# Geometric Art from around the World

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| Tasg:<br>Edrychwch ar y patrymau o wahanol rannau'r byd sydd ar eich bwrdd.<br><br>Ar gyfer pob patrwm, ystyriwch: Beth yw nodweddion geometrig y patrwm?<br><br>A oes yna siapiau geometrig allweddol? A oes siapiau allweddol yn cael eu hailadrodd?<br><br>**Gwneud cysylltiadau rhwng Mathemateg a Gwyddoniaeth a Thechnoleg**<br><br>**Codio**<br><br>Mae codio wedi datblygu o fathemateg ac mae'n defnyddio rhesymu rhesymegol fel adnabod a chymhwyso patrymau a ailadroddir. Tarddle cyfrifiadura modern yw gwaith mathemategwyr. Caiff Alun Turing, mathemategydd, ei gydnabod gan lawer yn un o sylfaenwyr cyfrifiadura modern; bu'n rhan ddylanwadol o waith torri codau cyfrinachol ym Mharc Bletchley, yn ystod yr Ail Ryfel Byd, a arweiniodd at dorri cod 'Enigma' yr Almaen. Amcangyfrifir bod y gwaith hwn, a gafodd ond ei gyhoeddi yn y 1990au oherwydd y Ddeddf Cyfrinachau Swyddogol, wedi cwtogi'r rhyfel o tua dwy flynedd. Ystyrir mai'r peiriannau torri codau a ddatblygwyd gan Alun Turing a'r tîm ym Mharc Bletchley oedd y math cyntaf o gyfrifiadur modern.<br><br>Felly mae'r ddolen rhwng cyfrifiadura a mathemateg yn gryf iawn ac mae defnyddio codio i dynnu lluniau siapiau geometrig yn un ffordd y gall medrau digidol a dealltwriaeth fathemategol gydblethu. | Task:<br>Look at the patterns from around the world on your table.<br><br>For each pattern, consider: What are the geometric features of the pattern?<br><br>Are there key geometric shapes?<br><br>Is there repetition of key shapes?<br><br>**Making links between Mathematics and Science and Technology**<br><br>**Coding**<br><br>Coding has developed out of mathematics and involves logical reasoning such as recognition and application of repeated patterns. Modern computing originated from the work of mathematicians. Alun Turing, a mathematician, is widely regarded as one of the founders of modern computing; he was highly influential in secret code breaking work in Bletchley Park, during the Second World War, which resulted in breaking the German 'Enigma' code. This work, which only became public in the 1990's due to the Official Secrets Act, is estimated to have shortened the war by around two years. The code breaking machines which were developed by Alun Turing and the team in Bletchley Park are regarded as the first form of modern computers.<br><br>The link between computing and mathematics is therefore really strong and using coding to draw geometric shapes is one way in which digital competence and mathematical understanding can be intertwined. |

Making geometric style art **Use J2E Coding (Hwb)**
https://nrich.maths.org/4852
https://www.ncetm.org.uk/resources/18030

Would you be able to code something like this:
https://scratch.mit.edu/projects/25197752/

Also to explore: Blockly Turtle: good for understanding commands and practising skills
https://blockly.games/turtle?lang=en

Or Rangoli patterns using coding:
https://scratch.mit.edu/search/projects?q=rangoli

Projects for the classroom (available in Welsh and English):
https://www.barefootcomputing.org/resources/shapes-crystal-flowers-repetition