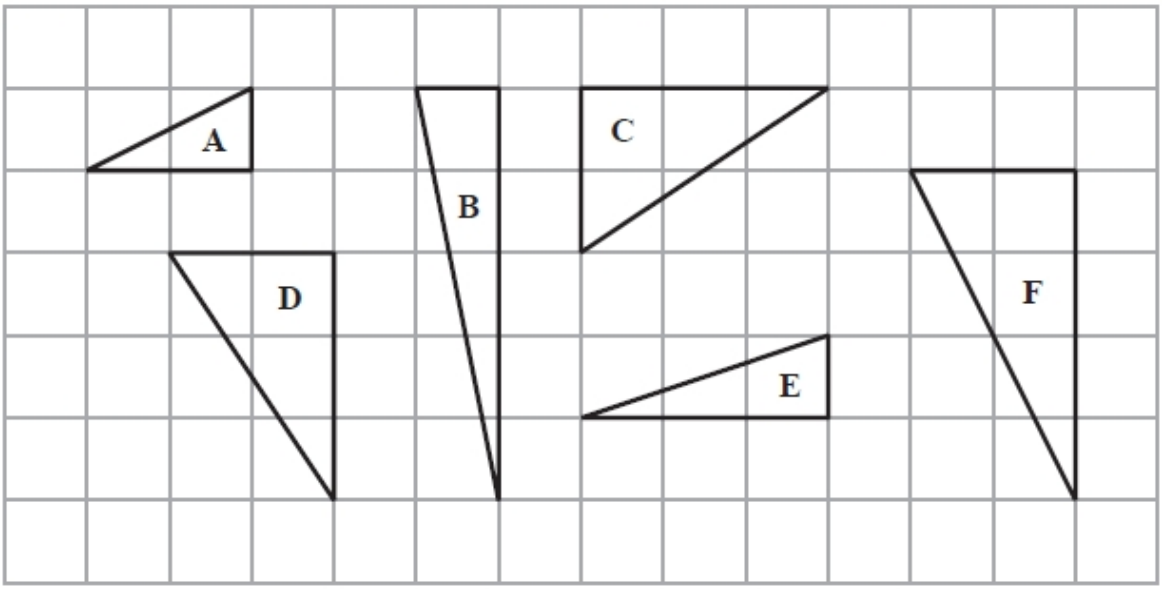
Foundation tier unit 10 check in test

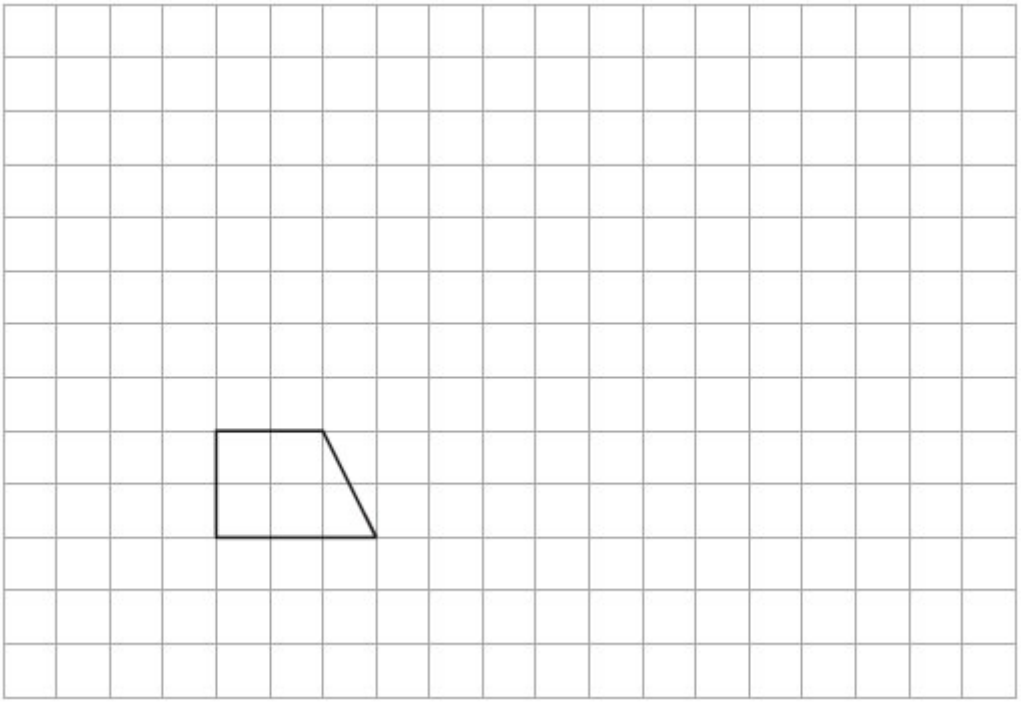
Non-calculator

Q1. Here are some triangles drawn on a grid.

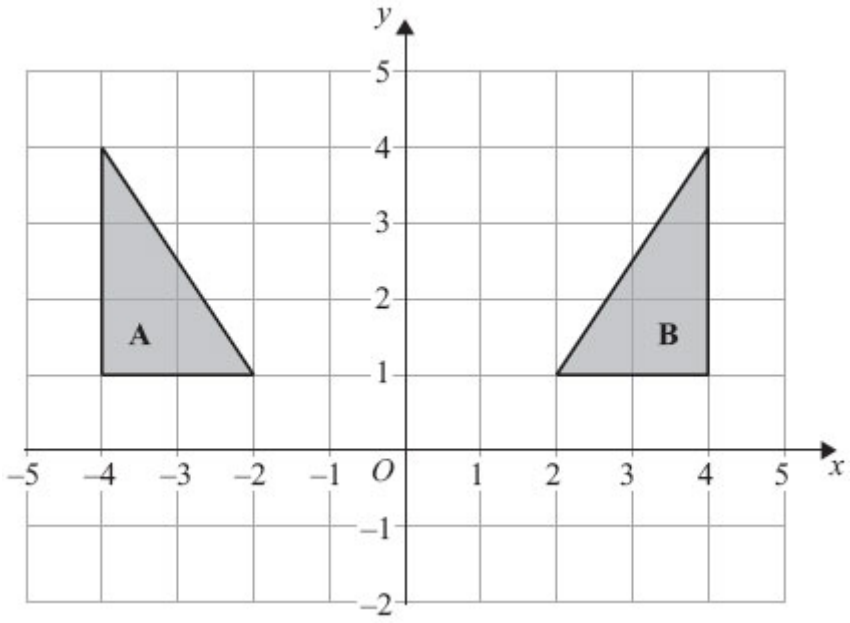


Two of the triangles are congruent.
Write down the letters of these two triangles.

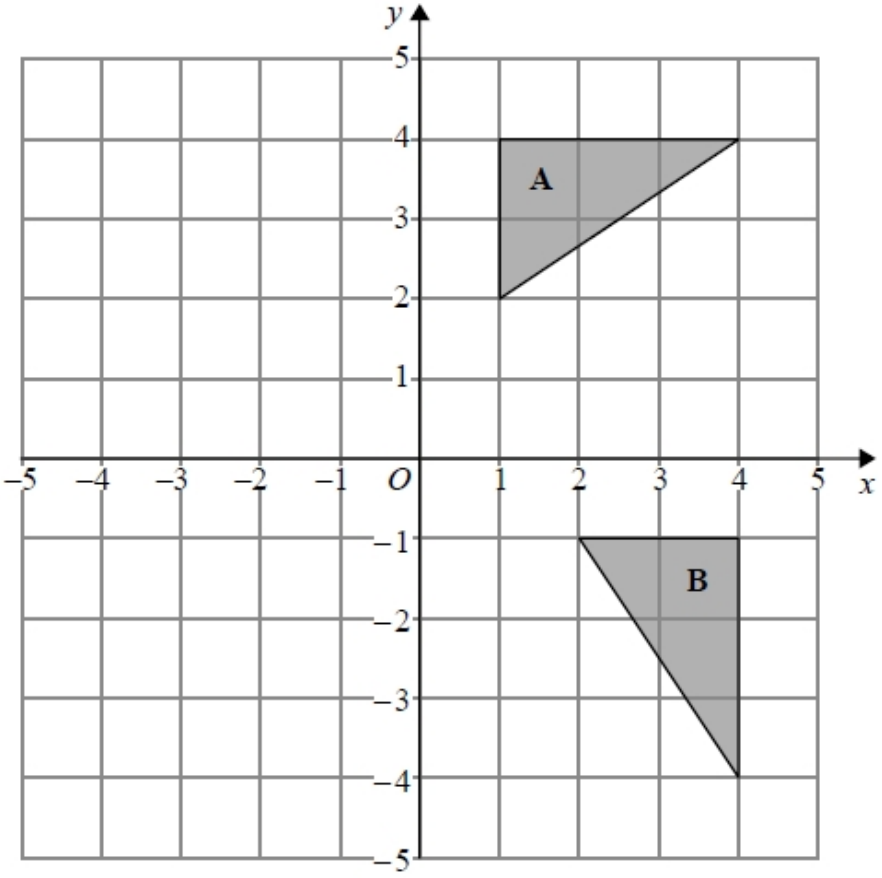
Q2. Here is a shape drawn on a grid.
On the grid, draw an enlargement of the shape with scale factor 3



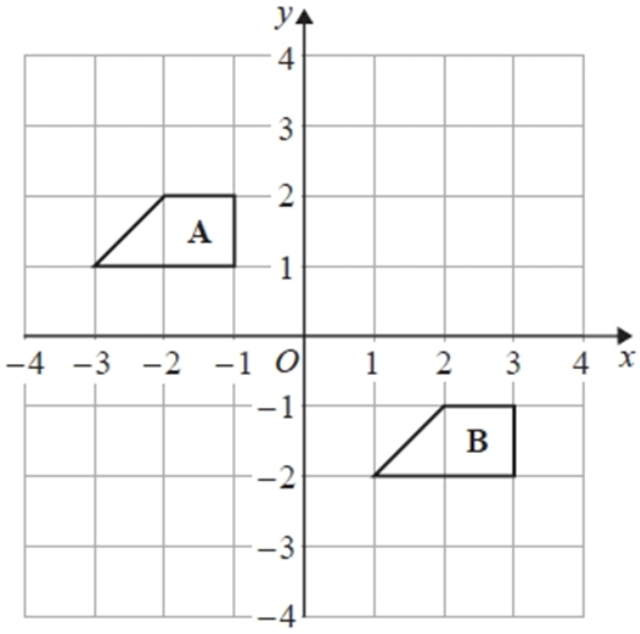
Q3. Describe fully the single transformation that maps shape **A** onto shape **B**.



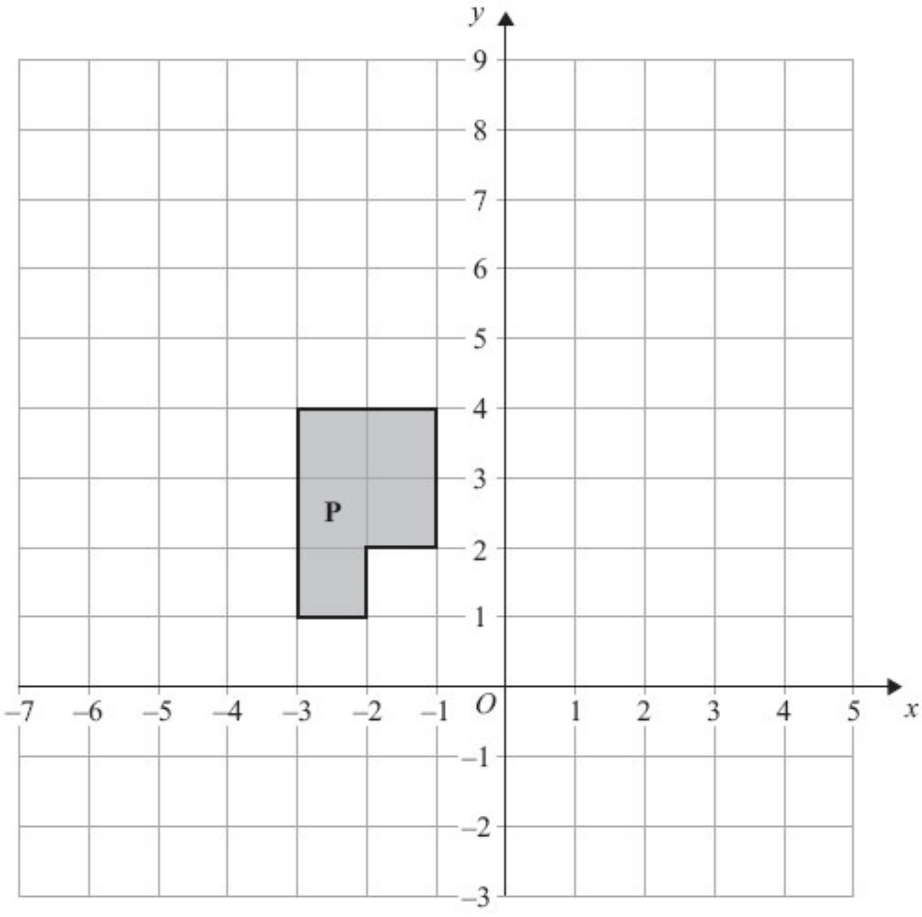
Q4. Describe fully the single transformation that maps triangle **A** onto triangle **B**.



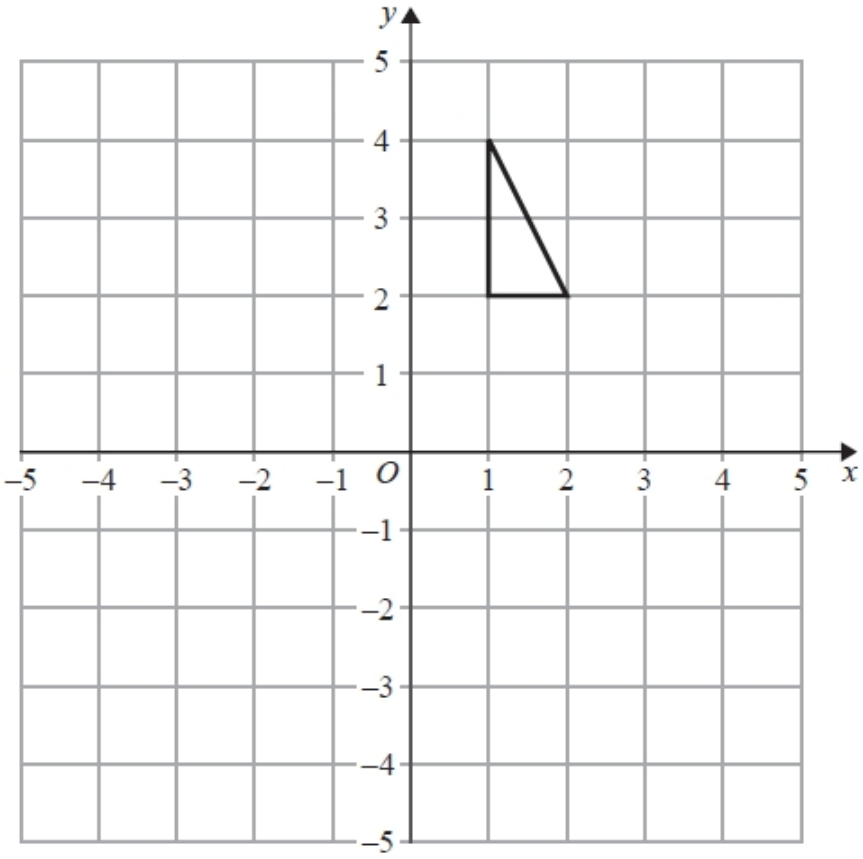
Q5. Describe the single transformation that maps shape **A** onto shape **B**.



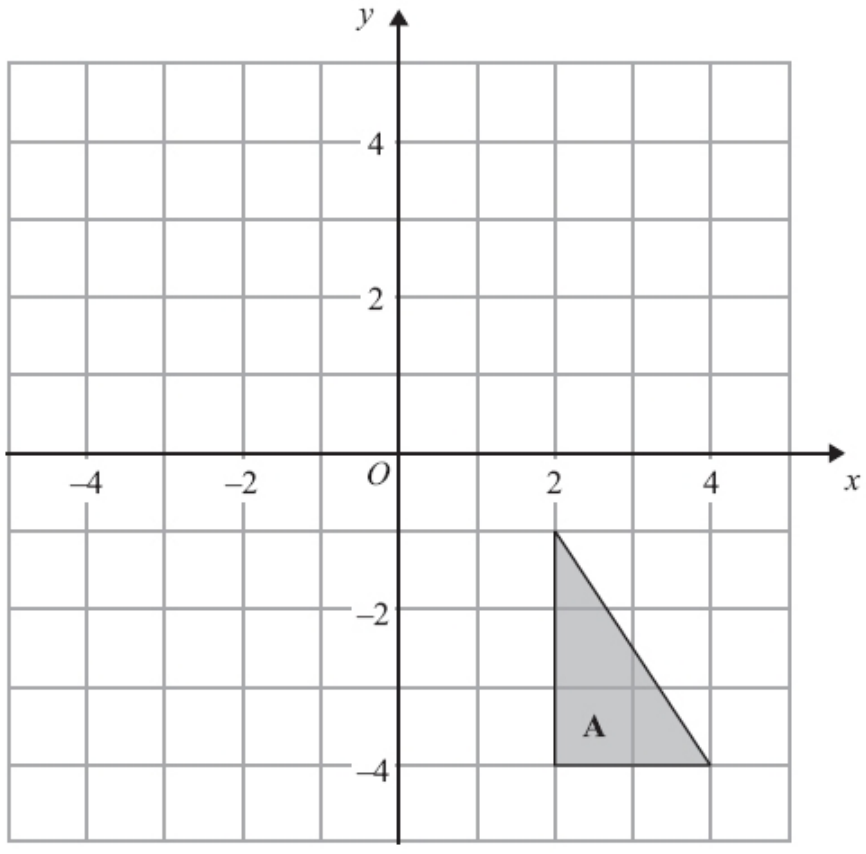
Q6. Translate shape **P** by the vector $\begin{pmatrix} 5 \\ 2 \end{pmatrix}$



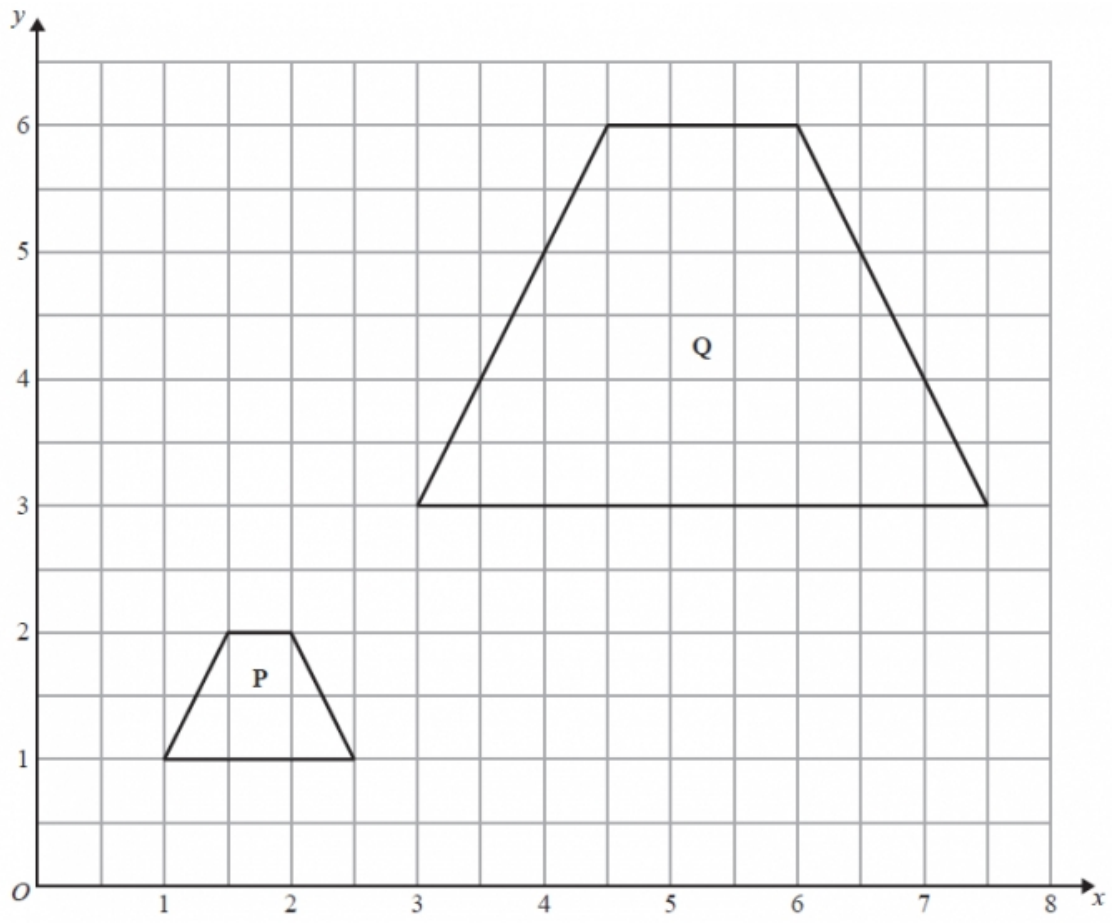
Q7. On the grid, rotate the triangle 90° clockwise about (0, 1).



Q8. Reflect triangle **A** in the *x*-axis.



Q9. Describe fully the single transformation that maps shape **Q** onto shape **P**.



Q10. The smallest angle of a triangle is 25º
The triangle is enlarged by scale factor 3

Ben says,

"The smallest angle of the enlarged triangle is 75º because 25 × 3 = 75"

Is Ben right?
Explain your answer.

Topics listed in objectives

- Identify congruent shapes by eye;
- Understand that rotations are specified by a centre, an angle and a direction of rotation;
- Find the centre of rotation, angle and direction of rotation and describe rotations fully using the angle, direction of turn, and centre;
- Rotate and draw the position of a shape after rotation about the origin or any other point including rotations on a coordinate grid;
- Identify correct rotations from a choice of diagrams;
- Understand that translations are specified by a distance and direction using a vector;
- Translate a given shape by a vector;
- Use column vectors to describe and transform 2D shapes using single translations on a coordinate grid;
- Understand that distances and angles are preserved under rotations and translations, so that any figure is congruent under either of these transformations;
- Understand that reflections are specified by a mirror line;
- Identify correct reflections from a choice of diagrams;
- Identify the equation of a line of symmetry;
- Transform 2D shapes using single reflections (including those not on coordinate grids) with vertical, horizontal and diagonal mirror lines;
- Describe reflections on a coordinate grid;
- Scale a shape on a grid (without a centre specified);
- Understand that an enlargement is specified by a centre and a scale factor;
- Enlarge a given shape using (0, 0) as the centre of enlargement, and enlarge shapes with a centre other than (0, 0);
- Find the centre of enlargement by drawing;
- Describe and transform 2D shapes using enlargements by:
  - a positive integer scale factor;
  - a fractional scale factor;
- Identify the scale factor of an enlargement of a shape as the ratio of the lengths of two corresponding sides, simple integer scale factors, or simple fractions;
- Understand that distances and angles are preserved under reflections, so that any figure is congruent under this transformation;
- Understand that similar shapes are enlargements of each other and angles are preserved – define similar in this unit.

Answers

Q1. C and D

Q2. Correct enlargement

Q3. Reflection in $x = 0$

Q4. Rotation of 90° clockwise about (0, 0)

Q5. Translation by $\begin{matrix} 4 \\ 3 \end{matrix}$

Q6. Vertices of translated shape at (4, 0), (3, 0), (3, –1), (2, –1), (2, 2), (4, 2)

Q7. Vertices of rotated shape at (1, 0), (3, 0), (1, –1)

Q8. Vertices of reflected shape at (2, 1), (2, 4), (4, 4)

Q9. Enlargement, centre (0, 0), scale factor $\frac{1}{3}$

Q10. No, the angle will still be 25°, as the enlarged shape is a similar triangle