

Maths art for IGCSE and GCSE: curve stitching, tessellations and graph pictures: answers

IGCSE Math Revision · IGCSE and GCSE (Higher and Extended) · Teacher answers and notes

No calculator needed.

Teacher notes

- Bring squared paper, rulers and coloured pencils.
- Make it a display: curve stitching in coloured pencil (or thread on card), a tessellation tile coloured in groups, and the graph pictures printed with their equations underneath.
- Task C works well in any free online graph plotter: students type the equations and screenshot the picture.

Starter

1. **60°**
 - $180 \div 3$
2. **-4**
 - $(0 - 8)/(2 - 0)$
3. **3**
 - $120 \times 3 = 360$

Task A: Curve stitching

- a. **$y = -4x + 8$**
 - Gradient $= (8 - 0)/(0 - 2) = -4$
 - y-intercept 8
- b. **$7x + 3y = 21$**
 - Gradient $-7/3$, intercept 7: $y = -7x/3 + 7$
 - Multiply by 3: $7x + 3y = 21$
- c. **$(0.6, 5.6)$**
 - $-4x + 8 = -7x/3 + 7$
 - $-12x + 24 = -7x + 21$, so $x = 3/5$
 - $y = -12/5 + 8 = 28/5$

Task B: Tessellations

- a. **$120^\circ; 3$**
 - Exterior angle $360 \div 6 = 60$, so interior 120
 - $360 \div 120 = 3$
- b. **Each angle is 108° , and 108 does not divide 360**
 - Interior angle $180 - 72 = 108$
 - $360 \div 108 = 3.33\dots$, not a whole number, so there is a gap.
- c. **$135 + 135 + 90 = 360$**
 - Octagon: $180 - 45 = 135$
 - $135 + 135 + 90 = 360$, so there is no gap.

Task C: Graph pictures

a. $y = x + 4$

- $y = mx + c$ with $m = 1$, $c = 4$

b. $(4, 0)$

- $y = -x + 4 = 0$ at $x = 4$

c. $(0, -4)$; $x = -2$ and 2

- The lowest point is at $x = 0$.
- $x^2 = 4$

Extension

1. $x + y = 5$

- Gradient -1 , intercept 5

Every question is original and every answer was recomputed by computer before publishing.