

Maths: Drawing Lines of Symmetry (with a focus on William Morris).

Duration 1 hour. Date:

This lesson has been inspired by ideas from the National Centre for Excellence in the Teaching of Mathematics.

<p>Main teaching</p> <p>CCL History (Victorians), Art and Design</p>	<p>Activities - Differentiation</p>	<p>Plenary</p>
<p>L.O.: To be able to draw lines of symmetry</p> <p>What is a line of symmetry? How do you find a line of symmetry? Show some simple shapes and ask children to come up and draw in the lines of symmetry.</p> <p>Model using a mirror to find a line of symmetry.</p> <p>Show shapes where the line of symmetry is horizontal, vertical and at 45 degrees.</p> <p>If the children are not aware of who William Morris is, you may want to tell them a few key facts about him:</p> <p>Show children a photo of William Morris – e.g. from www.wikipedia.org (see link below)</p> <p>Tell the children: William Morris was born in Walthamstow in East London in 1834 and he died in 1896.</p> <p>Do you know what we call that time? (The Victorian Era). Do you know why we call it that? (Because Queen Victoria was on the throne at that time).</p> <p>Do you know of any major changes which happened then, or any important inventions? (industrialisation, steam engine – trains)</p> <p>William Morris always wanted to learn how things were made. He liked more old-fashioned techniques – such as colouring fabrics with natural dyes, block printing from wood, and weaving things by hand. He valued good craftsmanship.</p> <p>What is a craftsman?</p> <p>What do you think craftsmanship means?</p>	<p>Activity:</p> <p>Children to draw lines of symmetry on Morris designs (see worksheet).</p> <p>G&T extension: To draw their own symmetrical design inspired by Morris on squared paper.</p> <p>SEN: You could cut out the patterns from the worksheet so they can find the line of symmetry by folding rather than using a mirror.</p> <p>Success criteria</p> <p>I understand what a line of symmetry is.</p> <p>I can find the line of symmetry in designs by William Morris.</p>	<p>G&T children to share their designs with the rest of the class. Ideally teacher to put their design onto the whiteboard so everyone can see it.</p> <p>Resources (Bold included in pack)</p> <p>Worksheet</p> <p>Mirrors for support</p> <p>Rulers</p> <p>Squared paper</p> <p>Pencils</p>

Maths: Drawing Lines of Symmetry (with a focus on William Morris). (continued)

Drawing lines of Symmetry (with focus on William Morris). Duration 1 hour. Date:

Main teaching		
<p>Show the children the image from Link 1 – tiles designed by William Morris.</p> <p>What can you see? How might you describe this pattern using mathematical language?</p> <p>Is it symmetrical? Where do we think the line of symmetry is? Would someone like to come and draw it in as accurately as possible?</p> <p>Repeat with image from Link 2 – dragon fabric designed by Morris.</p> <p>Explain to the children that today they will be drawing lines of symmetry on other Morris designs. Encourage them to use a mirror to help them, and to draw the line as accurately as they can.</p> <p>ICT: Link to wikipedia portrait: http://en.wikipedia.org/wiki/File:George_Frederic_Watts_portrait_of_William_Morris_1870_v2.jpg</p> <p>Link 1 – Tiles - http://en.wikipedia.org/wiki/File:Morris_tiles_de_Morgan_1876.jpg</p> <p>Link 2 http://en.wikipedia.org/wiki/File:Morris_Peacock_and_Dragon_Fabric_1878_v2.jpg</p> <p>EAL: modeling, visual scaffolding, mixed ability grouping</p> <p>Every Child Matters: Enjoy and Achieve</p>		

**Draw the lines of symmetry onto these designs by William Morris.
Use a mirror to help you, and draw the lines accurately using a ruler. On some,
there is more than one line of symmetry, so look carefully!**



**Extension challenge: On squared paper, draw your own symmetrical pattern
inspired by the works of William Morris**

Maths: Exploring Pattern and Symmetry (with a focus on William Morris).

Duration 1 hour. Date:

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<p>Main teaching</p> <p>CCL History (Victorians), Art and Design</p>	<p>Activities - Differentiation</p>	<p>Plenary</p>
<p>L.O.: To review knowledge of pattern, symmetry, reflection, transformation and translation in the context of William Morris.</p> <p>Review the key vocabulary from the learning objective (remove any the children are unfamiliar with) – at a minimum they will need to understand pattern, symmetry, reflection.</p> <p>If the children are not aware of who William Morris is, you may want to tell them a few key facts about him:</p> <p>Show children a photo of William Morris – e.g. from www.wikipedia.org (see link below) Tell the children: William Morris was born in Walthamstow in East London in 1834 and he died in 1896.</p> <p>Do you know what we call that time? (The Victorian Era). Do you know why we call it that? (Because Queen Victoria was on the throne at that time). Do you know of any major changes which happened then, or any important inventions? (industrialisation, steam engine – trains).</p> <p>William Morris always wanted to learn how things were made.</p> <p>He liked more old-fashioned techniques – such as colouring fabrics with natural dyes, block printing from wood, and weaving things by hand. He valued good craftsmanship.</p> <p>What is a craftsman? What do you think craftsmanship means?</p> <p>Show the children the image from Link 1 – tiles designed by William Morris.</p> <p>What can you see? How might you describe this pattern using mathematical language?</p>	<p>Activity (in mixed ability groups):</p> <p>Each child to have access to the William Morris designs (either on whiteboard or printed out).</p> <p>They also need squared paper.</p> <p>Children to create their own William Morris inspired design.</p> <p>Can use mirrors for support.</p> <p>LA: Should have one line of symmetry.</p> <p>MA: Should try to include symmetry and translation.</p> <p>HA: To include symmetry, translation and rotation. Also to try to include detailed elements in their design e.g. rather than just outline of a leaf, to include detail of veins.</p> <p>SEN: You could give them a selection of William Morris designs on paper (see Investigating Pattern art resources) which the children could cut out and stick to create their own pattern.</p> <p>Success criteria</p> <p>I understand the concepts of reflection, symmetry, translation and rotation.</p> <p>I can use these concepts to create my own pattern inspired by William Morris.</p>	<p>Some children to share their designs, and explain them using mathematical vocabulary.</p> <p>Teacher to show their work on whiteboard if possible.</p> <p>Resources</p> <p>Mirrors for support</p> <p>Squared paper</p> <p>Pencils</p>

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<p>Is the symmetry the same as in the first one? Why? Why not?</p> <p>Would it be possible to divide the image into 3, and have 3 lines of symmetry? Where would they be?</p> <p>Look at the red and yellow flowers in the corners of the image. How could you make the top flowers match the bottom flowers?</p> <p>Is it reflection? (no or they would be upside down at the top). It is called translation – it has been moved without changing size or shape.</p> <p>Now look at the trio of red and cream flowers. How are these three flowers related to each other? Not truly symmetrical because of the stems. Instead, use as a way of discussing rotation. Where would the centre of rotation be? How do you know?</p> <p>Model creating your own design inspired by William Morris including symmetry, translation, and rotation.</p> <p>ICT: Link to wikipedia portrait: http://en.wikipedia.org/wiki/File:George_Frederic_Watts_portrait_of_William_Morris_1870_v2.jpg</p> <p>Link 1 – Tiles - http://en.wikipedia.org/wiki/File:Morris_tiles_de_Morgan_1876.jpg</p> <p>Link 2 – Snakeshead - http://en.wikipedia.org/wiki/File:Morris_Snakeshead_printed_textile_1876_v_2.jpg</p> <p>EAL: modeling, visual scaffolding, mixed ability grouping</p> <p>Every Child Matters: Enjoy and Achieve</p>		