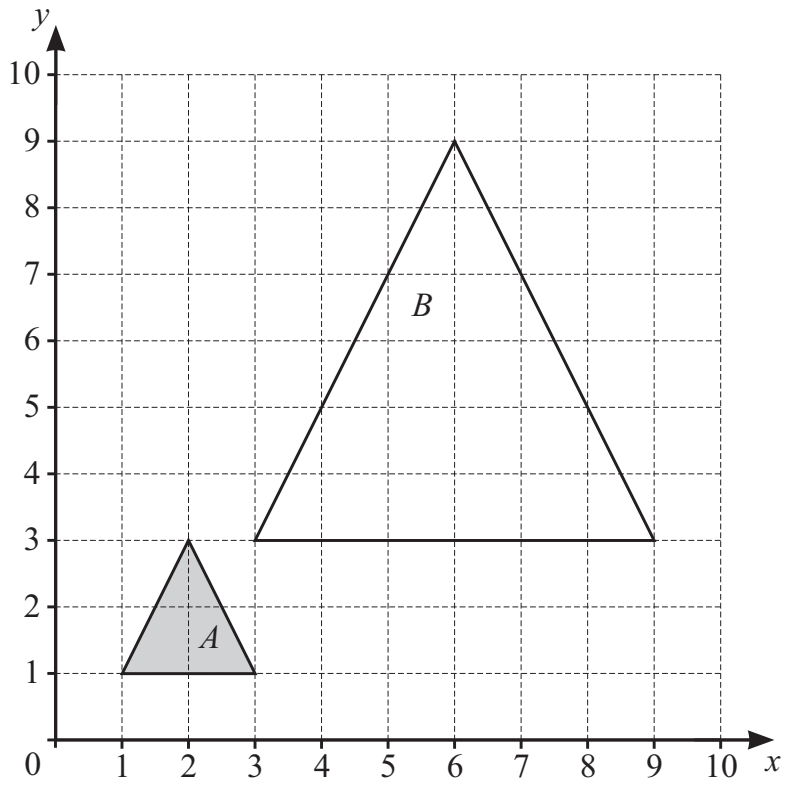
22 The diagram shows triangles *A* and *B*.



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

.....

..... [3]

2 Find the largest **odd** number that is a common factor of 90 and 120.

..... [1]

8 $\overrightarrow{DE} = \begin{pmatrix} \\ -4 \end{pmatrix}$

(a) Find $5\overrightarrow{DE}$.

$\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [1]

(b) Find $\left|\overrightarrow{DE}\right|$.

..... [2]

(c) D is the point (–2, –3).

Find the coordinates of the point E.

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

20 Work out $0.1\dot{1}\dot{4} + 0.2$.
Give your answer as a fraction.

..... [3]

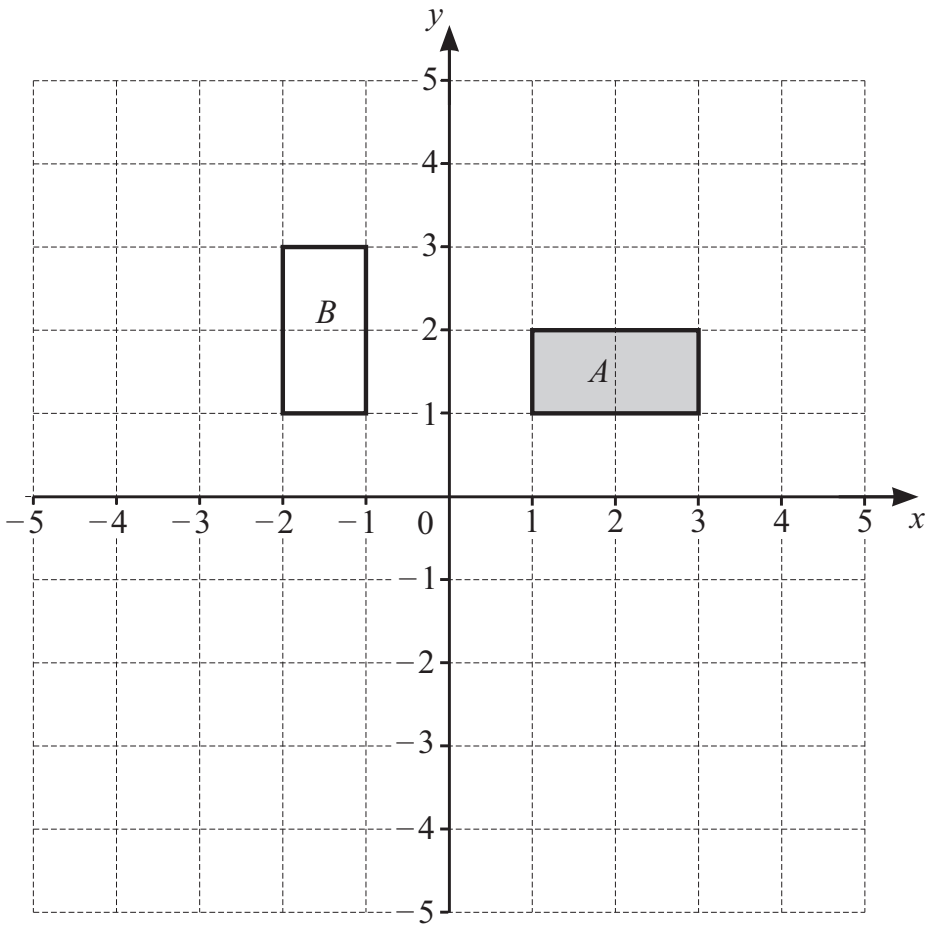
3 In the USA, one gallon of fuel costs \$4.83 .
In the UK, one litre of fuel costs £1.62 .

The exchange rate is £1 = \$1.215 .
1 gallon = 3.785 litres

In which country does 1 litre of fuel cost more and by how much?
Give your answer in dollars.

..... by \$ ..... [3]

21 Shapes A and B are shown on the grid.



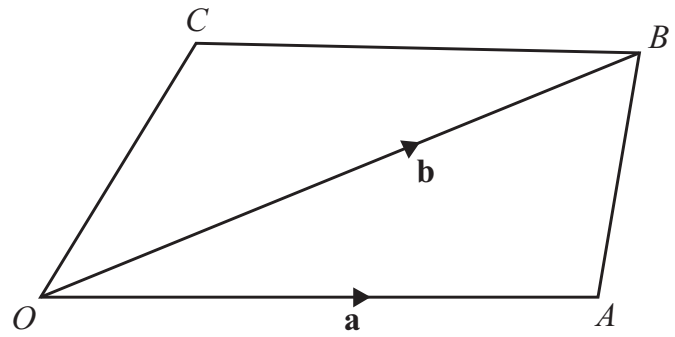
(a) Describe fully the **single** transformation that maps shape A onto shape B.

.....

..... [3]

(b) Draw the image of shape A after a reflection in the line $y = -1$. [2]

18



NOT TO SCALE

In the diagram, OA is parallel to CB.
$OA : CB = 4 : 3$
$\overrightarrow{OA} = \mathbf{a}$ and $\overrightarrow{OB} = \mathbf{b}$.

(a) Find $\overrightarrow{AB}$ in terms of **a** and **b**.

$\overrightarrow{AB} =$ ..... [1]

(b) M is the midpoint of OC.

Find $\overrightarrow{AM}$ in terms of **a** and **b**.
Give your answer in its simplest form.

$\overrightarrow{AM} =$ ..... [3]

8 $\mathbf{m} = \begin{pmatrix} \\ 5 \end{pmatrix}$ $\mathbf{n} = \begin{pmatrix} \\ -3 \end{pmatrix}$

(a) Find $2\mathbf{m} - \mathbf{n}$.

$\begin{pmatrix} \\ \end{pmatrix}$ [2]

(b) The vector $\begin{pmatrix} 5 \\ \sqrt{y} \end{pmatrix}$ has a magnitude of 7.

Find the value of y.

$y =$ ..... [2]