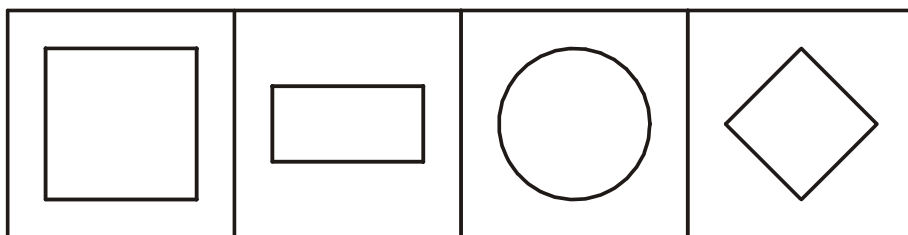
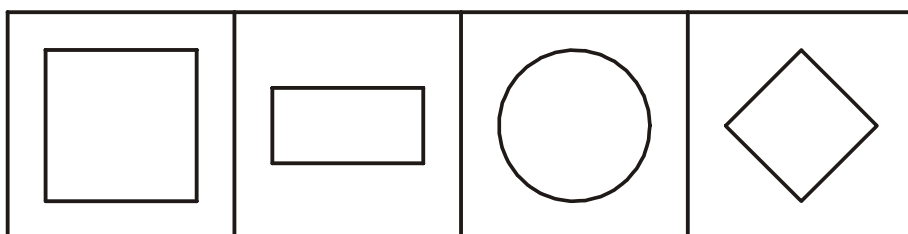


<b>Aims</b>	Practising finding reference points.
<b>Applications (examples)</b>	<p><u>In class</u>: any operation which consists in finding reference points (drawing lines in geometry, drawings, technical drawings, geography (for maps to be drawn or copied).</p> <p><u>In technical training</u>: for any precision drawing or plan.</p> <p><u>At work</u>: any task requiring precise reference points, for example to locate or indicate a defect in a manufactured part or, more generally, to organise the layout of the workspace.</p> <p><u>In everyday life and for leisure</u>: any mental operation requiring accurate and reliable reference points in handiwork, for example, sewing or cutting out.</p>
<b>Materials</b>	A sheet of paper with 4 series of 4 geometrical shapes (a square, a rectangle, a circle and a diamond).
<b>Instructions</b>	<p>The pupils are asked to draw lines to show how they would divide up these shapes into equal parts as if they were cakes. They must divide them up approximately and successively:</p> <ul style="list-style-type: none"><li>- into 2 equal parts</li><li>- into 4 equal parts</li><li>- into 6 equal parts</li><li>- into 8 equal parts.</li></ul>
<b>Remarks</b>	<p>The pupils may use a ruler if they wish. When the solutions are being pooled, it is interesting to compare those where measurements have been taken (the centre of the sides of the square or rectangle, for example) and those where the ruler has not been used (drawing diagonal lines or centre lines in the square or rectangle, for example). Some solutions can be quite ingenious, particularly for the circle to be divided into 6 parts.</p>
<b>Variations (examples)</b>	<ol style="list-style-type: none"><li>1. On the request of the pupils, the teacher can get them to imagine (or find) the method(s) for calculating the perimeter or the area of the shapes.</li><li>2. The teacher can ask the pupils to come and draw other geometrical shapes that they might know (triangles, semi-circles, parallelograms, etc.) and to divide them into 2, 4, 6 or 8.</li><li>3. The teacher can ask the pupils to divide the different shapes in the exercise into 3 equal parts.</li></ol>
<b>Individualisation</b>	Yes.
<b>Answers</b>	Yes, but other solutions are possible in addition to those suggested.

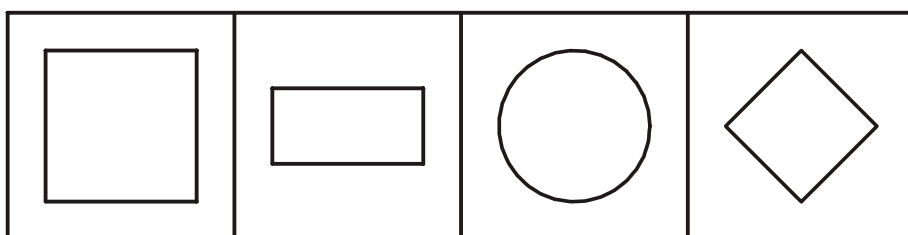
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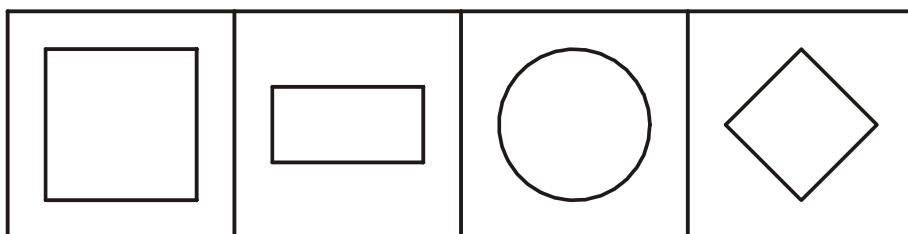
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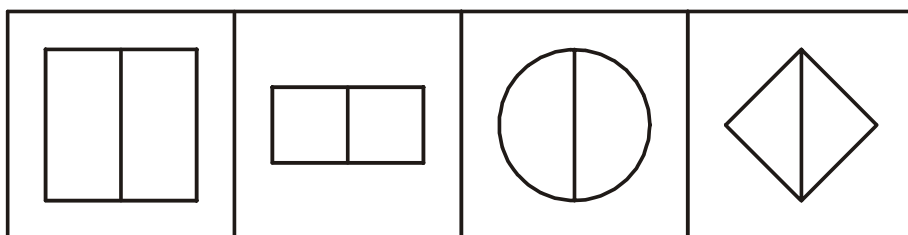
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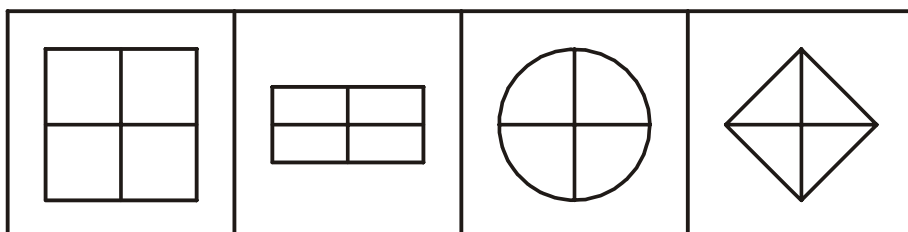
**8**



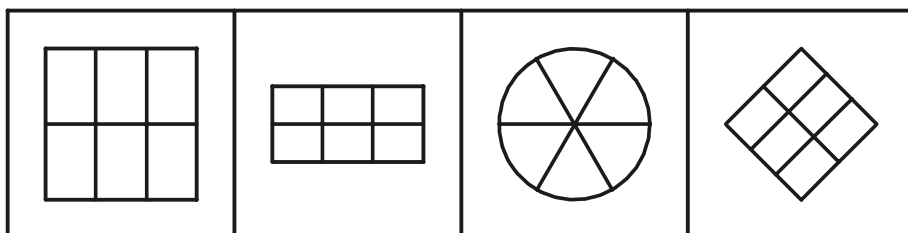
**2**



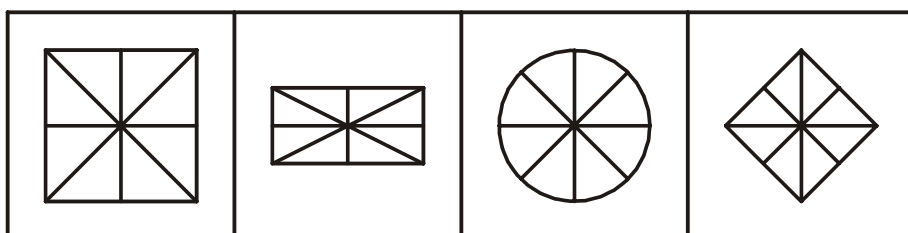
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**6**

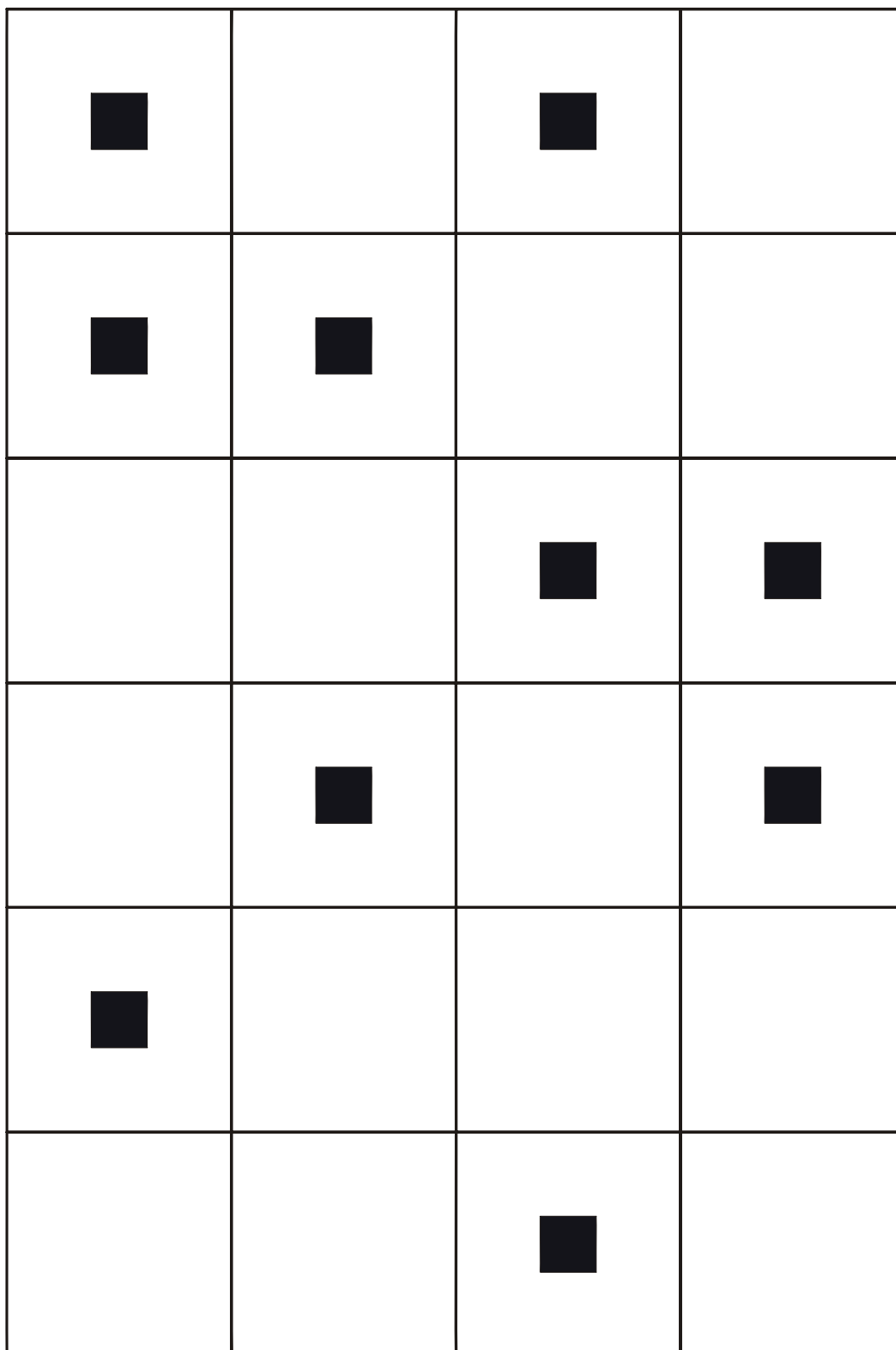


**8**



<b>Aims</b>	<ul style="list-style-type: none"><li>- Practising finding a point in a grid (in terms of blank or inscribed boxes, rows, columns, left or right, above or below).</li><li>- Practising finding the centre point in manipulations.</li></ul>
<b>Applications (examples)</b>	<p><u>In class</u>: any operation requiring you to locate something quickly and efficiently in a grid, for example mathematical "tables".</p> <p><u>At work</u>: any task requiring you, regularly or occasionally, to become acquainted with information or facts in the form of a double entry table or grid that might have to be filled in or completed.</p> <p><u>In everyday life and for leisure</u>: any mental operation requiring finding a point in a grid or a simple double entry table: diary, calendar, bingo cards and the like.</p>
<b>Materials</b>	<ul style="list-style-type: none"><li>- A page showing a grid with some boxes blank and others containing a black square;</li><li>- A sheet of numbers for tracing for each pupil;</li><li>- A page of oral instructions for the teacher.</li></ul>
<b>Instructions</b>	<p>The pupils follow the instructions given orally by the teacher who, after the first 2 or 3 instructions, will have them compare and correct any mistakes.</p> <p>Rules for the pupils:</p> <ul style="list-style-type: none"><li>* you are not allowed to put anything outside the boxes;</li><li>* you are not allowed to trace any numbers in boxes where there are already black squares.</li><li>* you are not allowed to put two numbers in the same box.</li></ul> <p>N.B. To make it easier to find, the pupils can mark the right box with a pencil BEFORE choosing which number from their sheet to trace.</p>
<b>Remarks</b>	<ol style="list-style-type: none"><li>1. Instead of using numbers to trace, the pupils can of course write them by hand if nobody in the group has any literacy problems. However, precision handling – with the possible addition of the use of reference points to find the centre – can be a useful complement to finding the reference points as stated in the aims.</li><li>2. In the instructions, it is not stated whether a black square can be placed between two numbers; one is then faced with 2 possible solutions.</li><li>3. If some students are reticent about writing numbers, the group may use coloured stickers and the teacher must adapt the exercise to this material.</li></ol>
<b>Variations (examples)</b>	Using the same exercise sheet, given out again, each pupil can give the group a position on the grid and a number to put in the corresponding square.
<b>Individualisation</b>	Yes, but the teacher must be present.
<b>Answers</b>	Yes, suggested (see "remark" 2).

(Page 1)



1. In the first row, between two black squares, put the number **1**.
2. In the first row, to the right of a black square, put the number **2**.
3. In the second row, under the number 2, put **3**.
4. In the third row, under two black squares, put **4**.
5. In the fifth row, to the right of a black square, put **5**.
6. In the sixth row, to the right of a black square, put **6**.
7. Above number 6, put **7**.
8. Under number 5, put **8**.
9. Next to number 8, put **9**.
10. Next to 3, put **10**.
11. Between number 5 and number 7, put **11**.
12. Between number 1 and number 5, put **12**.
13. Between two black squares, put **13**.
14. Under number 4, put **14**.

■	1	■	2
■	■	10	3
4	12	■	■
14	■	13	■
■	5	11	7
9	8	■	6

<b><i>Aims</i></b>	Observing and reproducing a manipulation while decentring in relation to what is being observed.
<b><i>Applications (examples)</i></b>	<p><u>In class</u>: all situations leading to the observation, exploration or reproduction of a series of gestures or movements, mirror fashion, for example while carrying out simple operations on different materials or supports, in technology or in art.</p> <p><u>At work</u>: any initiation or training for a new job with a demonstration from an instructor or a tutor.</p> <p><u>In everyday life and for leisure</u>: any manual work or handiwork for which a demonstration is given.</p>
<b><i>Materials</i></b>	<ul style="list-style-type: none"><li>- A blank sheet of A4 paper for each participant.</li><li>- An optional page giving the teacher an example for folding.</li></ul>
<b><i>Instructions</i></b>	The teacher folds a sheet of A4 paper in front of the students who, during the demonstration, carry out the same folds. The teacher stands opposite the participants, makes slow, precise movements, visible to all the observers and shows clearly any marked reference points that he uses. The demonstration can be done with or without a commentary, as the teacher wishes.
<b><i>Remarks</i></b>	A fairly simple example of paper-folding is given for this exercise, but the teacher can invent any method s/he likes, as long as it requires at least two marked reference points.
<b><i>Variations (examples)</i></b>	<ol style="list-style-type: none"><li>1. One pupil comes to the front of the group (which includes the teacher) and shows a folding method that he already knows or that he has invented, while the others reproduce it as it is explained. Emphasis will very probably be – automatically – on how difficult it is to manipulate without his hands hiding any part of the folding from the observers and to fold slowly enough for everyone to be able to follow at his own pace.</li><li>2. Folding can be replaced by cutting out using marked reference points, or both folding and cutting out can be associated.</li></ol>
<b><i>Individualisation</i></b>	No.
<b><i>Answers</i></b>	No.



### **Suggestions for folding**

1. Take a sheet of A4 paper and hold it lengthways. By folding the top half down to the lower edge and then unfolding it, you mark the middle.
2. Then fold down the upper corners, using the mark to help you, to form an isosceles triangle and, underneath, a rectangle formed by the rest of the page.
3. Turn the page over to see the back and mark the middle of each of the two sides of the isosceles triangle by folding them carefully.
4. Turn down the tip of the isosceles triangle at the two marks. Then fold down the two sides of the resulting shape so that the left and right edges meet the two sides of the triangle.
5. Turn over the folded page and slightly open the two flaps on the edge, so that it can stand up facing the observers.

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