Y8 Maths

Unit 5 Test

Transformations

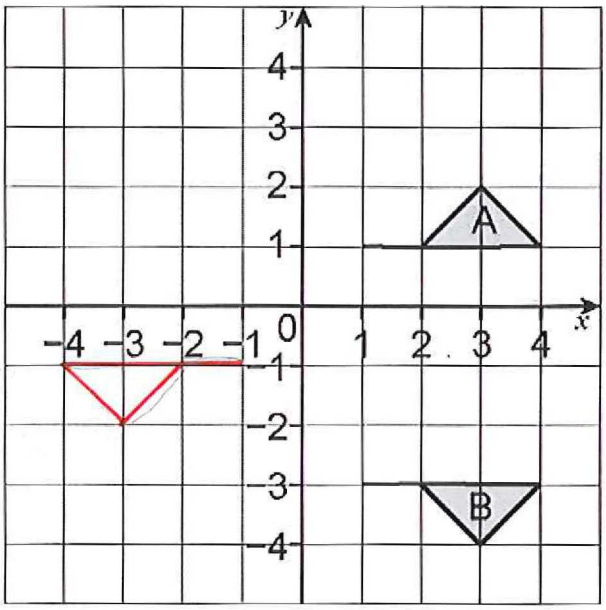
Name: _____

NON-CALCULATOR

Mark Scheme

Total 41 marks

1



a Describe fully the transformation which maps A onto B.

M1

Reflection B1 in the line $y = -1$ **(2 marks)**

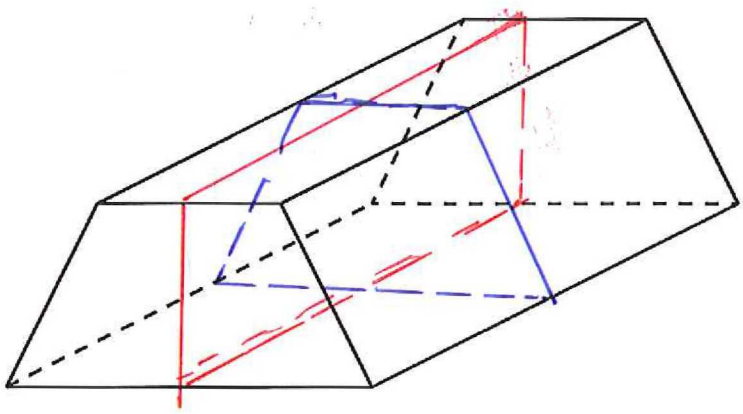
b Rotate shape A by 180° about the point (0, 0). Label your answer C.

(2 marks)

Rotation 180° anywhere B1

Correct shape in the correct place B1

2 Draw a plane of symmetry on this 3D shape.

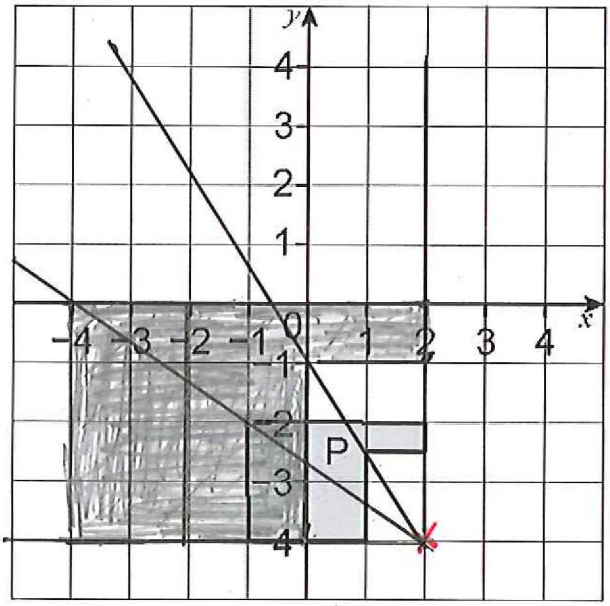


(2 marks)

B1 Two lines of Symmetry on two faces

B1 Completely correct plane (only one)

3



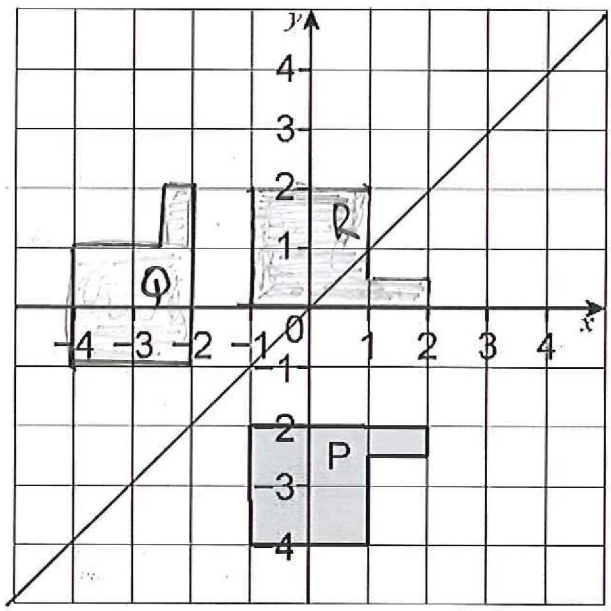
B1 Enlargemet Scale2 (main part)

B1 Enlargement Scale2 correct completely

B1 Enlargement in the correct place (point (2, −4) used)

Enlarge shape P with the scale factor 2 and the centre of enlargement (2, −4) **(3 marks)**

4



B1 Reflection in any line

B1 $y = x$

B1 Correct Reflection Shape Labled

B1 Rotation 90°

B1 Rotation clockwise

B1 Correct position shape R Labled

a Reflect shape P in the line $y = x$. Label your new shape Q. **(3 marks)**

b Rotate shape Q by 90° clockwise about the point (−1, −1). Label this shape R. **(3 marks)**

c What **single** transformation will map the original shape P onto shape R?

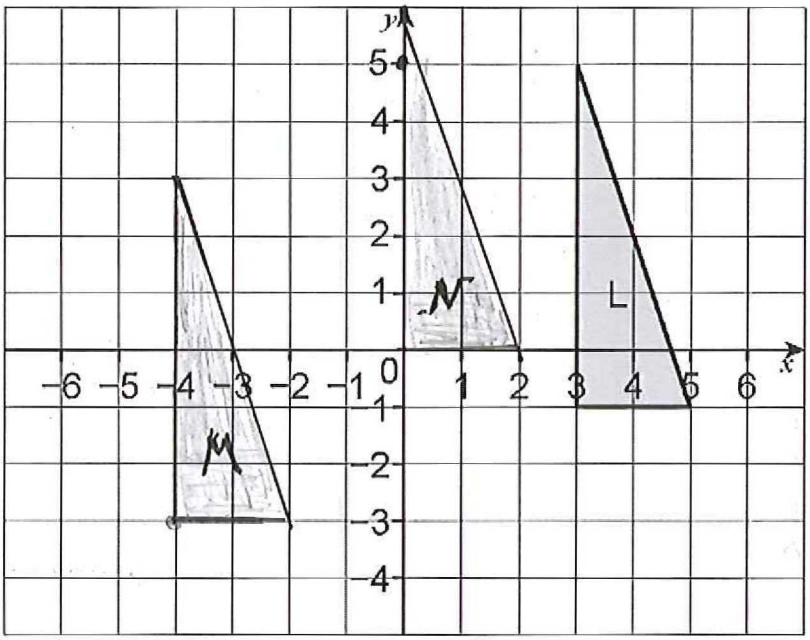
.....

(2 marks)

B1 Reflection

B1 Line $y = -1$

5.



Translate shape L with the vector $\begin{pmatrix}-7\\-2\end{pmatrix}$. Label the new shape M.

B1 correct in x
B1 correct in y
(2 marks)

Translate shape M with the vector $\begin{pmatrix}4\\3\end{pmatrix}$. Label the new shape N.

B1 correct in x (ft)
B1 correct in y (ft)
(2 marks)

What **single** transformation will map the shape N onto the original shape L? Describe it fully.

Translation $\begin{pmatrix}3\\-1\end{pmatrix}$ B1 (ft) B1 (ft)

B1

(3 marks)

6 Fill in the gaps in the following sentences, using words from below.

angles **similar** **congruent** **side lengths**

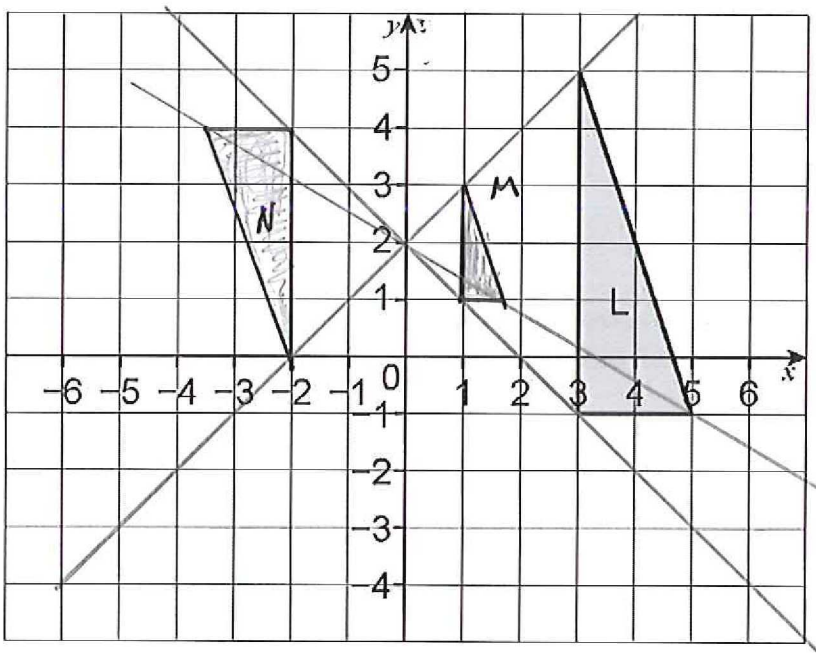
a After translations, rotations and reflections the image shape is ...congruent... to the original shape, with ...side lengths... and ...angles... remaining the same.

B2 - All correct B1 one mistake **(2 marks)**

b After enlargements the image shape is ...similar... to the original shape with ...angles... remaining the same and ...side lengths... changing. **(2 marks)**

B2 - all correct B1 one mistake

7



B1 centre used correctly
B1 correct scale factor
B1 correct position

a Enlarge triangle L with scale factor $\frac{1}{3}$, centre (0, 2). Label your new shape M. **(3 marks)**

b Now enlarge shape M with scale factor −2 about centre (0, 2). Label this new shape N.

As 9a) **(3 marks)**

c What can you say about the triangles L, M and N?

They are similar

(1 mark)

8 A rectangular photograph with sides 4cm and 6 cm is to be enlarged by scale factor 10, to be used as a wall mural.

a Find perimeter of the enlarged photograph. How many times it is larger than the original?

P original 20 cm B1 P New 200 cm B1

10 times larger B1 — may be implied in this answer **(3 marks)**

b Find area of the enlarged photograph. How many times it is larger than the original?

B1 B1

A original 24 cm² A New 2400 cm²

100 times larger

B1

first two marks may be implied **(3 marks)**

If you've finished, and checked your work, try this challenge.

YOU WILL **NOT** BE MARKED ON THIS SECTION

P and Q are two geometrically similar solid shapes.

The total surface area of shape P is 600 cm^2.

The total surface area of shape Q is 5400cm^2.

The volume of shape P is 1000cm^3.

Find the volume of shape Q.

Can you sketch possible shapes P and Q?