## Geometry Activity – Pentominoes

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A geometry activity resembling the tangram, in which the user is required to create a pattern from a number of pieces provided:

Two sections can be found in the "<u>Activity</u>" tab: the left to select parameters and a grid on the right to create the model you want to be displayed. In the top left part we have:



Answer method: O Free figures	For every wrong answer _	1	Destination
Make a mode			
Background Size $5 \neq \times 5 \Rightarrow$ $1 \Rightarrow$ $5 \Rightarrow \times 5 \Rightarrow$ $1 \Rightarrow$ $5 \Rightarrow \times 5 \Rightarrow$ $1 \Rightarrow$ $1 \Rightarrow$ $1 \Rightarrow$ $1 \Rightarrow$ $1 \Rightarrow$ $1 \Rightarrow$	Miniature 4		
Show answers 6  7			

**1**.- <u>Answer method</u>: by selecting the "*Free shapes*" radio button, the user will take the available pieces to form the patterns required; in such case, the activity will not include the check button to confirm the answer. When selecting the "*Make a model*" radio button, the user will have to fit the pieces together to form the suggested pattern and confirm their answer by clicking on the check button.

2.- <u>Background</u>: The buttons on the left indicate if the grid which will be shown to the user will be formed by continuous lines making squares or just points. The button allows choosing the colour of these lines/points and also the colour of the lines forming the squares of the movable pieces. In the lower field we can increase the line/point thickness or even set it to zero to completely remove the grid from the activity.

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**3**.- On the right side of the "*Background*" box, you will specify the number of squares contained in the grid (width X height). That grid could be either square or rectangular. You can also determine the length of the sides of the squares.

**4**.- In this box we have the necessary tools to define the characteristics of the model that will be displayed to the user to create the shape. If you tick the "*Miniature*" box, the model to be replicated will be displayed in the upper right part of the work space. With the button on the left we can choose the background colour for that model and by ticking the box "*With lines in model*" it will show the solution and the button on the right will be activated so that we can choose the line colour showing the location of each of the pieces within the model in order to make them stand out enough according to the colour we have indicated for the background of the model.

**5**.- Double-click on this grid to launch a pop-up window which will allow placing the pieces to create the shape you want to propose:

Clicking on one of the pieces in the right area (11), it will then be placed at the top left part of the grid and when selected, a group of buttons (10) will be displayed to change its position; from top to bottom these buttons allow: rotating it to the right at 90° intervals, mirroring it horizontally, mirroring it vertically or removing it from the



grid area respectively. Once we have finished building the desired shape, we will accept by using the button (12) to return to the main editing screen.

**6**.- By ticking the "*Show answer*" box, the shape to be replicated will be shaded inside the grid presented to the user with the desired colour (use the left button) and the degree of transparency indicated in the field beside it. If we also check the box "*With answer guides*", the different pieces will be highlighted within the shaded shape and the button on the right will be activated to choose the line colour which will be used to draw these pieces.

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## **PIECES SECTION:**



7.- By checking this box at the top left, we will ensure that all the pieces forming part of the activity will have the same colour; we can choose that colour by clicking on the button on the right.

8.- With these buttons we will determine the position of the movable pieces when the activity starts: at the bottom of the grid or on the right of it.

**9**.- In this section the 12 available pieces are displayed. We will use the boxes next to each one of them to specify the number of pieces of each kind we want the user to have. In addition, if we have left the box at the top left (7) unchecked, the buttons next to each of the boxes with the numbers will be available so that each of the pieces have a different colour.