General Certificate of Secondary Education

| Centre name | | | | | | Surname |
|---|---|---|---|---|---|---|
| Centre Number | | | | | | Other Names |
| Candidate Number | | | | | | Signature |

# GCSE
## Mathematics (Linear)

Answers at: http://www.mathsmadeeasy.co.uk/gcsemathsrevisionpapers.htm

## Basic Transformations
## Translate, enlarge, rotate, reflect, tessellate

Marks shown in brackets for each question (2)

| Question | Type of question | Marks |
|---|---|---|
| 1 | Translation | 5 |
| 2 | Enlargement | 7 |
| 3 | Reflection | 8 |
| 4 | Rotation | 10 |
| 5 | Describing transformations | 9 |
| 6 | Tessellation | 3 |

### Instructions
Write your name and other details in the boxes above.
Answer all the questions

### Information
Marks are shown in brackets for each question (2)
There are 24 Questions. Total marks 42
**Calculators can be used**

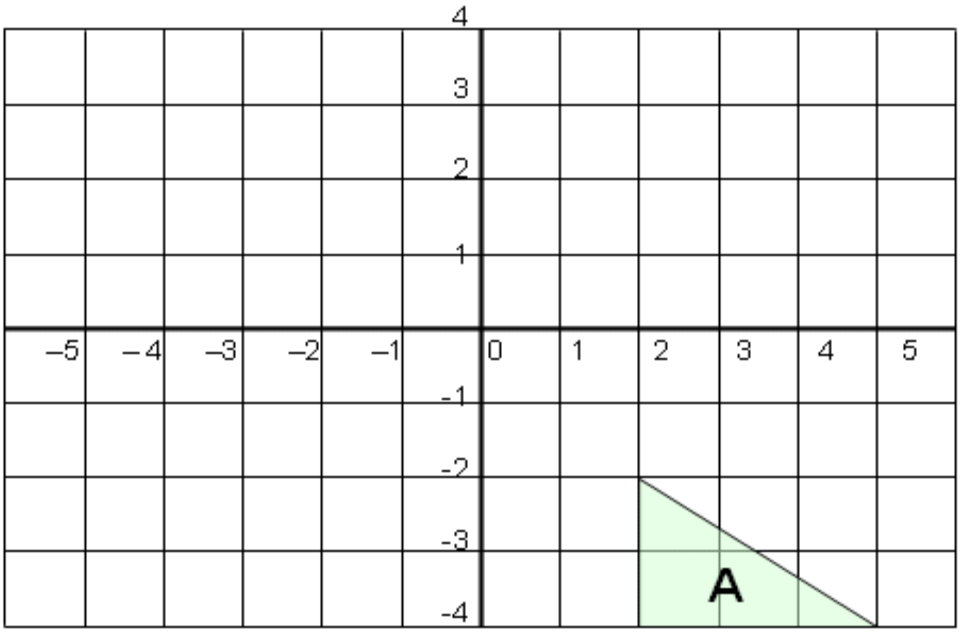
### Advice
Don't spend too long on one question
Show all your working in calculations for full marks
You will get marks for method even if your answer is incorrect
Leave a question until later it you cannot answer it

**Authors Note**

Every possible effort has been made to ensure that everything in this paper is accurate and the author cannot accept responsibility for any errors.

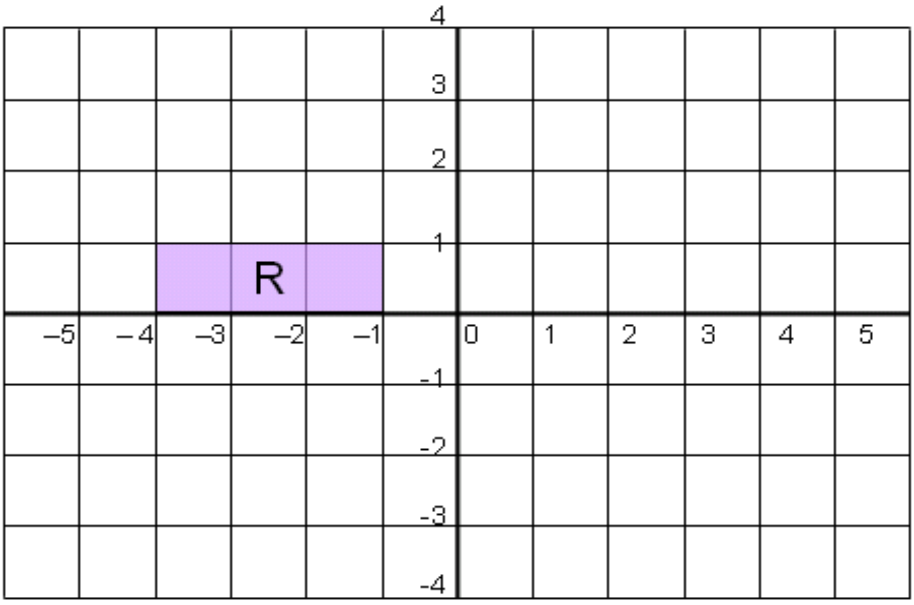
**1. Translation**

**a)** Translate triangle A by the vector $\begin{pmatrix} +1 \\ +5 \end{pmatrix}$ Label the new triangle B.



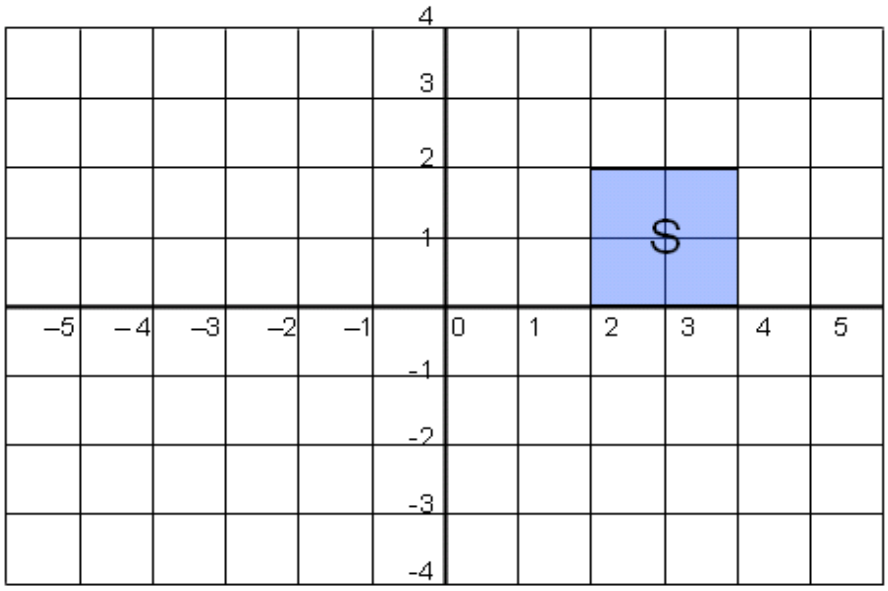

**(1)**

**b)** Translate rectangle R by the vector $\begin{pmatrix} +6 \\ -2 \end{pmatrix}$ Label the new rectangle P.



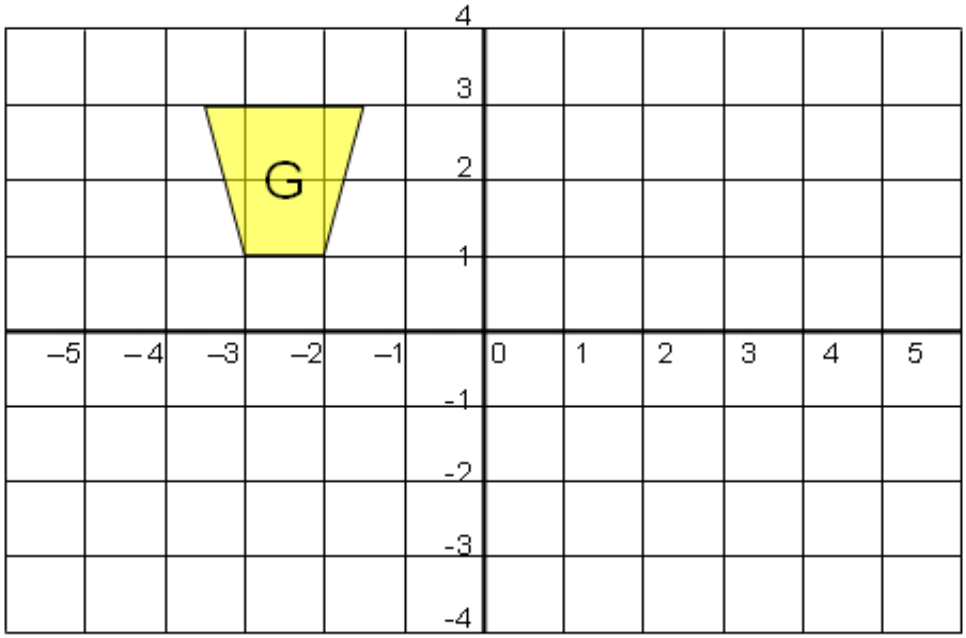

**(1)**

**c)** Translate square S by the vector $\begin{pmatrix} -6 \\ +1 \end{pmatrix}$ Label the new square Q.




**(1)**

**d)** Translate shape G by the vector $\begin{pmatrix} -2 \\ -4 \end{pmatrix}$ Label the new shape H.




**(1)**

**e)** Name the shape G

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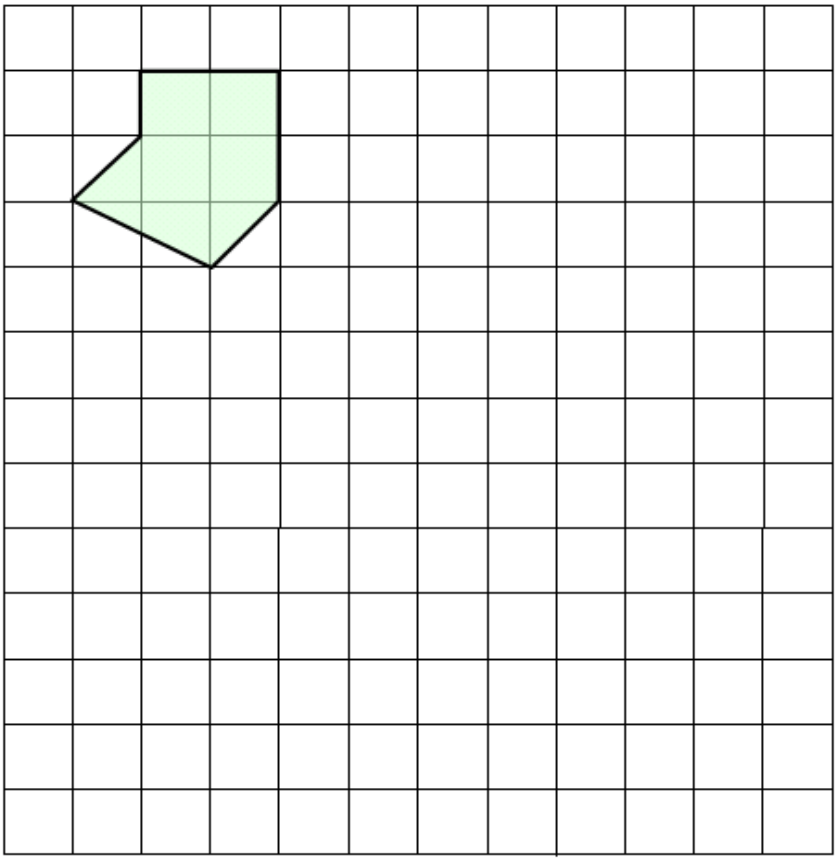
**(1)**

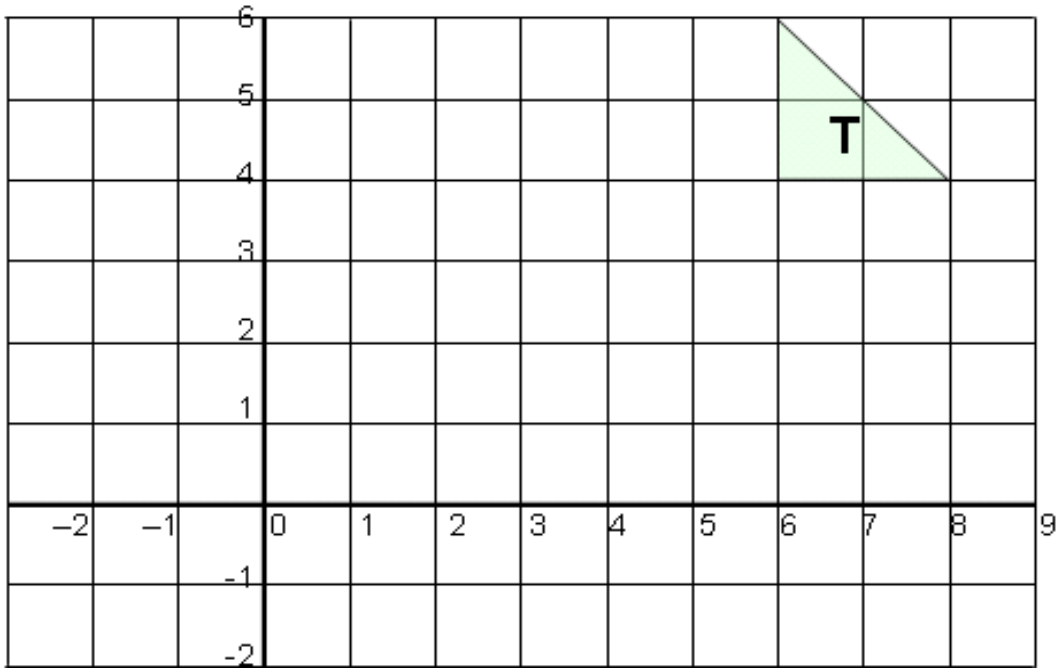
## 2. Enlargement

**a)** Enlarge the shape shown below by a factor of three.



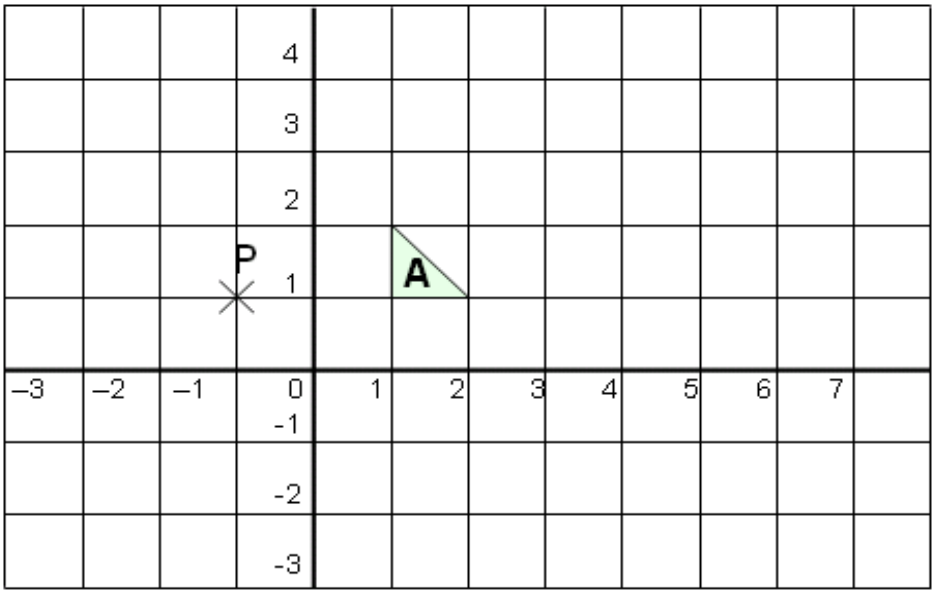
**(1)**

**b)** Enlarge the triangle T by a factor of ½ from the origin.



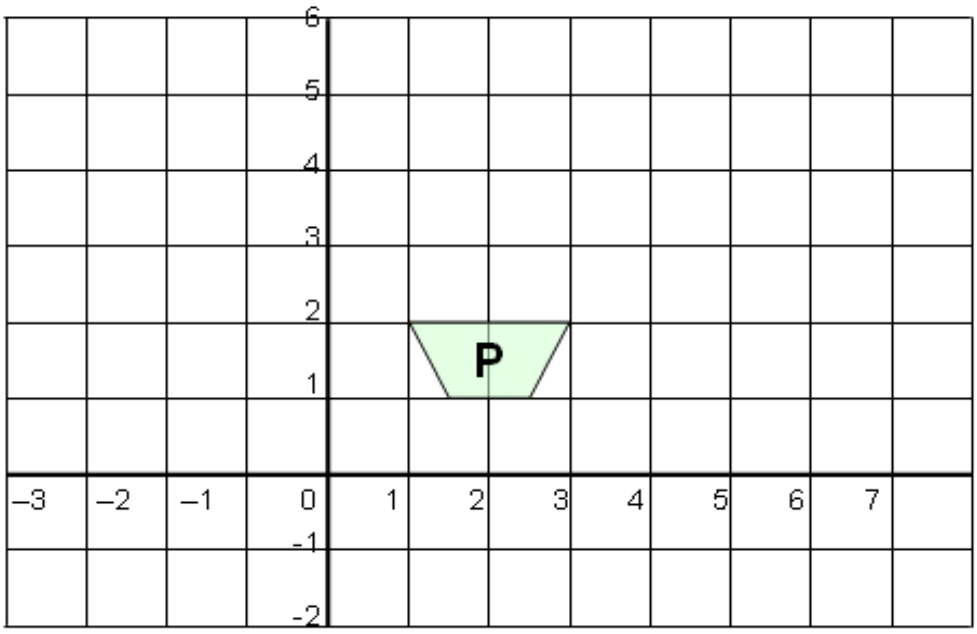

**(2)**

**c)** Enlarge the triangle A by a factor of 3 from centre P.




**(2)**

**d)** Enlarge shape **P** by scale factor 2, centre *O*, to give shape **Q**.

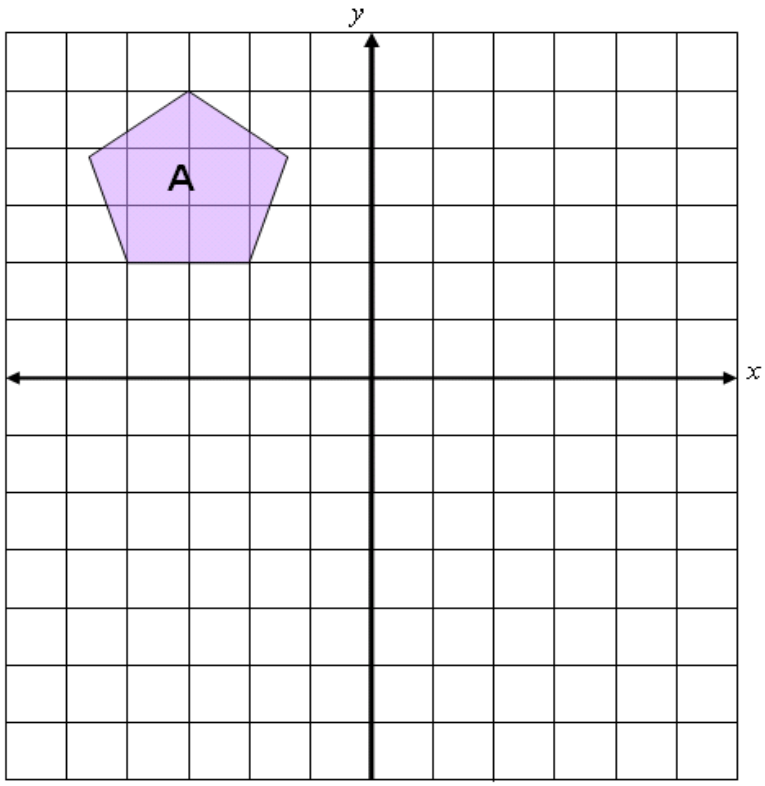



**(2)**

**3. Reflection**

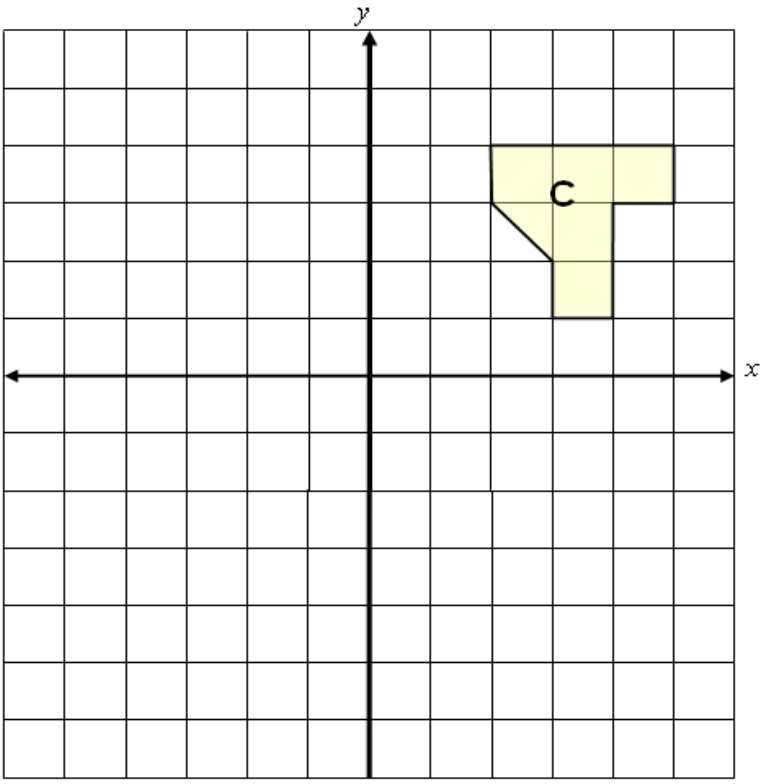
**a)** Reflect the shape A in the y-axis. Label it B

**(2)**



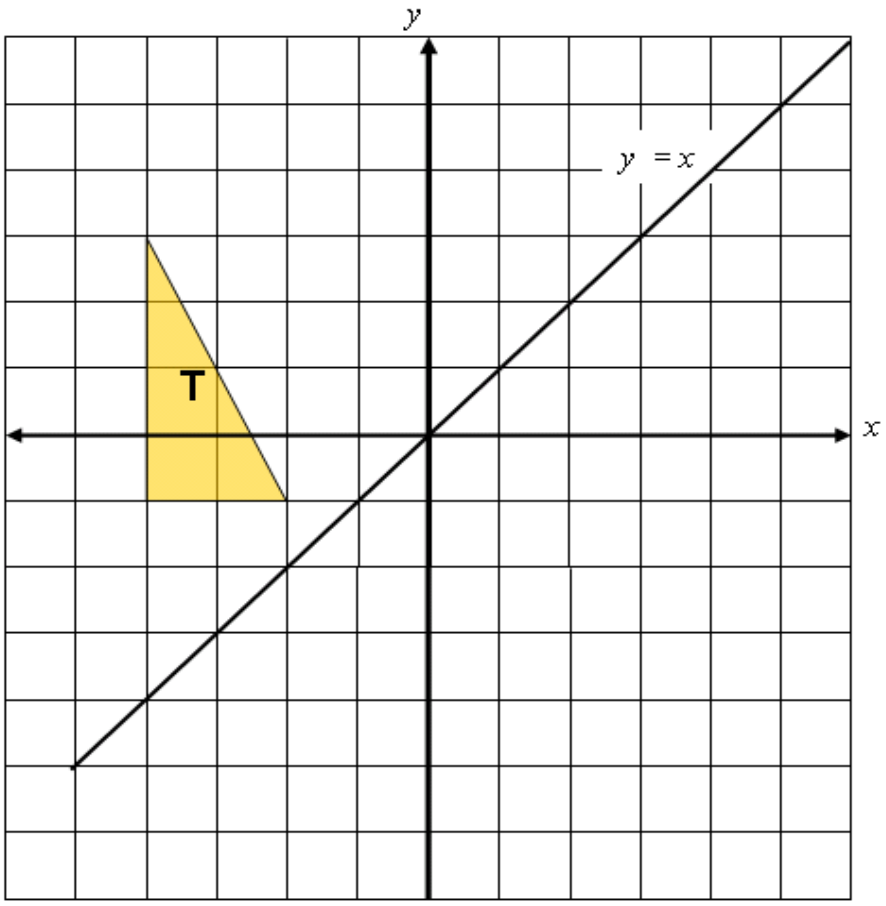

**b)** Reflect the shape C in the x-axis. Label it D

**(2)**



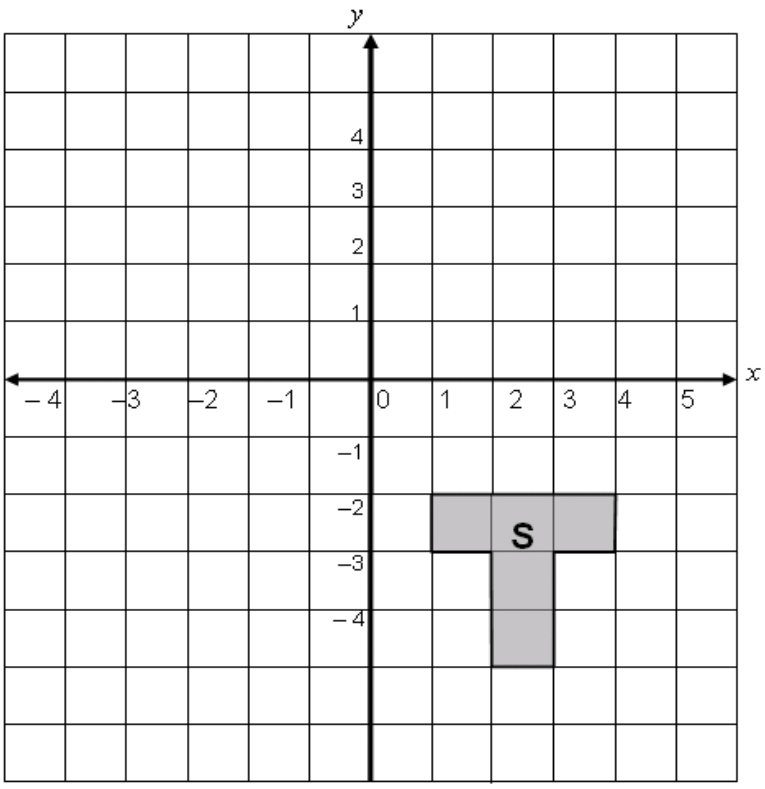
**c)** Reflect the triangle T in the line y = x
Label it V

**(2)**




**d)** Reflect shape S in the line y = – 1. Label it T.

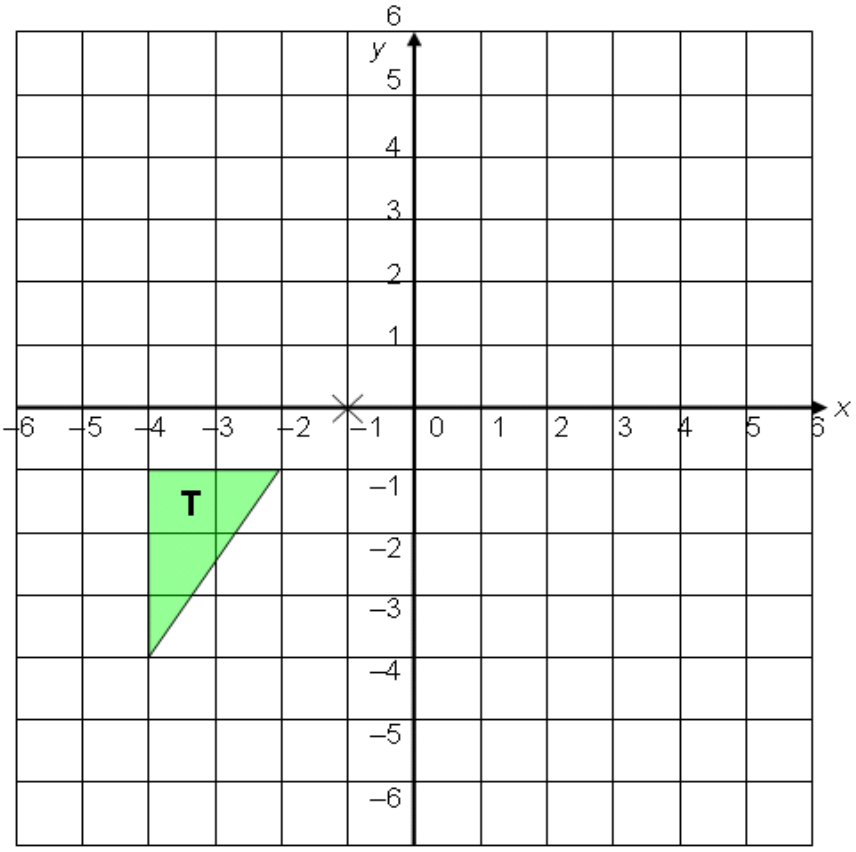
**(2)**



**4. Rotation**

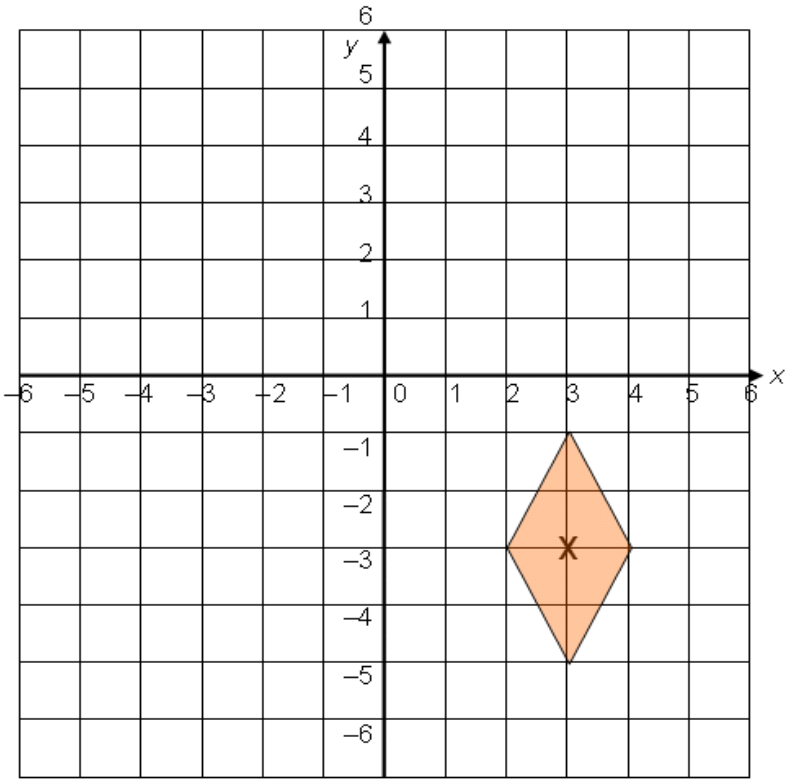
**a)** Rotate triangle **T** by $180^0$ about the point (– 1, 0). Label it U

**(3)**



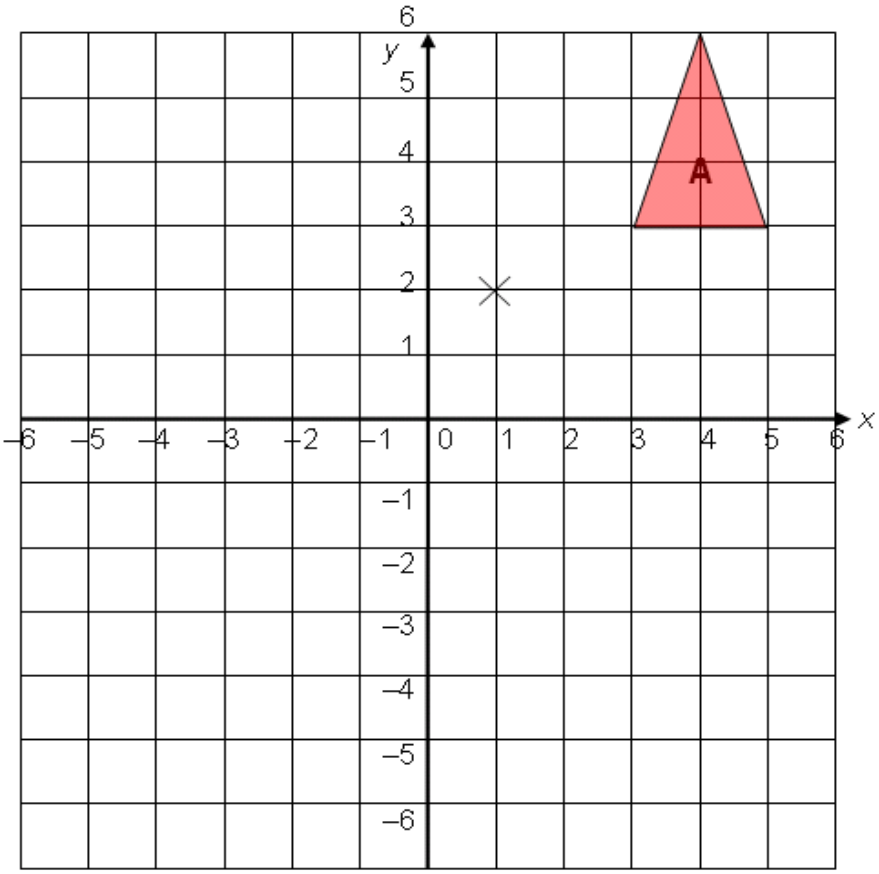

**b)** Rotate shape **X** by $90^0$ anti-clockwise about the origin (0, 0). Label it shape Y

**(2)**



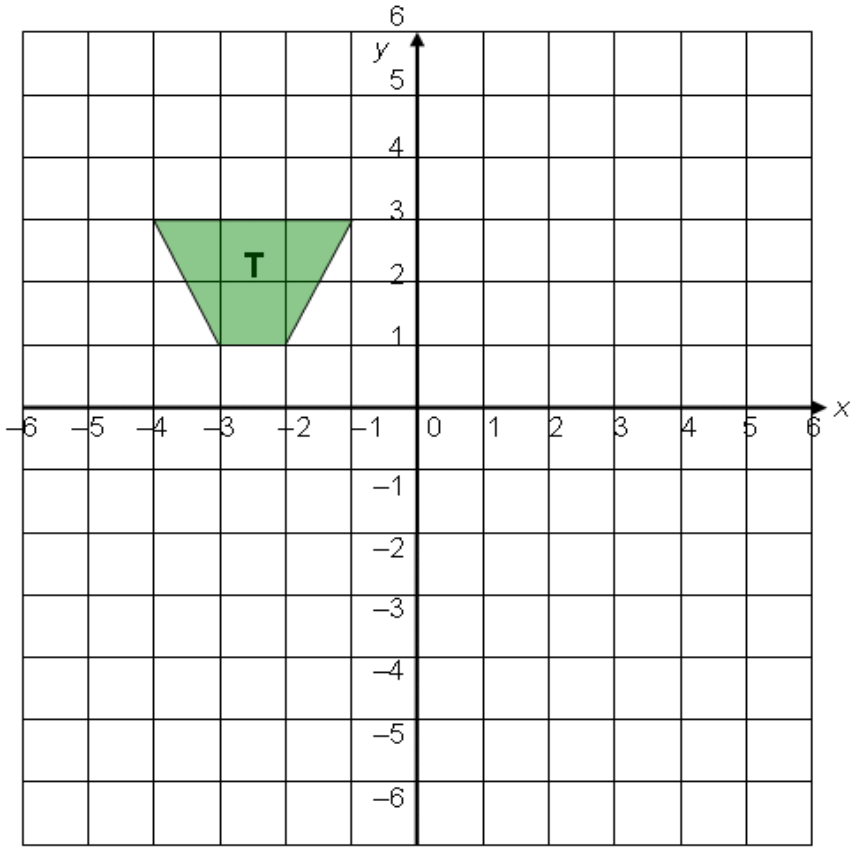
**c)** Rotate triangle **A** by $90^0$ anticlockwise about the point (1, 2). Label it B

**(3)**



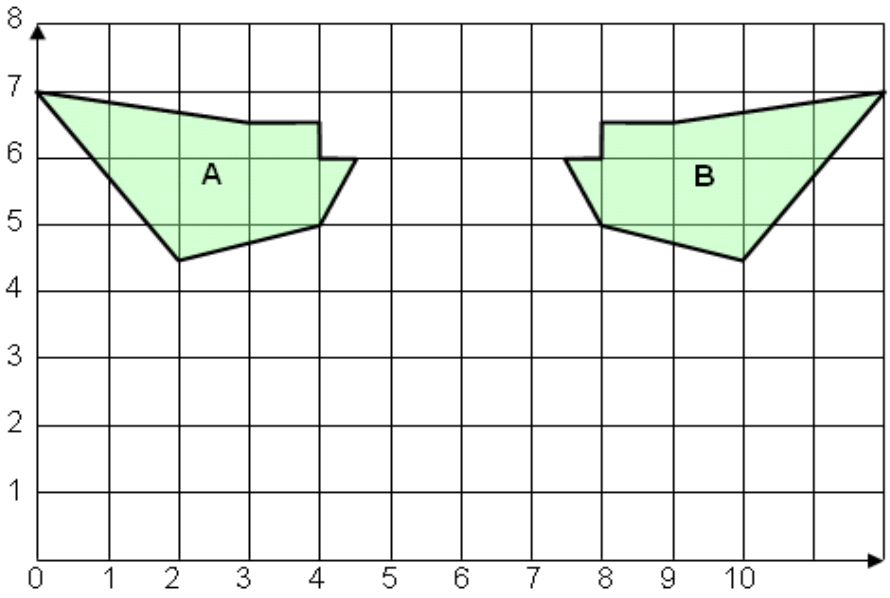

**d)** Rotate shape **T** by $180^0$ clockwise about the origin (0, 0). Label it V

**(2)**



**5. Describing Transformations**

**a)** Fully describe the single transformation which takes shape A to shape B

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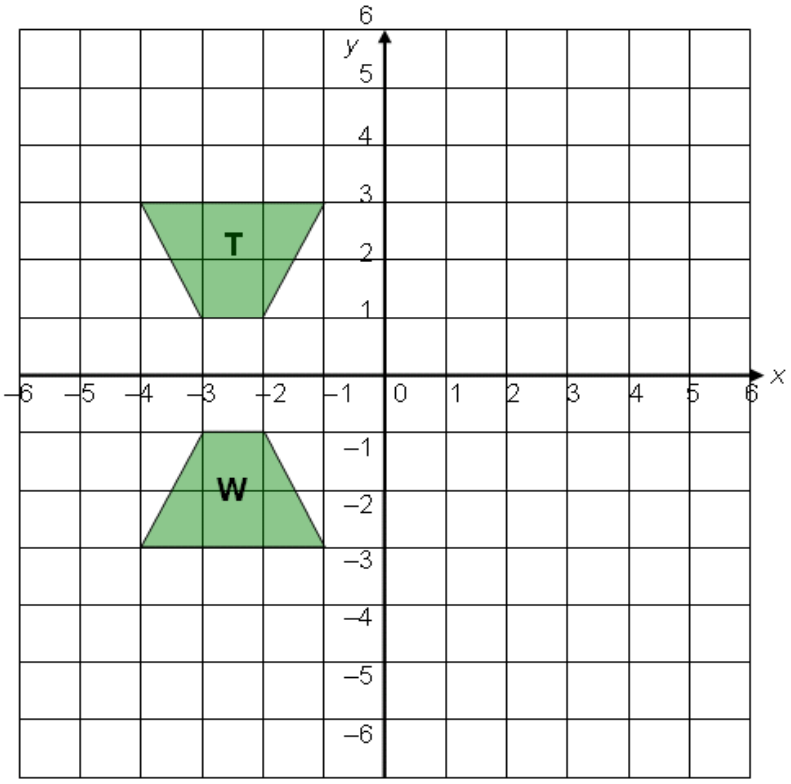
**(2)**

**b)** Fully describe the single transformation which takes shape T to shape W

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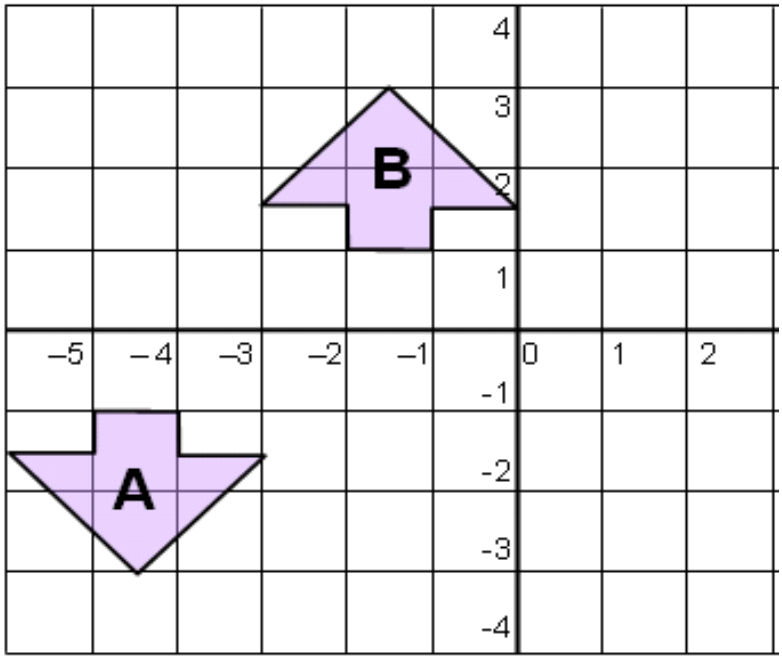
**(2)**

**c)** Fully describe the single transformation which takes shape A to shape B

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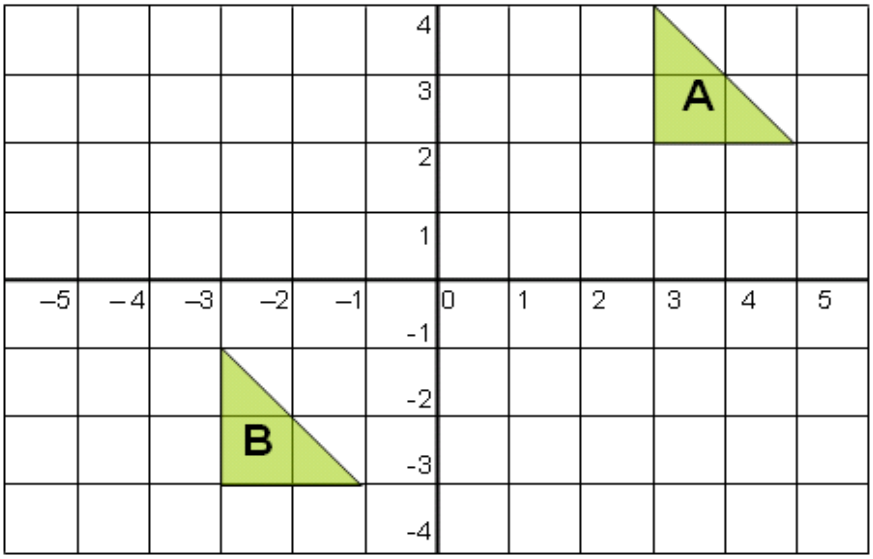
**(3)**

**d)** Fully describe the single transformation which takes triangle A to triangle B

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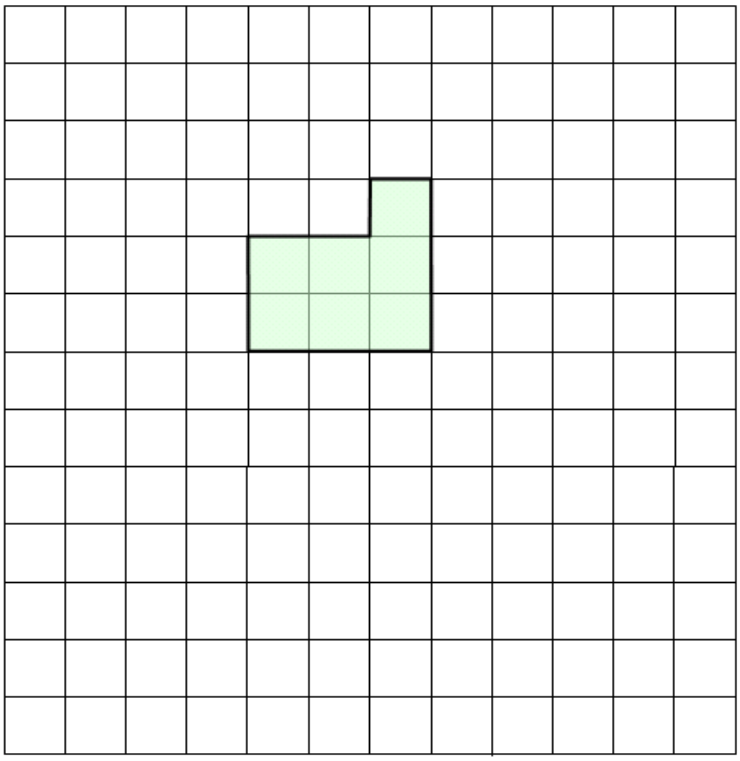
**(2)**

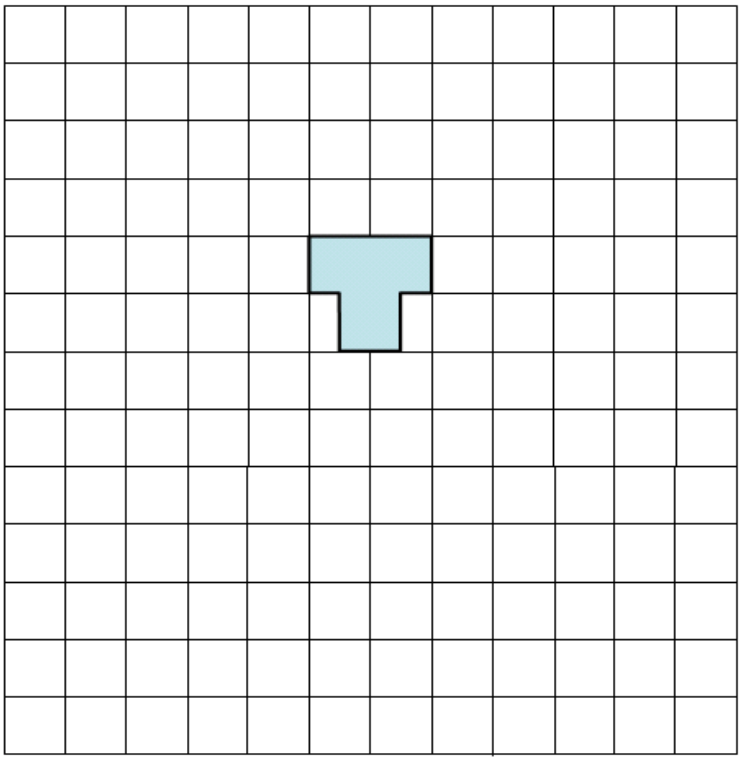
**6. Tessellate**

**a)** On the grid below, show how the shaded shape will tessellate.
You should draw at least six shapes.



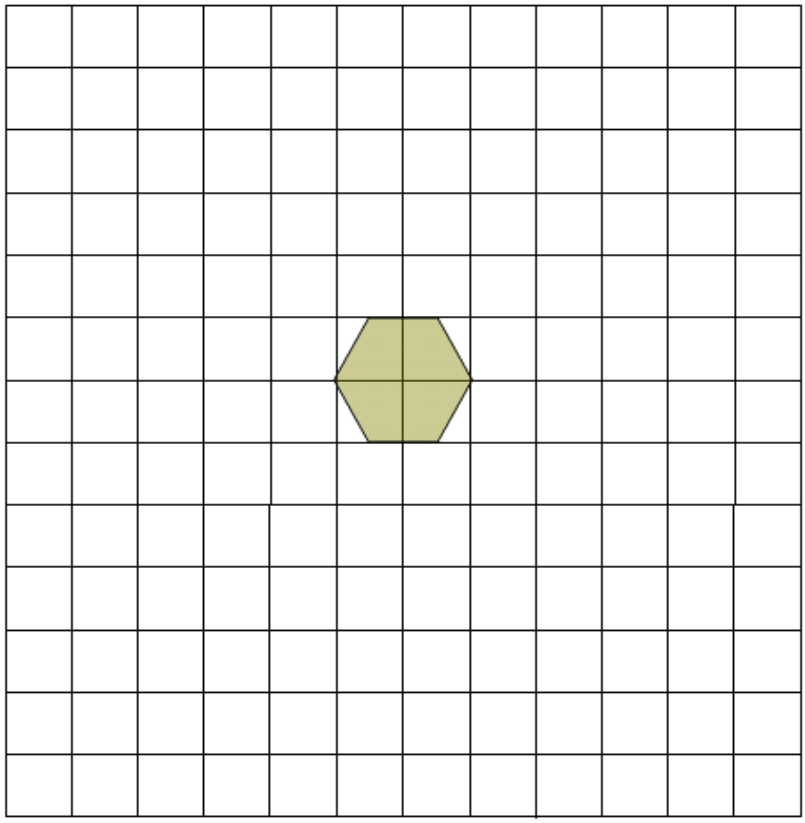
**(2)**

**b)** On the grid draw at least 6 shapes to show how the shape tessellates.



**(2)**

**c)** On the grid below draw how this shape tessellates. Make at lease 6 shapes.



**(2)**

**END**