

Maths art for CBSE Class 9 and 10: curve stitching, tessellations and designs: answers

CBSE Math Revision · CBSE Class 9 and 10 · Teacher answers and notes

No calculator. Every answer works out exactly.

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 A, question 3 is a pair of linear equations: students can check the crossing point on their stitching.

Starter

1. **60°**
 - $180 \div 3$
2. **3**
 - $120 \times 3 = 360$
3. **60°**
 - $360 \div 6$

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°; 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 $180 - 72 = 108$
 - $360 \div 108 = 3.33...$, 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-paper designs

a. **$(-3, 5)$**

- Change the sign of the x -coordinate.

b. **6**

- $\sqrt{((3 - (-3))^2 + 0^2)} = 6$

c. **$(4, 5)$**

- $((2 + 6)/2, (7 + 3)/2)$

Extension

1. **$x + y = 5$**

- Both points satisfy $x + y = 5$.

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