Write your name, centre number and candidate number in the boxes below.

Surname	Other names

Centre number | | | | | |

Candidate number | | | | |

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Transformations

Time allowed: 1 hour 15 minutes

Subject code **0580**

Mathematics

Questions from Paper 1, Paper 3 and Paper 4

You must have: a ruler marked in centimetres and millimetres, a protractor, compasses, a pen, an HB pencil and an eraser.
You may use a calculator.

Total marks

/ 61

Instructions

- Answer every question in the space provided on this paper.
- Write in black or dark blue ink. Pencil may be used for diagrams and graphs.
- Fill in your name, centre number and candidate number above.
- Show your working: a correct method can earn marks even if the answer is wrong.
- Unless a question says otherwise, give answers that are not exact to 3 significant figures, and angles in degrees to 1 decimal place.

Information

- This paper has 10 questions worth 61 marks in total.
- The marks for each question or part are shown in brackets, for example [3].

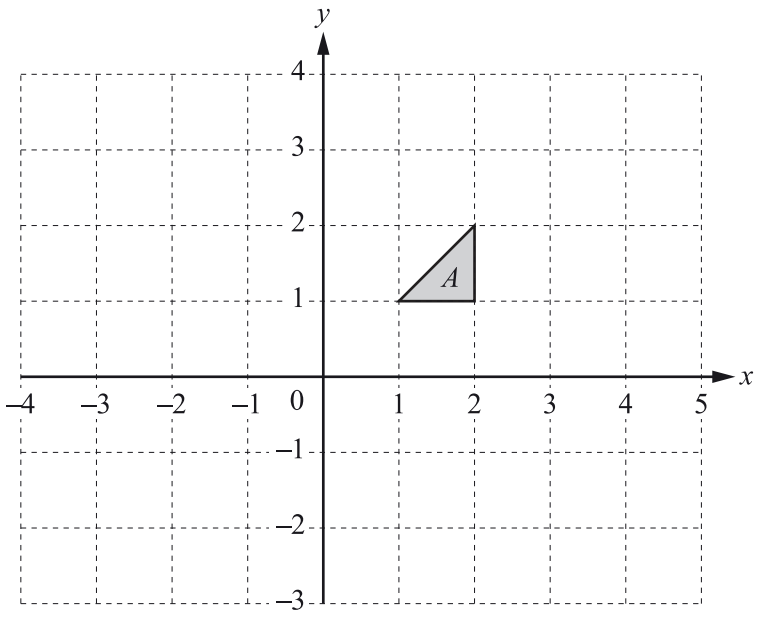
Advice

- Read every question through once before you write anything.
- Use the marks in brackets to judge how long to spend on each part.
- If you finish early, go back and check your working.

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Print at 100% (Actual size) so diagrams keep their real measurements.

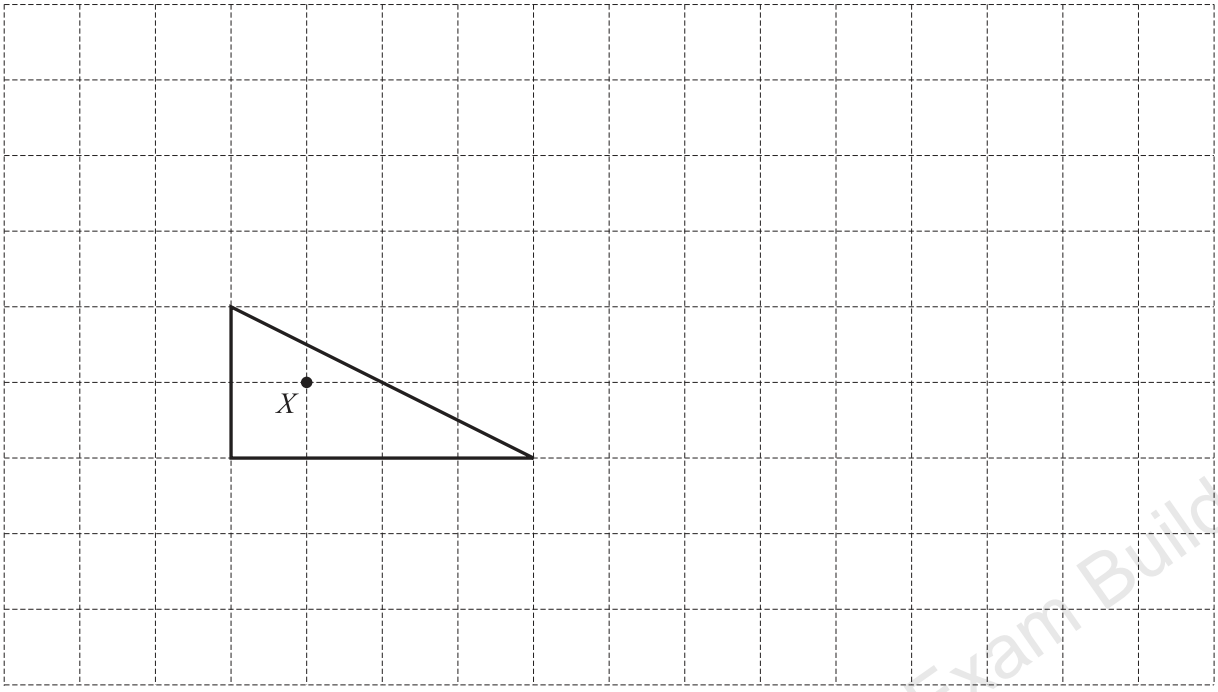
1



Draw the image of shape A after a translation by the vector $\begin{pmatrix} 2 \\ -3 \end{pmatrix}$. [2]

Transformations Click for more variations

2



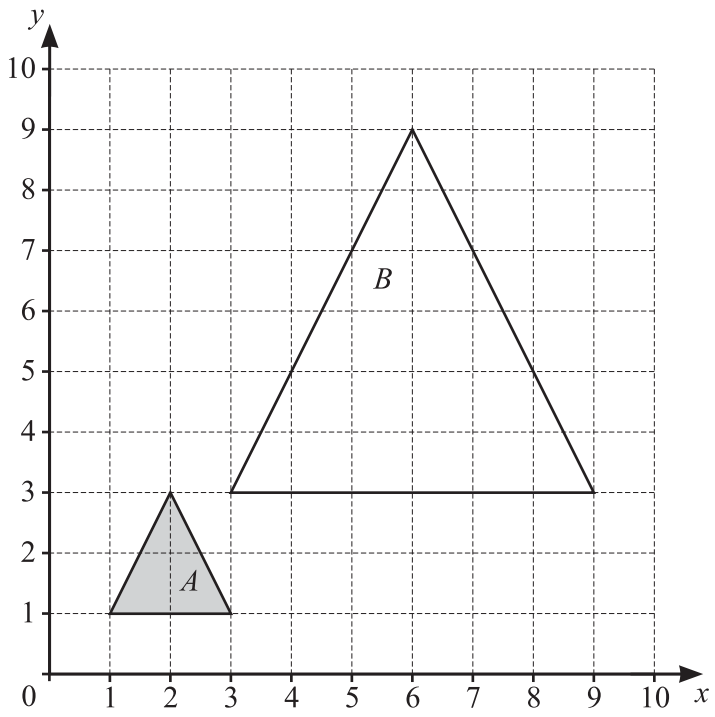
Draw the enlargement of the triangle by scale factor 3, centre X.

[2]

Transformations Click for more variations

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3 The diagram shows triangles A and B.



Describe fully the **single** transformation that maps triangle A onto triangle B.

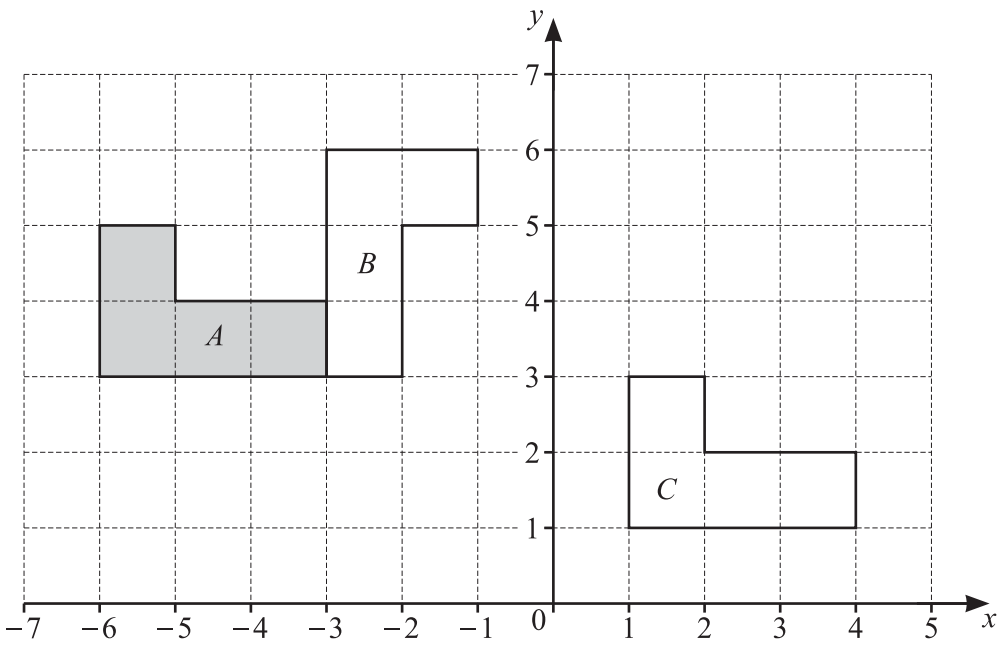
.....

..... [3]

Transformations Click for more variations

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4 The diagram shows three shapes, A, B and C, on a 1 cm^2 grid.



Describe fully the **single** transformation that maps

(a) shape A onto shape B

.....

..... [3]

(b) shape A onto shape C.

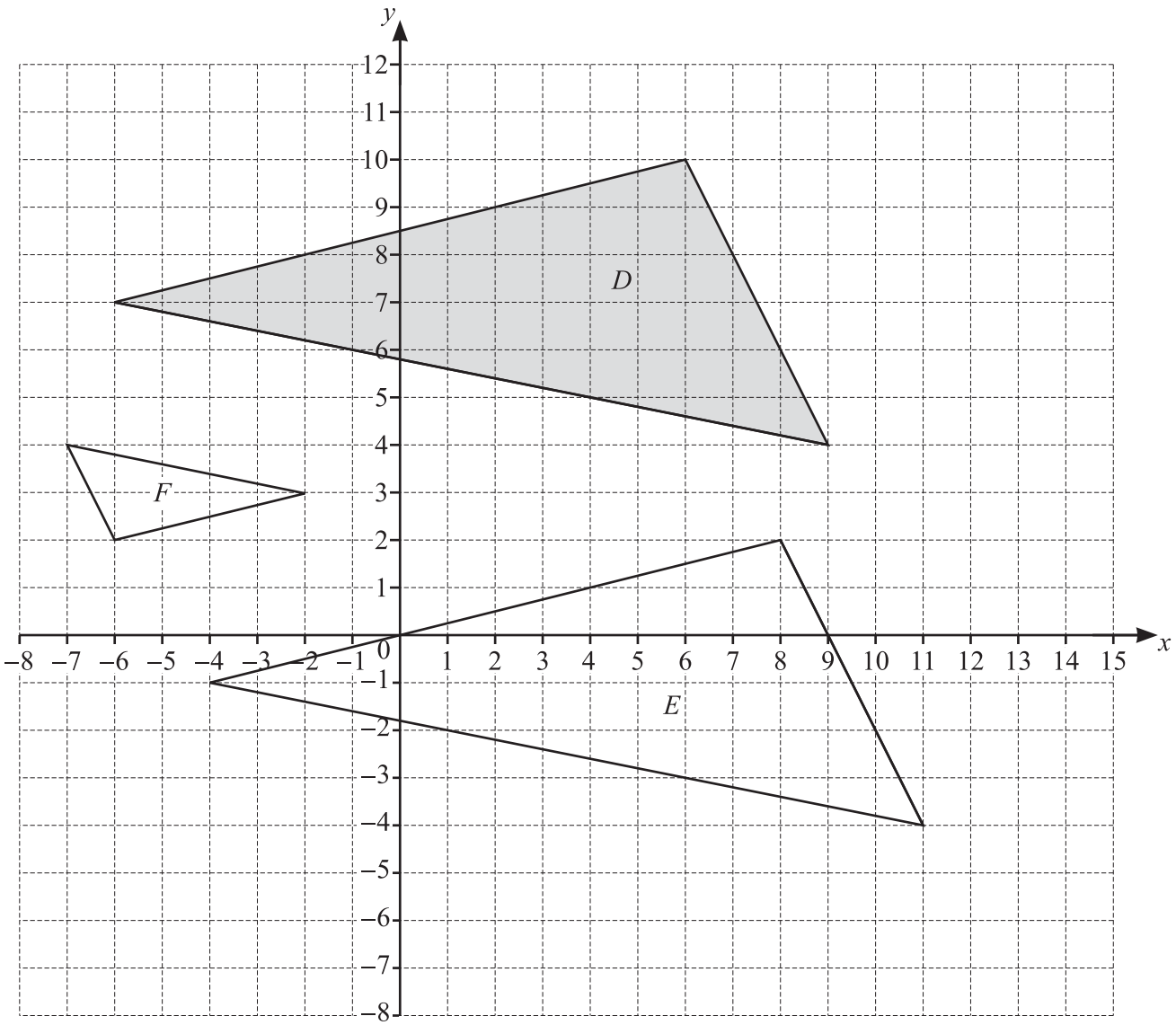
.....

..... [2]

(a) Transformations (b) Transformations Click for more variations

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5



(a) Describe fully the **single** transformation that maps triangle *D* onto triangle *E*.

.....

..... [2]

(b) Describe fully the **single** transformation that maps triangle *D* onto triangle *F*.

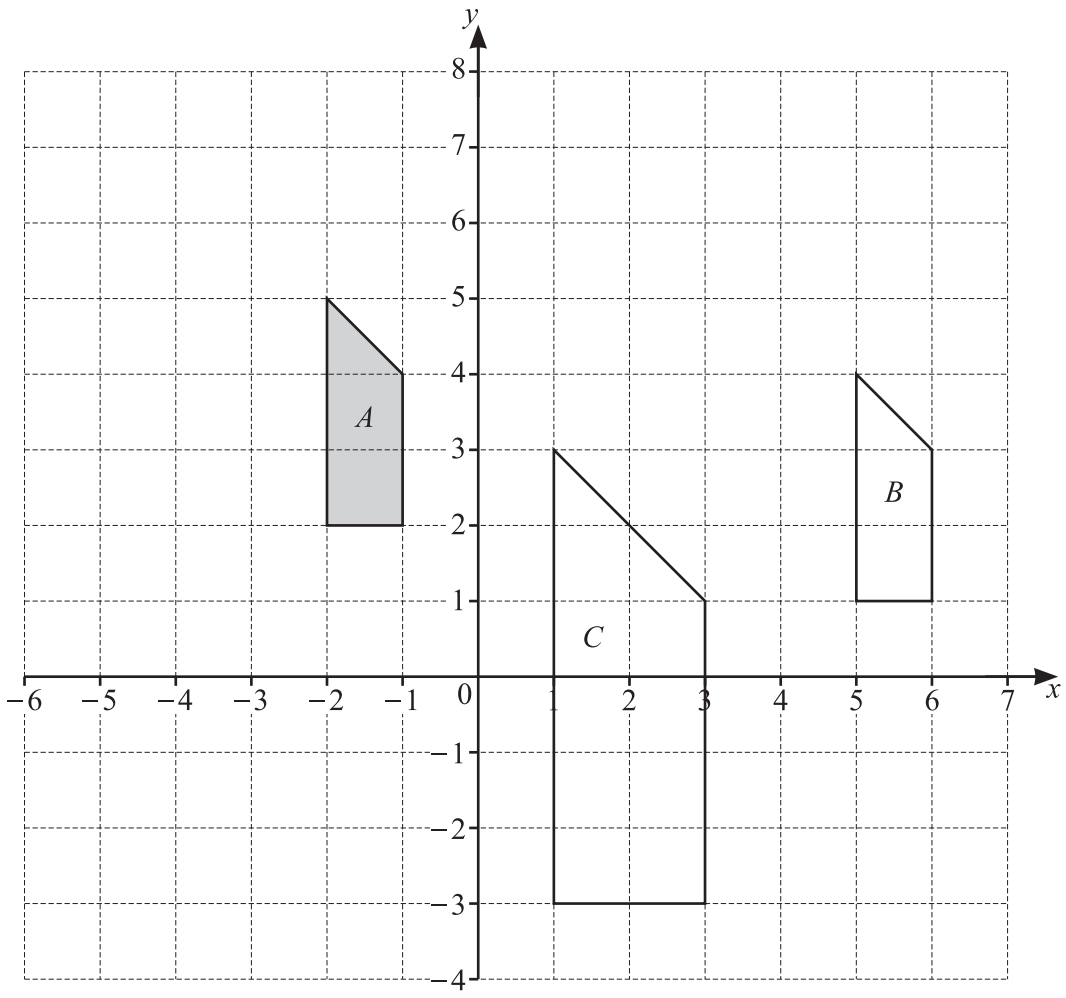
.....

..... [3]

(a) Transformations (b) Transformations Click for more variations

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6



(a) Sue describes the **single** transformation that maps shape *A* onto shape *B* as a translation by the vector $\begin{pmatrix} 7 \\ 1 \end{pmatrix}$.

Explain why Sue is incorrect.

.....

..... [1]

(b) On the grid, draw the image of shape *A* after a rotation of 90° anticlockwise about (0, 0). [2]

(c) Describe fully the **single** transformation that maps shape *A* onto shape *C*.

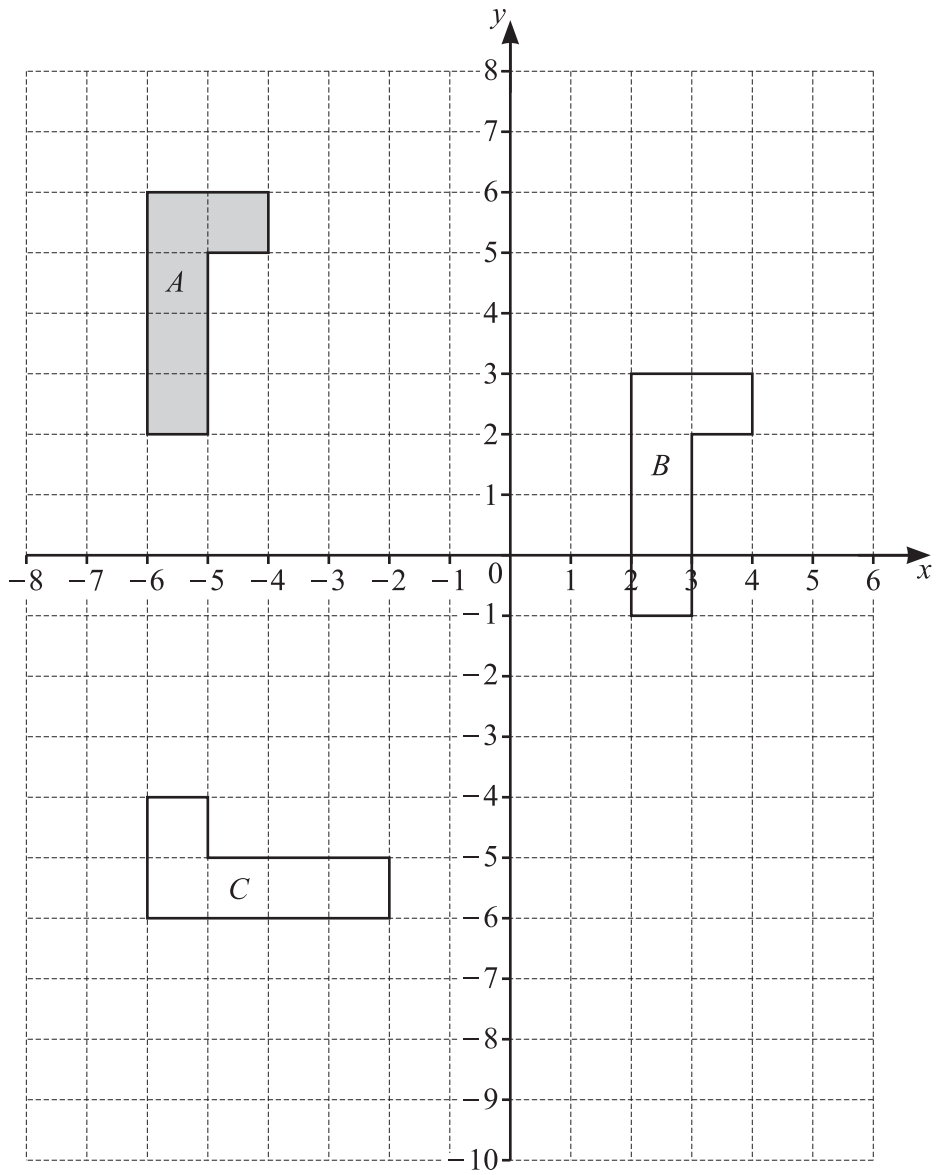
.....

..... [3]

(a) Transformations (b) Transformations (c) Transformations Click for more variations

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7



(a) Describe fully the **single** transformation that maps

(i) shape A onto shape B

.....

..... [2]

(ii) shape A onto shape C.

.....

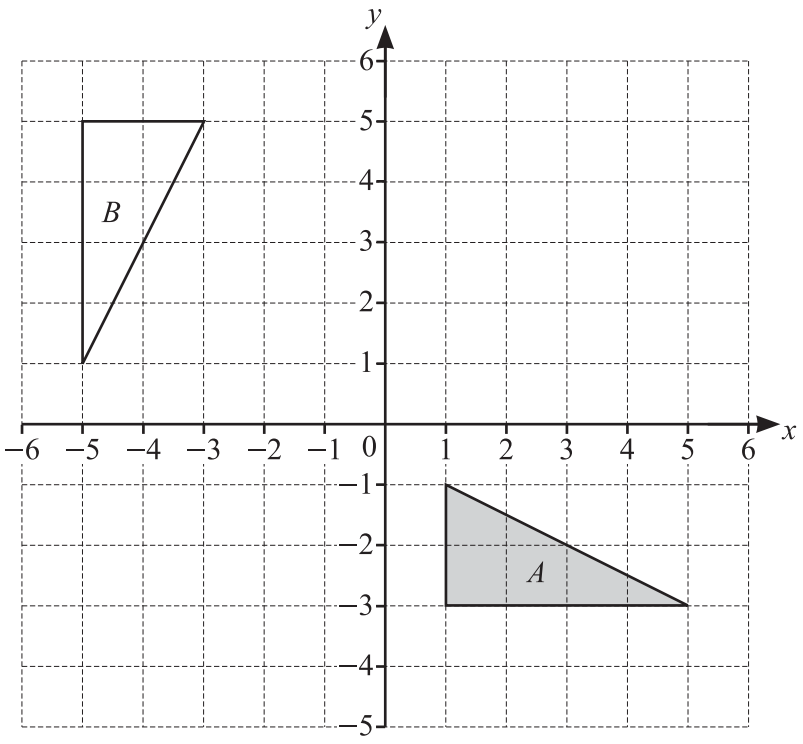
..... [3]

(b) On the grid, draw the image of shape A after a reflection in the line $x = -2$. [2]

(a)(i) Transformations (a)(ii) Transformations (b) Transformations Click for more variations

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8



(a) On the grid, draw

(i) the image of triangle A after a reflection in the line $x = 1$ [2]

(ii) the image of triangle A after an enlargement by scale factor $\frac{1}{2}$ with centre (5, 1). [2]

(b) Describe fully the **single** transformation that maps triangle A onto triangle B.

.....

..... [3]

(c) The point (a, b) is reflected in the line $y = k$ where k is an integer and $b < k$.

Write the coordinates of the image of point (a, b) in terms of a, b and k.

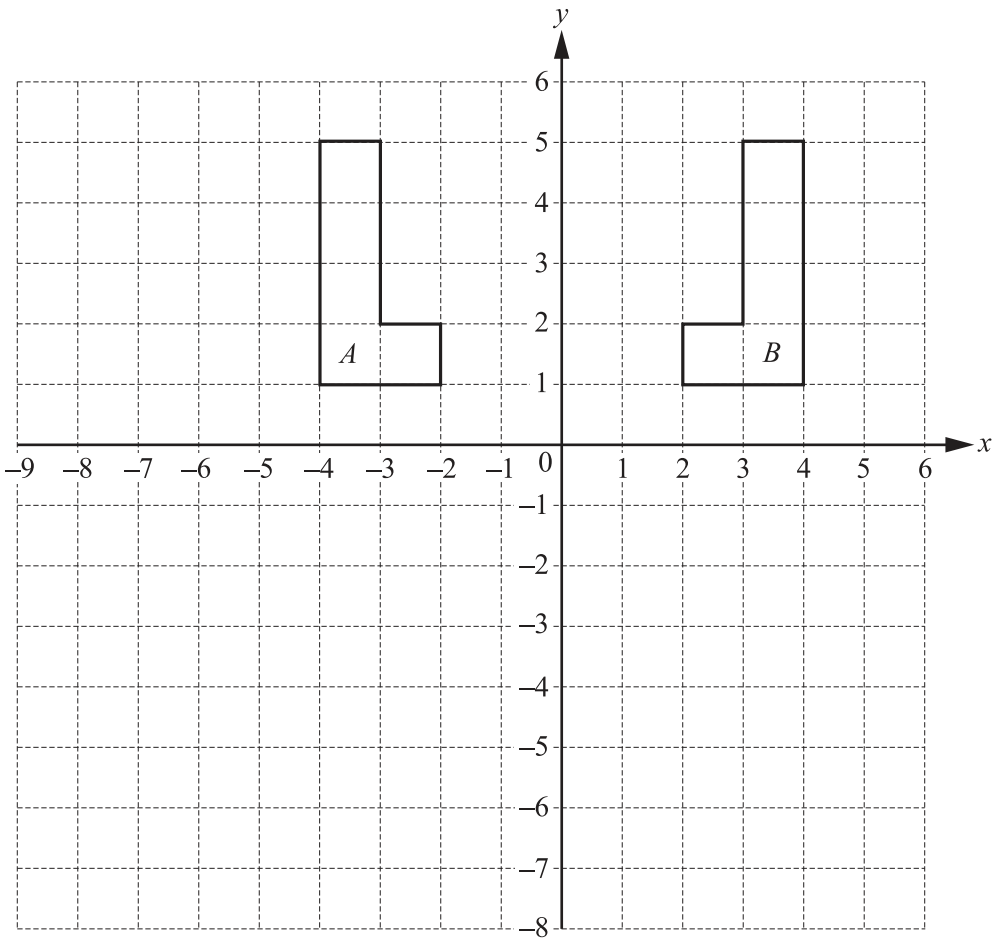
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(..... , ...) [2]

(a)(i) Transformations (a)(ii) Transformations (b) Transformations (c) Transformations

Click for more variations

9



The diagram shows two shapes A and B.

(a) Describe fully the **single** transformation that maps shape A onto shape B.

.....

..... [2]

(b) **(i)** Reflect **shape *B*** in the line $y = 0$ and label this shape C. [2]

(ii) Describe fully the **single** transformation that maps **shape *A*** onto shape C.

.....

..... [3]

(c) **(i)** Enlarge **shape *A*** by scale factor 3, centre (–2, 5). Label this shape D. [2]

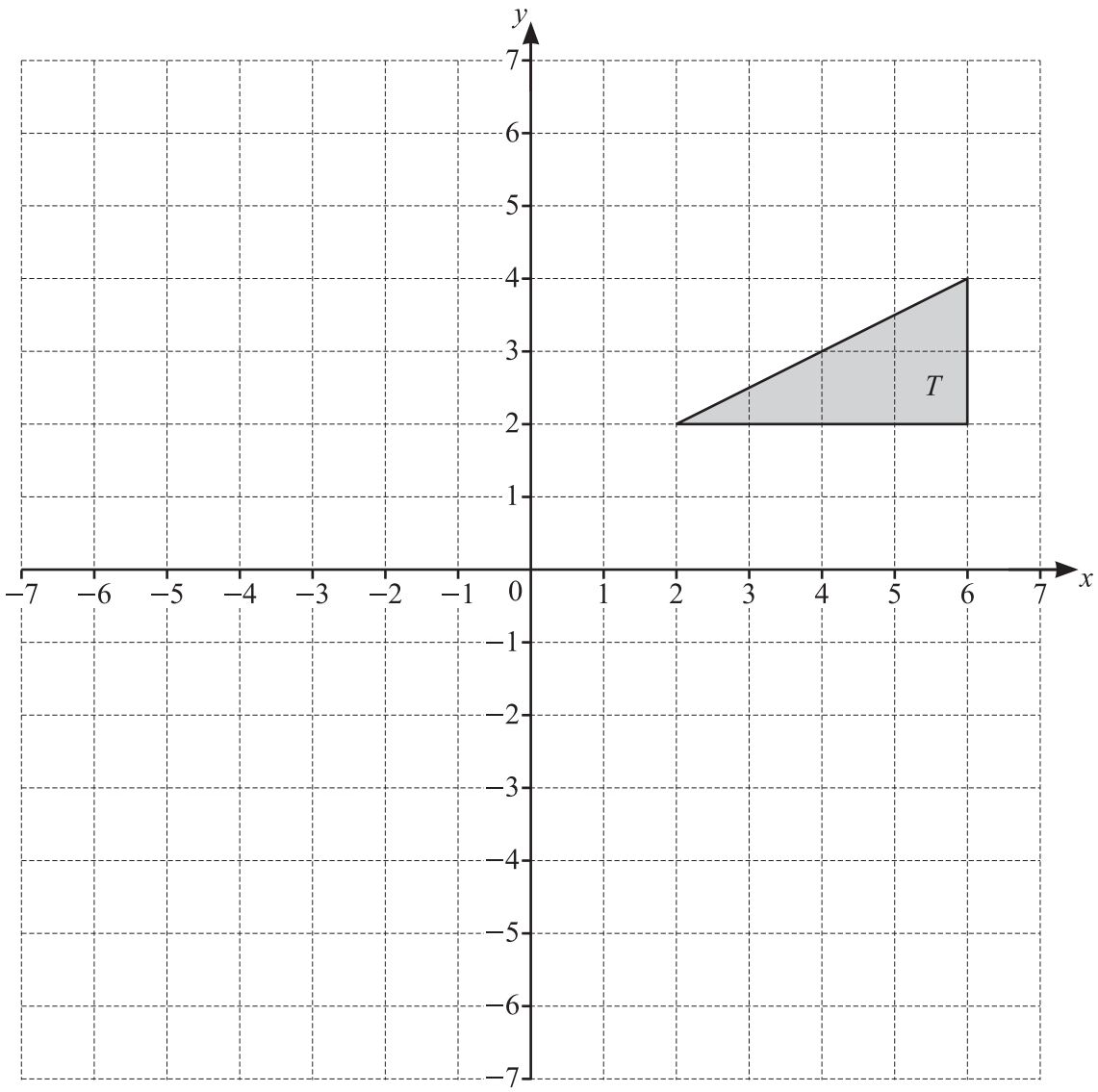
(ii) How many times bigger is the area of shape D than the area of shape A?

..... [2]

(a) Transformations (b)(i) Transformations (b)(ii) Transformations (c)(i) Transformations (c)(ii) Similar areas and volumes Click for more variations

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10



(a) **(i)** Translate triangle T by the vector $\begin{pmatrix} -7 \\ 1 \end{pmatrix}$. Label the image K. [2]

(ii) Describe fully the **single** transformation that maps triangle K onto triangle T.

.....

..... [1]

(b) Reflect triangle T in the line $y = 4$. [2]

(c) Rotate triangle T through 90° clockwise about (0, 0). [2]

(d) **(i)** Enlarge triangle T by scale factor $-\frac{1}{2}$, centre (0, 0). Label the image P. [2]

(ii) Describe fully the **single** transformation that maps triangle P onto triangle T.

.....

..... [2]

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(a)(i) Transformations (a)(ii) Transformations (b) Transformations (c) Transformations
(d)(i) Transformations (d)(ii) Transformations Click for more variations