rectangle  $\longrightarrow$  Multiply length  $\times$  breadth

Work out the areas of these shapes:

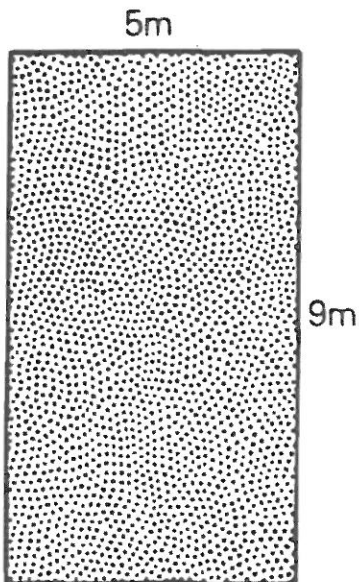
1.



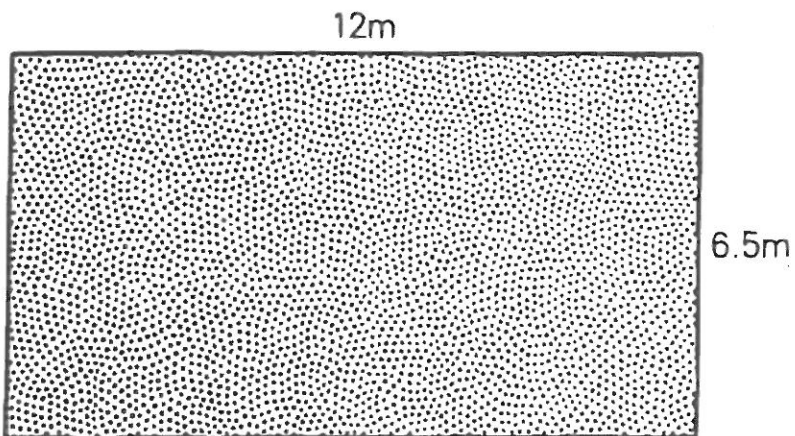
2.



3.



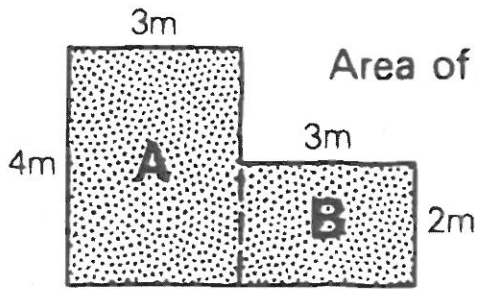
4.



5. Find the area of a rectangular carpet 5 metres  $\times$  4.5 metres.
6. An aircraft landing strip is 2km long and 80m wide.  
*Work in metres to find the area.*

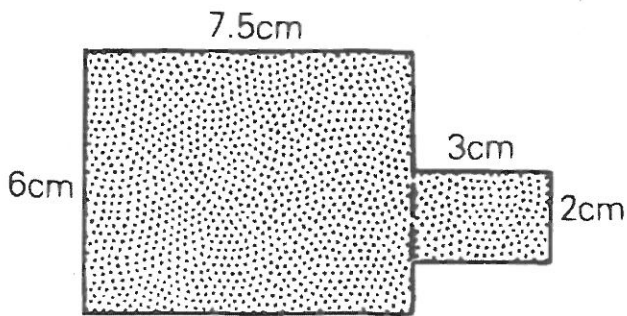
More difficult areas can be calculated by splitting the shapes into rectangles. *Work out these areas:*

7.

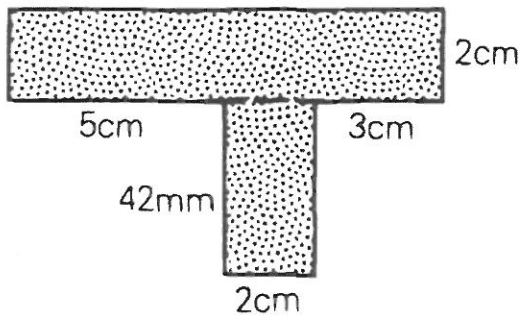


$$\begin{aligned}
 \text{Area of whole shape} &= \text{Area A} + \text{Area B} \\
 &= (4\text{m} \times 3\text{m}) + (\blacksquare + \blacksquare) \\
 &= 12\text{m}^2 + \blacksquare \text{m}^2 \\
 &= \blacksquare \text{m}^2
 \end{aligned}$$

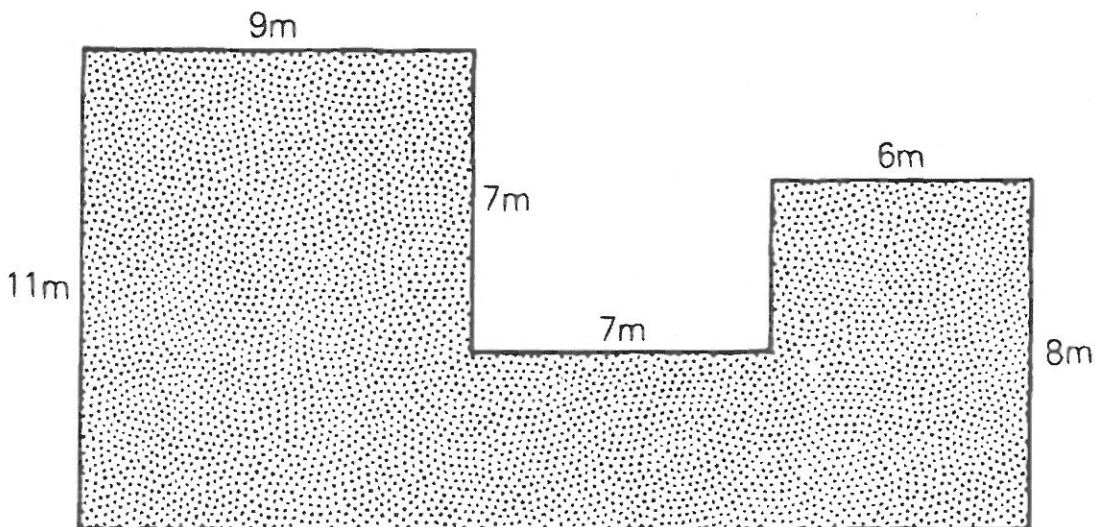
8.

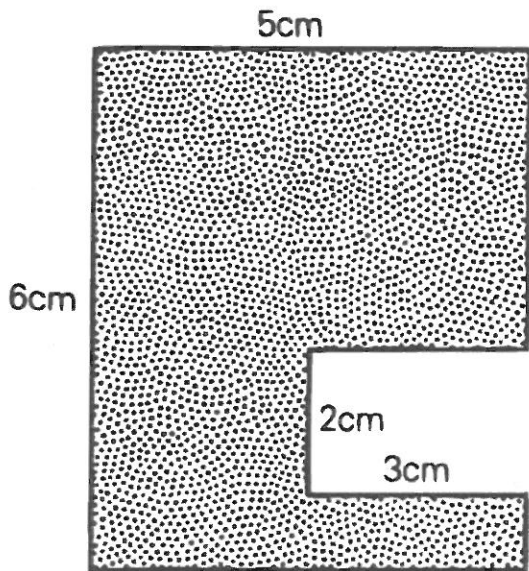


9.



10.





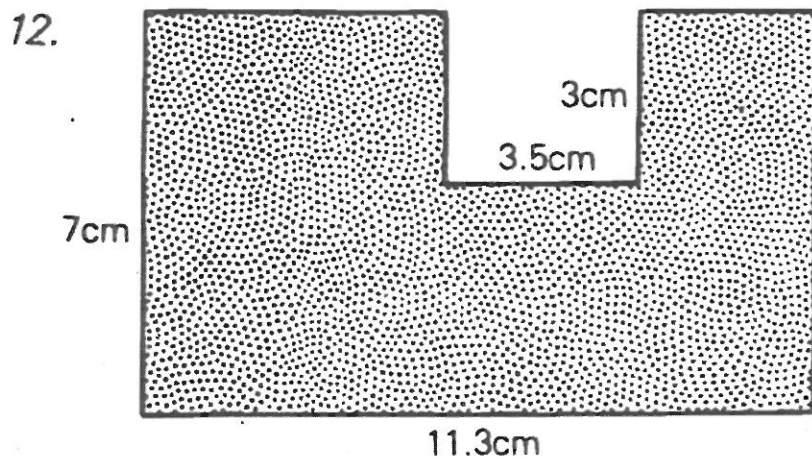
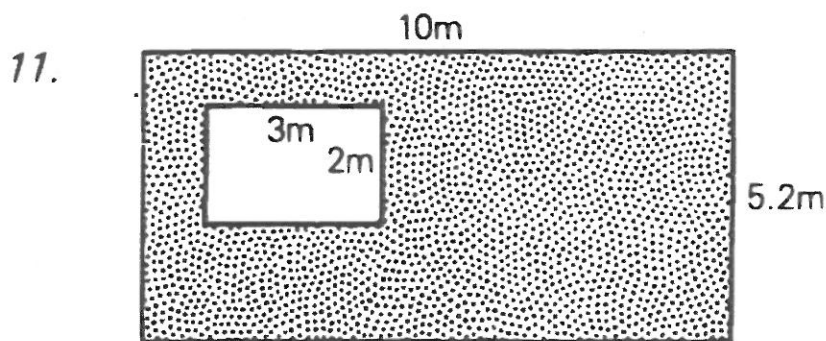
You could think of this shape as a large rectangle with a small rectangle cut out.

Area of large rectangle  
 $= 6\text{cm} \times 5\text{cm}$   
 $= 30\text{cm}^2$

Area of small rectangle  
 $= 3\text{cm} \times 2\text{cm}$   
 $= 6\text{cm}^2$

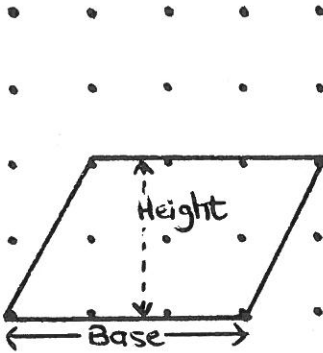
So shaded area  $= 30\text{cm}^2 - 6\text{cm}^2$   
 $= 24\text{cm}^2$

Find the shaded areas:



You will need: pinboard

## Area of a Parallelogram



Make this parallelogram on a pinboard.

The base is 3 units.

The height is 2 units.

Find the area by counting squares.

Make 5 more parallelograms on the pinboard - each time with the base along the bottom row of pins.

For each one, find:-

- (a) the length of the base in units.
- (b) The height in units.
- (c) the area in square units.

Put your results in a table like this :-

BASE (in units)	HEIGHT (in units)	AREA (in square units)
3	2	6

What does this table suggest about the area of a parallelogram?

Turn over



Write down this sentence:

The area of a parallelogram can be found from the formula  
'Area = Base  $\times$  Height'

Draw sketches of these parallelograms and write their areas underneath.

