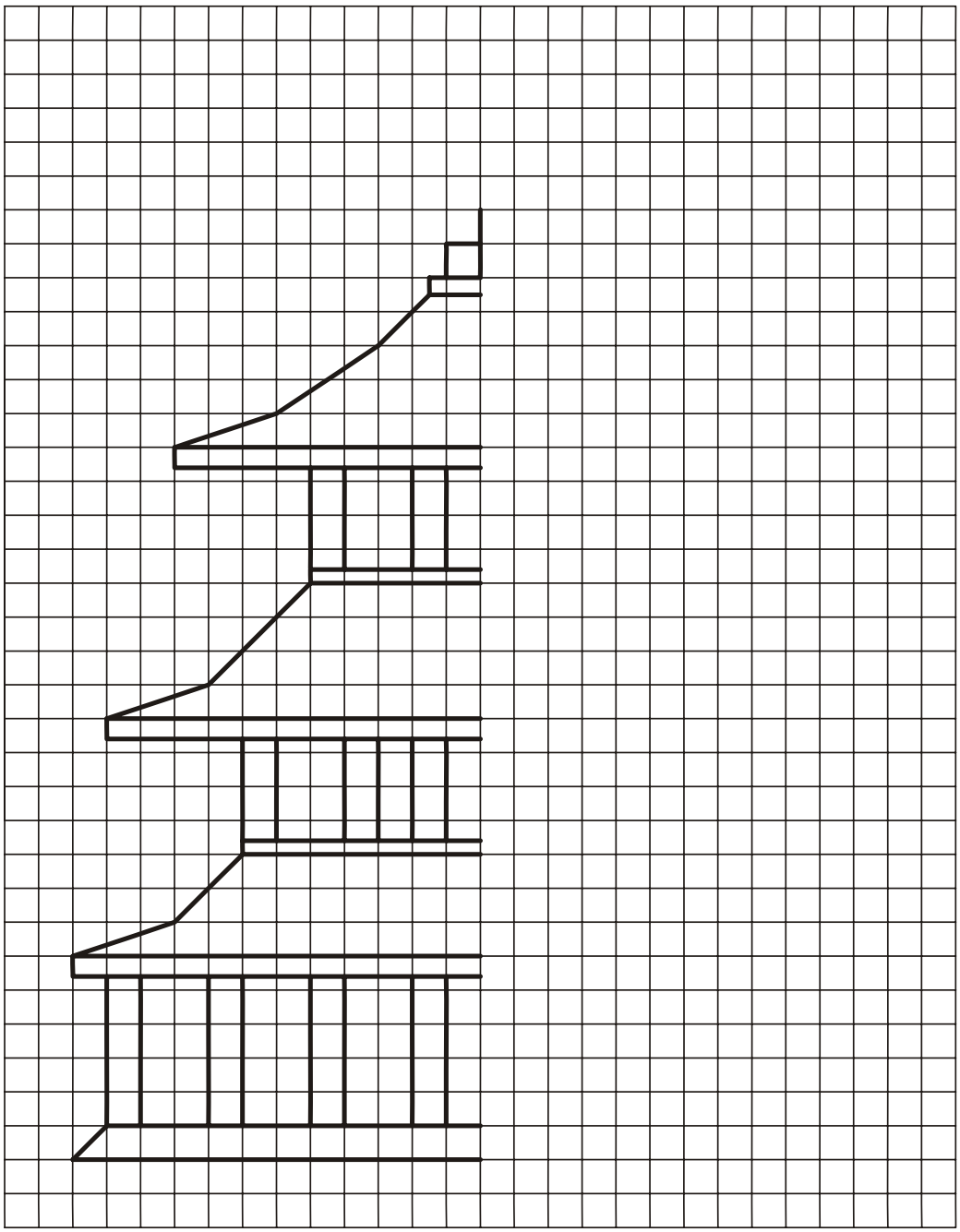
WORK IT OUT	**Reproduce - Represent** **"The Pagoda"**	**3-41** **Level 4** **Exercise 1**

Aims	- Find reference points in a grid. - Reproduce a simple drawing symmetrically using reference points in a grid. - Keep strictly to the lines and proportions when reproducing a simple drawing. - Observe the principles of symmetry.
Applications (examples)	In class: any exercise consisting of reproducing a simple shape symmetrically keeping the same proportions as the model and observing the principles of symmetry, for example in geometry exercises, in technology, in industrial drawing, etc. At work: any task consisting in using reference points, keeping to certain information and observing restrictions; any task consisting in using a grid or graph to mark data or results. Understanding graphs such as those seen in workshops to describe increased production or rates of defective parts, etc. In everyday life and for leisure: know how to use reference points, particularly those in a grid or graph. Understand graphs such as those that can be seen in newspapers. Know how to use symmetry with a model when making decorations, doing craftwork, making clothes, knitwear or crochet, made-to-measure furniture, etc. Particularly useful for cutting out clothes for which the pattern is given for one side of the body (front and back, left and right) and in sewing and making models where you have to put one part on top of the other to assemble, sew, or adapt to the size, etc.
Materials	A page with the drawing of the left side of a sort of pagoda on the left-hand side of a grid.
Task	The pupils will reproduce "mirror fashion" the drawing on the left hand side of the squares on the right hand side of the page, keeping the continuity of the lines so that the finished drawing looks like a pagoda. The pupils can then look for a practical way to check the symmetry of the two halves of the pagoda.
Comments	The pupils can of course, if they wish, take their measurements and reference points using a ruler, but, because of the squares, it is probably not necessary. It is interesting to compare working methods with a ruler and just with the squares.
Variations (examples)	The opposite exercise can be done by taking a geometric shape with both sides symmetrical (the vase in exercise 3-31 for example) and ask the pupils to draw the line that will enable them to divide the drawing into two perfectly symmetrical halves. They can also look around them to find objects which could be symmetrical, and draw them.
Individualisation	Yes.
Answers	Yes.

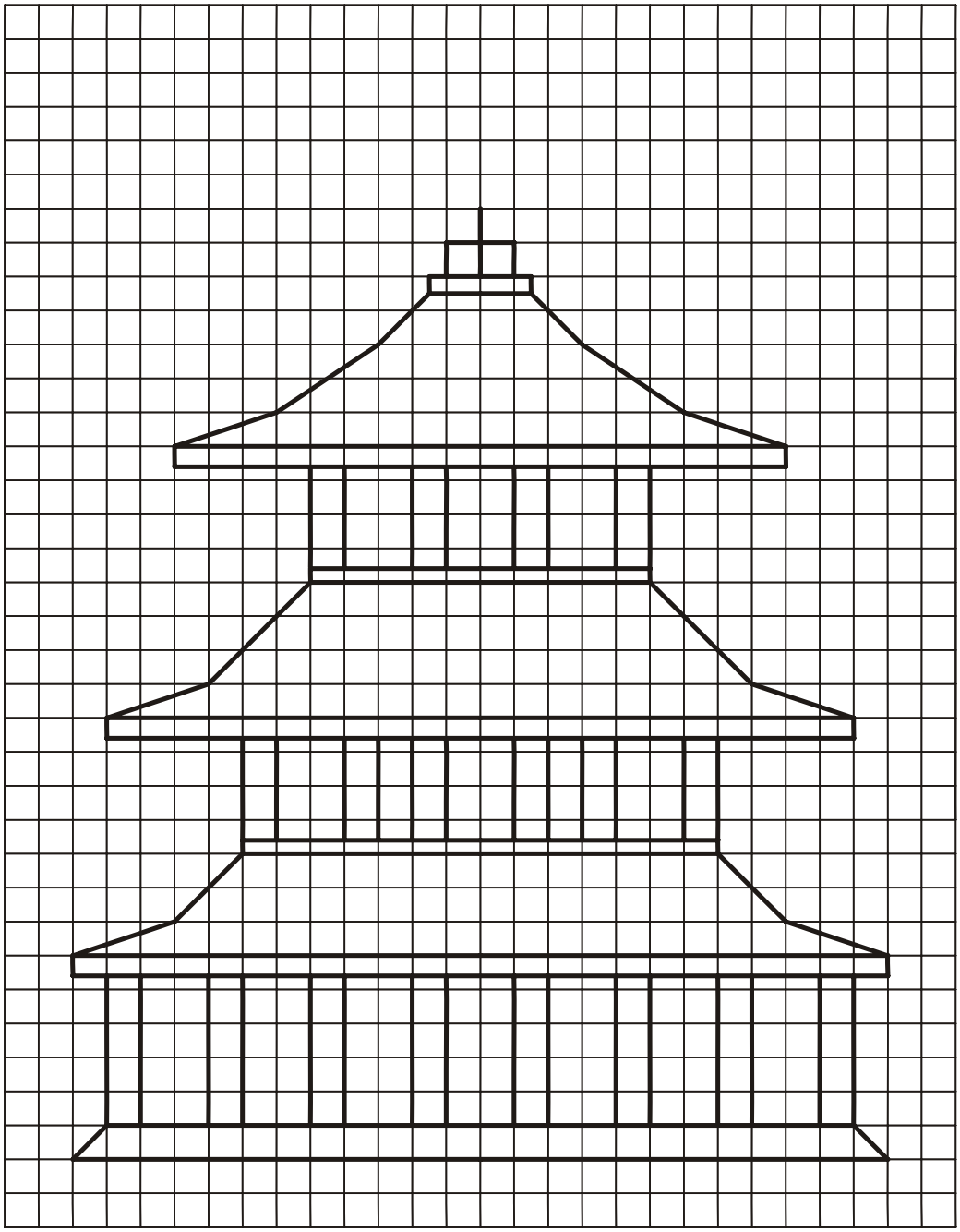
Reproduce - Represent

"The Pagoda"



Reproduce - Represent

"The Pagoda"

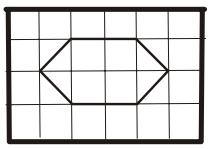


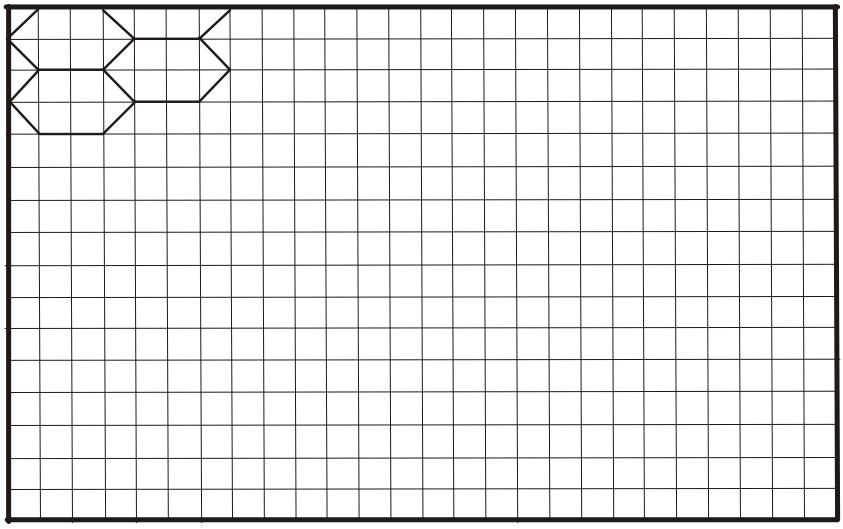
WORK IT OUT	**Reproduce - Represent** **"Tiling"**	**3-42** **Level 4** **Exercise 2**

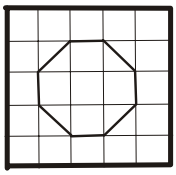
Aims	- Reproduce a simple drawing using reference points on a page without squares. - Keep strictly to the lines and proportions when reproducing a simple drawing. - Stick to the pattern given to continue arranging the required shapes. - Combine two shapes while paying attention to the restrictions, the main one of which is not to leave any gaps between the shapes.
Applications (examples)	In class: any exercise consisting of reproducing a simple shape symmetrically keeping the same proportions as the model and observing the principles of symmetry, for example in geometry exercises, in technology, in industrial drawing, etc Arrangement, choice of layout, reflection and choice of different arrangements et layouts. At work: any task consisting in using reference points, keeping to certain information and observing restrictions; any task consisting in using a grid or graph to mark data or results. Any task requiring work without reference points, and therefore necessitating greater autonomy: learning to find your own reference points, choosing a solution and following it closely, all the while checking your progression. In everyday life and for leisure: use reference points, particularly those given by squares. Understand a graph, such as those seen in newspapers. Use symmetry in relation to a model when making decorations, doing craftwork, making clothes, knitting or crochet, made-to-measure furniture, etc. Particularly useful for cutting out clothes for which the pattern is given for one side of the body (front and back, left and right) and in sewing and making models where you have to put one part on top of the other to assemble, sew, or adapt to the size, etc.
Materials	A page with tiles on the left hand side that are to be placed in a space without squares. In the first two spaces, a few tiles have already been placed as an example.
Task	In the first two spaces the pupils will reproduce the tiles as many times as is possible, sticking to the arrangement given as a model and staying within the given space. In the third space, the pupils must arrange the two shapes of tiles as well as possible to avoid "gaps".
Comments	The pupils can of course use a ruler, if they wish, to take the measurements and find the reference points. If the exercise seems too difficult as is, the pupils can draw squares in the blank space. They can use any means they might find to carry out the task.
Variations (examples)	The exercise can be done using tiles of other shapes or by combining three tiles. The pupils can find ideas for shapes and try to arrange them in the blank space observing the rules for laying tiles (no gaps!).
Individualisation	Yes.
Answers	Yes, but for the third part, several arrangements are possible.

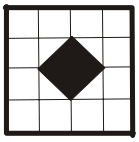
Reproduce - Represent

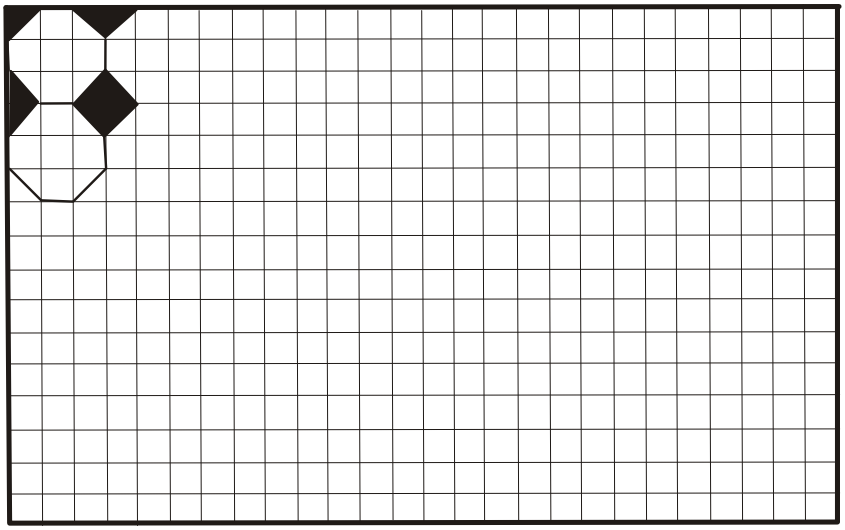
"Tiling"

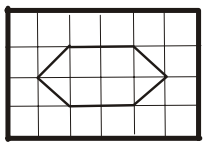


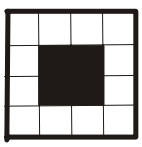


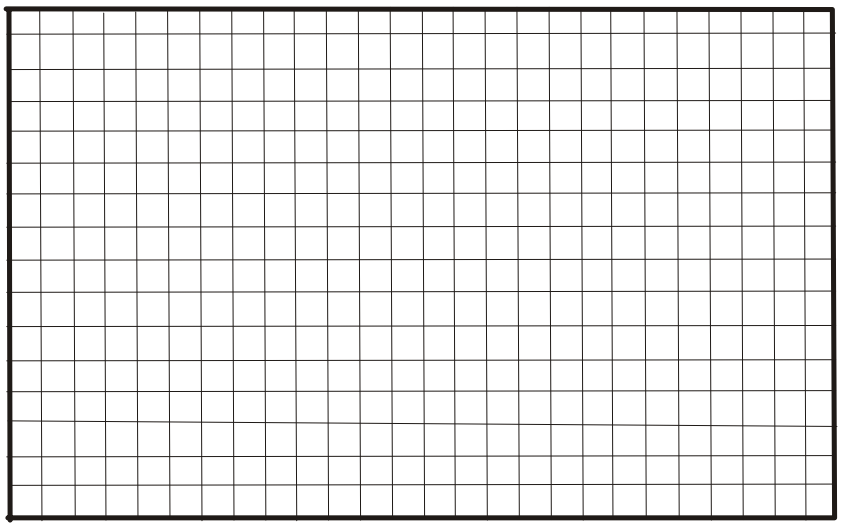






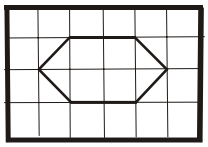


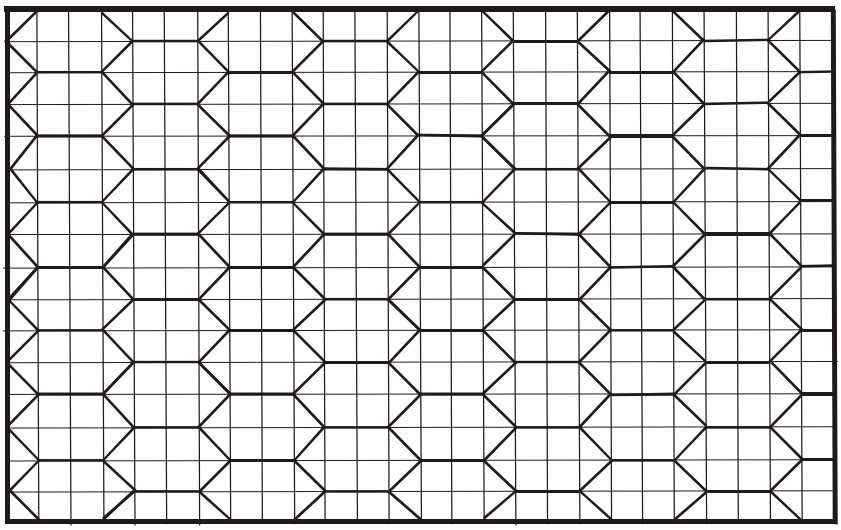


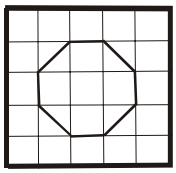


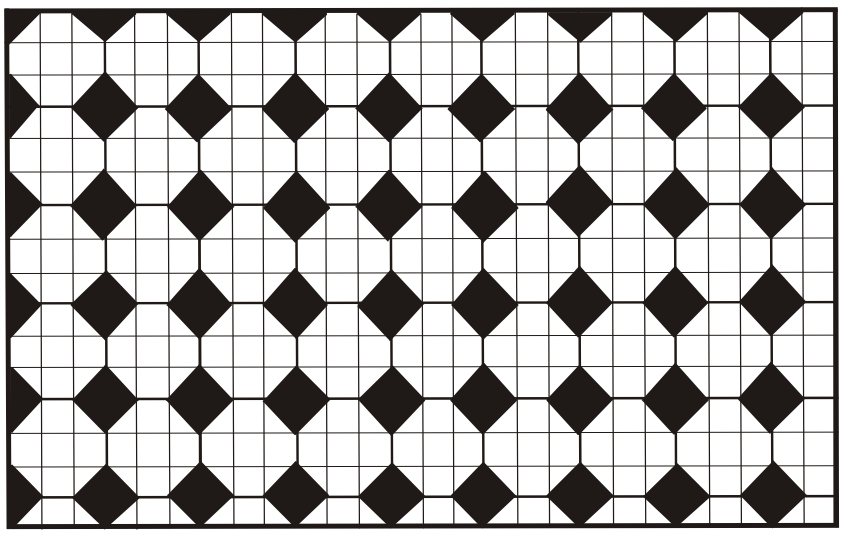
Reproduce - Represent

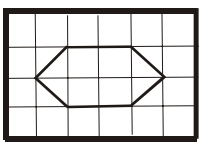
"Tiling"

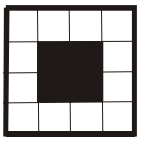


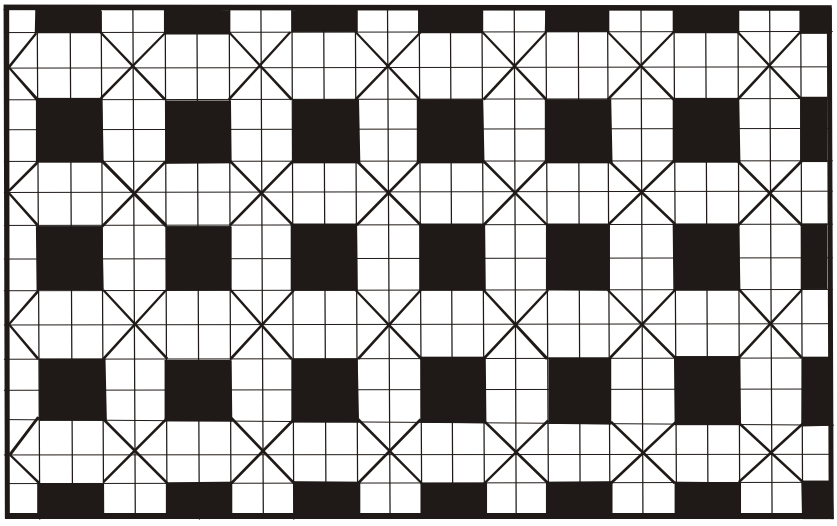










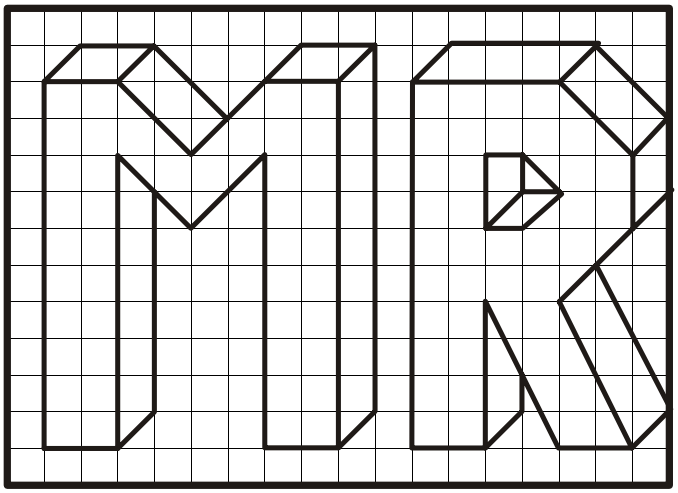


WORK IT OUT	**Reproduce - Represent** **"Initials"**	**3-43** **Level 4** **Exercise 3**

Aims	- Find reference points in a grid. - Reproduce a simple drawing symmetrically, enlarging the model, using reference points in a grid. - Keep strictly to the lines and proportions when reproducing and enlarging a simple drawing. - Underline the difference between identical and similar.
Applications (examples)	In class: any exercise consisting of reproducing a simple shape symmetrically keeping the same proportions as the model and observing the principles of symmetry, for example in geometry exercises, in technology, in industrial drawing, etc. Notions of arithmetic and geometric progression. Introduction to perspective: rough perspective. At work: any task consisting in using reference points, keeping to certain information and observing restrictions; any task consisting in using a grid or graph to mark data or results. Understanding graphs such as those seen in workshops to describe increased production or rates of defective parts, etc. In everyday life and for leisure: know how to use reference points, particularly those in a grid or graph. Understand graphs such as those that can be seen in newspapers. Know how to use symmetry with a model when making decorations, doing craftwork, when making clothes, knitting or doing crochet, made-to-measure furniture. Introduction to sketching and industrial drawing. Rough perspective. Introduction to methodology, a way of working. Transposition, adaptation by changing size (assembling objects in a kit; furniture assembly).
Materials	A page with two capital letters drawn in perspective in a grid. A grid four times as big below, with no letters drawn in it.
Task	The pupils reproduce the two letters but enlarge them in the squares given below the model. They must keep the proportions and the presentation.
Comments	Of course the pupils can, if they so wish, use a ruler to take their measurements and find their reference points, but with the squares it is hardly necessary. It is interesting to compare the work done with a ruler and that done with just the squares. If the exercise seems too difficult because of the enlargement required, the pupils can be asked to reproduce the model without enlarging it and dividing the squared space into 4 parts to make it smaller.
Variations (examples)	The pupils can use a photocopy of the squares to write their own initials, either in the same way as in the model or in any other way they choose. They could also be asked to say which presentation they preferred and encourage them to reproduce their initials using their favourite presentation as a pattern.
Individualisation	Yes.
Answers	Yes.

Reproduce - Represent

"Initials"



WORK IT OUT

Reproduce - Represent

"Initials"

3-43
Answers