G65(H)...Invariant Transformations

OCR

EDEXCEL

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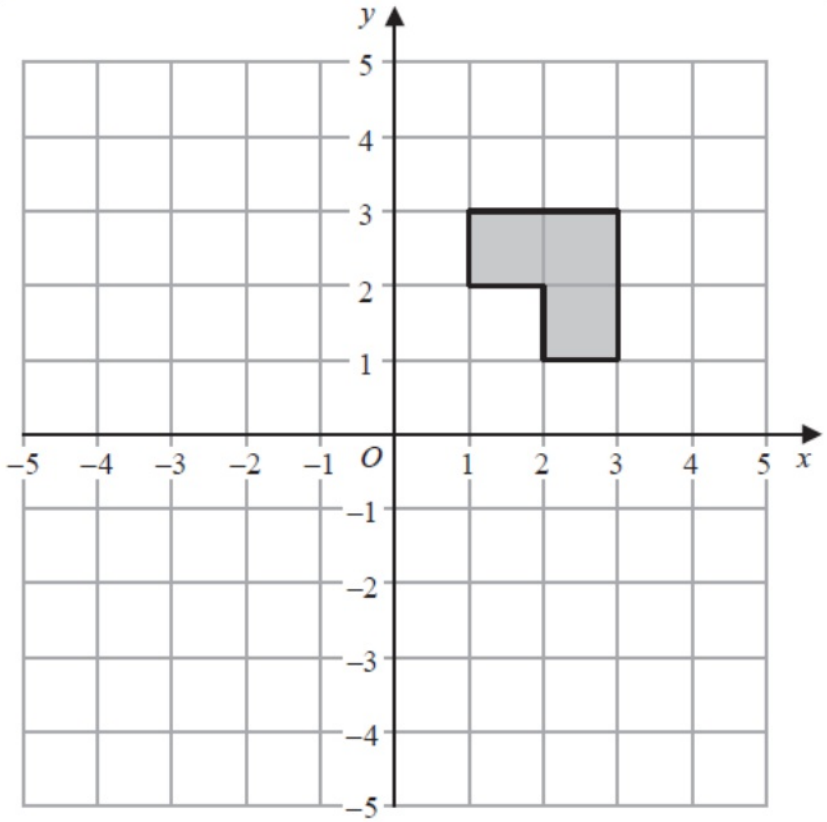
21



The shaded shape is rotated 180° about the point (2, 2)

(a) How many of the vertices of the shaded shape are invariant?

.....

(1)

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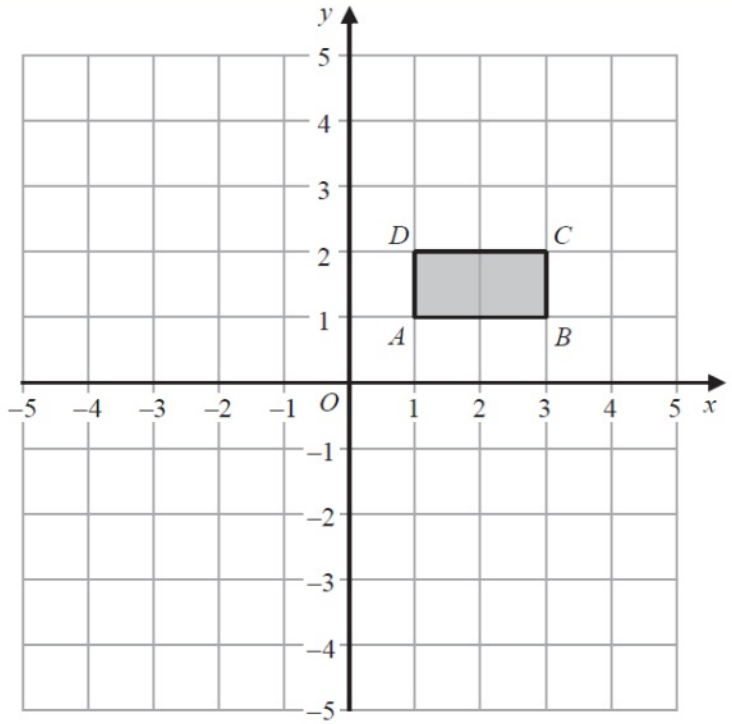

Rectangle $ABCD$ is transformed by a combination of two transformations so that

all points on AB are invariant
and there are no other invariant points.

The first transformation is

a reflection in the line with equation $y = k$, where k is an integer and $k \neq 1$

(b) Describe fully the second transformation.

(2)

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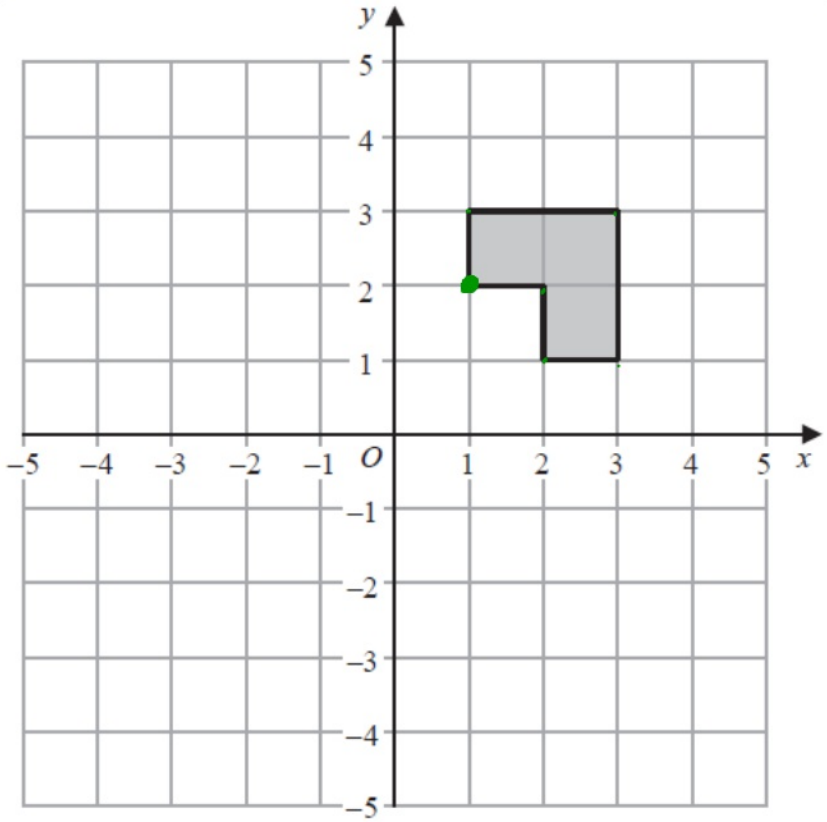

The shaded shape is rotated 180° about the point (2, 2)

(a) How many of the vertices of the shaded shape are invariant?

don't move

1 ✓

.....

(1)

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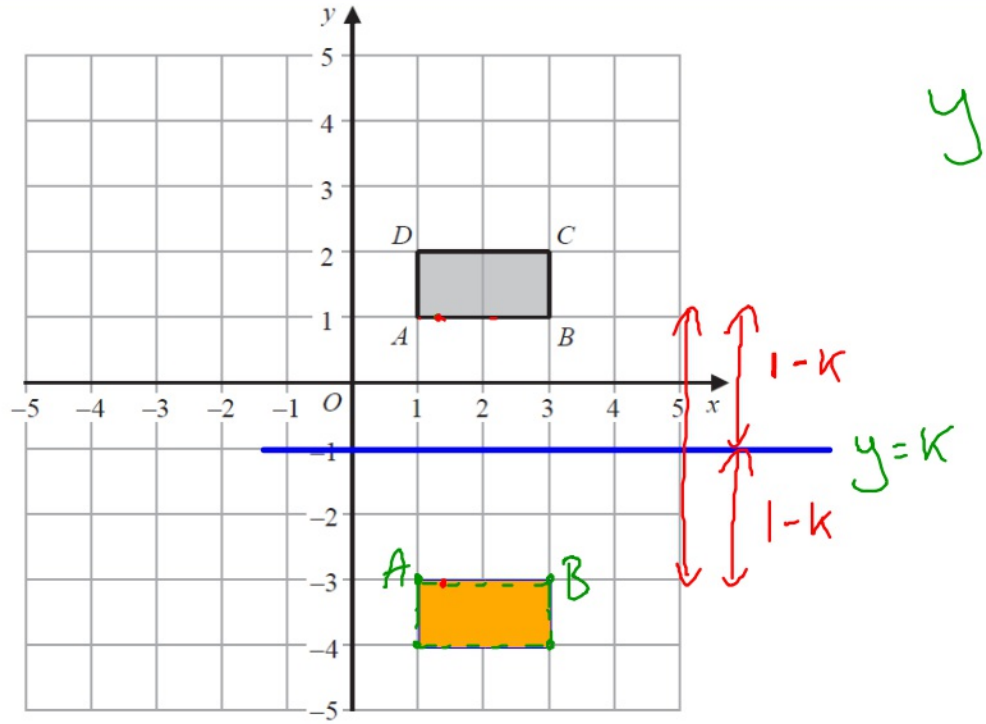

y = horizontal

(1-k) x 2

Translation ✓

$\begin{pmatrix} 0 \\ 2-2k \end{pmatrix}$ ✓

Rectangle $ABCD$ is transformed by a combination of two transformations so that

all points on AB are invariant
and there are no other invariant points.

The first transformation is

a reflection in the line with equation $y = k$, where k is an integer and $k \neq 1$

(b) Describe fully the second transformation.

(2)

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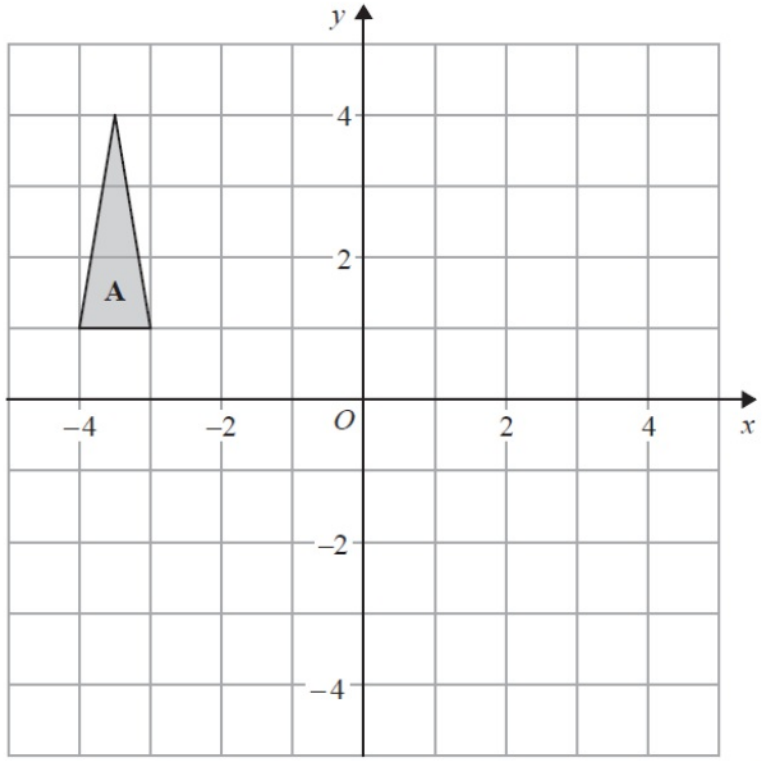
20

G42

G65



Triangle **A** is transformed by the combined transformation of a rotation of 180° about the point (−2, 0) followed by a translation with vector $\begin{pmatrix} -3 \\ 2 \end{pmatrix}$

One point on triangle **A** is invariant under the combined transformation.

Find the coordinates of this point.

(..... , ...)

(Total for Question 20 is 2 marks)

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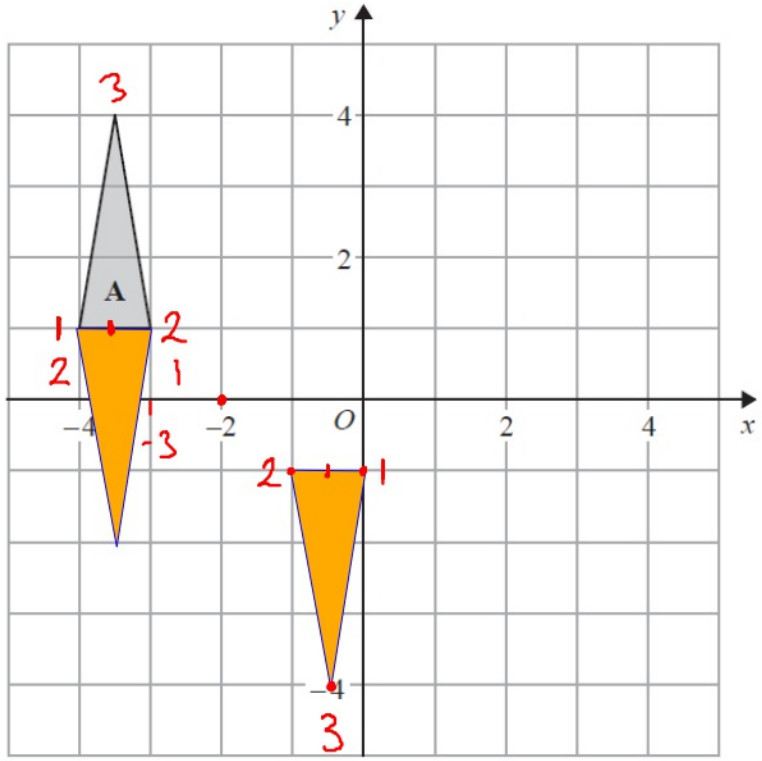
20

G42



Triangle **A** is transformed by the combined transformation of a rotation of 180° about the point (−2, 0) followed by a translation with vector $\begin{pmatrix} -3 \\ 2 \end{pmatrix}$

One point on triangle **A** is invariant under the combined transformation.

Find the coordinates of this point.

does not move

(-3.5 , 1)

(Total for Question 20 is 2 marks)

AQA

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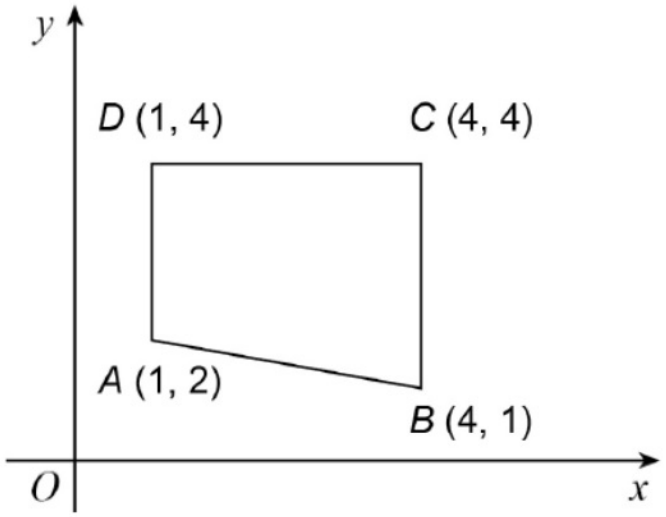
25 *ABCD* is a quadrilateral.

G65



The quadrilateral is reflected in the line $x = 4$

Which vertices are invariant?

Circle your answer. **[1 mark]**

A and *D* *C* and *D* *B* and *C* *B* and *D*

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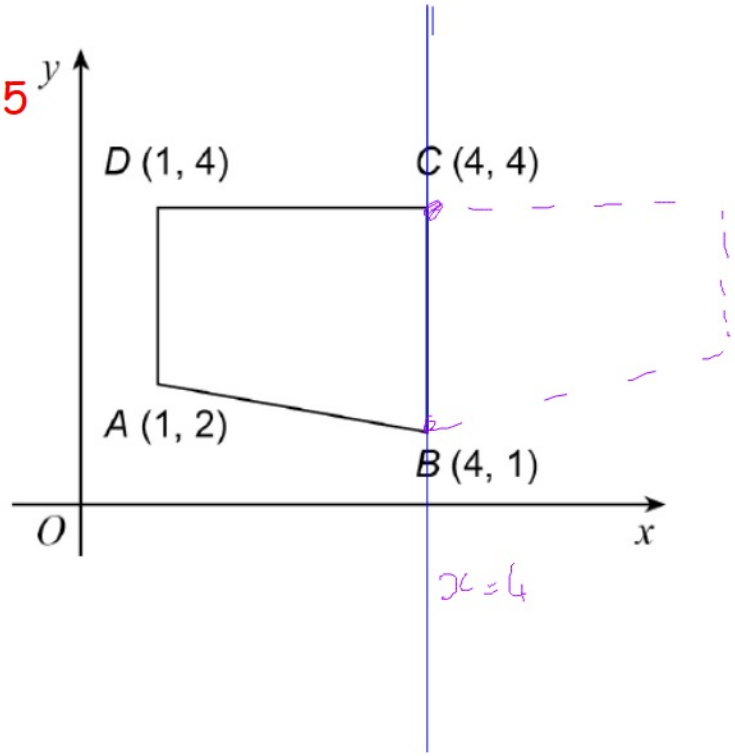
25 *ABCD* is a quadrilateral.

G65



The quadrilateral is reflected in the line $x = 4$

Which vertices are invariant? — don't move

Circle your answer. **[1 mark]**

A and *D* *C* and *D* *B* and *C* *B* and *D*