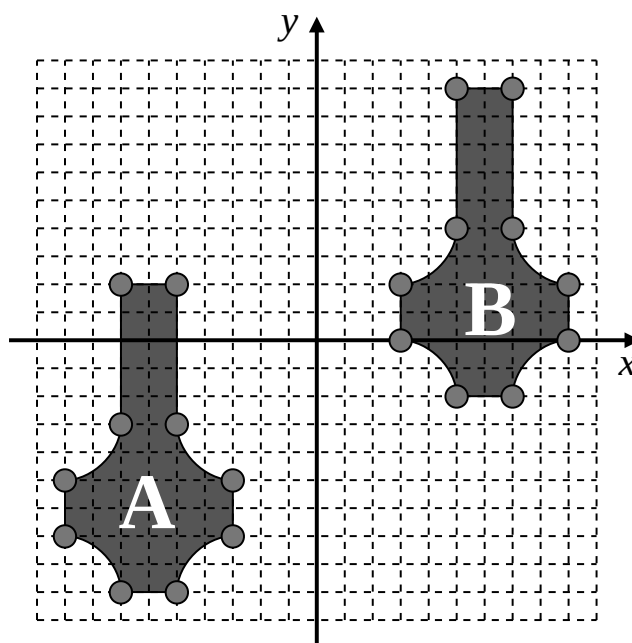


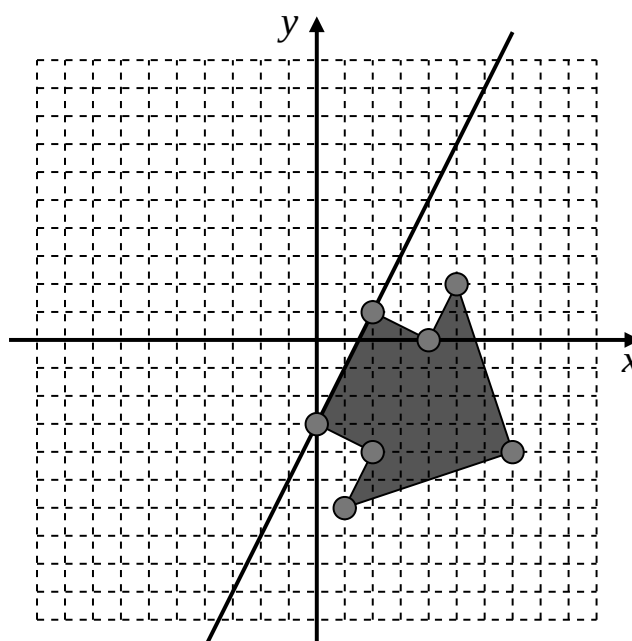
9.1 Test

Question 1



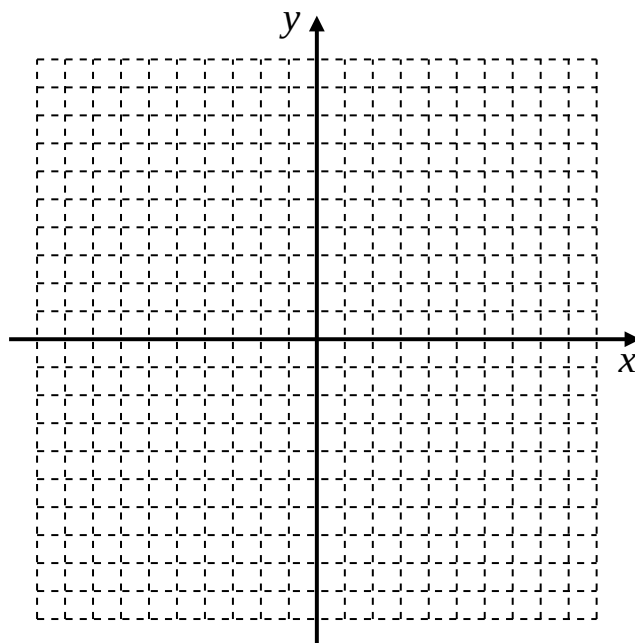
- (i) Translate A by $\begin{pmatrix} 5 \\ 4 \end{pmatrix}$ and label the image C.
- (ii) Write down the vector that translates A onto B.

Question 2



- (i) Reflect the shape in the mirror.
- (ii) What is the equation of the mirror line?

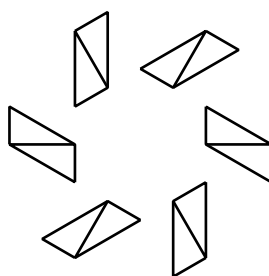
Question 3



- (i) Plot the AXE with vertices;
 $A(4, -2)$, $B(3, 1)$, $C(-8, 1)$,
 $D(-8, 2)$, $E(3, 2)$, $F(1, 4)$,
 $G(7, 4)$, $H(5, 2)$, $I(5, 1)$.
- (ii) Rotate the AXE by -90° about the point $(-4, 4)$.

Question 4

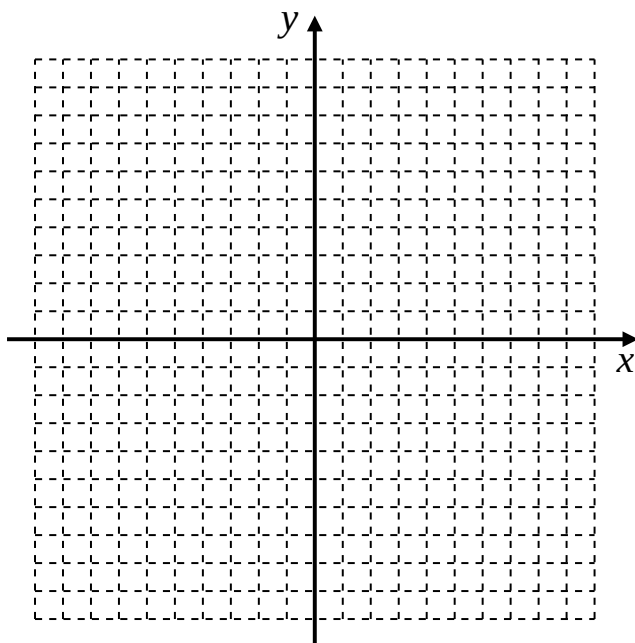
Describe the symmetry of this diagram:



Question 5

Write down the coordinates of the image of the point $(-7, 11)$ when it is translated by the vector $\begin{pmatrix} 15 \\ -7.5 \end{pmatrix}$

Question 6

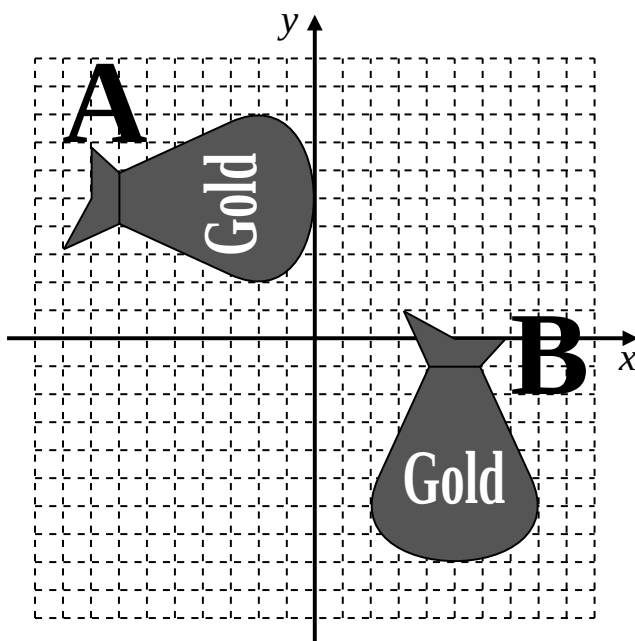


(i) Plot the π with vertices;

$G (5, 7),$	$H (6, 7),$	$I (6, 5),$
$J (7, 5),$	$K (7, 7),$	$L (8, 7),$
$M (8, 5),$	$N (9, 5),$	$O (9, 7),$
$P (10, 7),$	$Q (10, 8),$	$R (5, 8).$

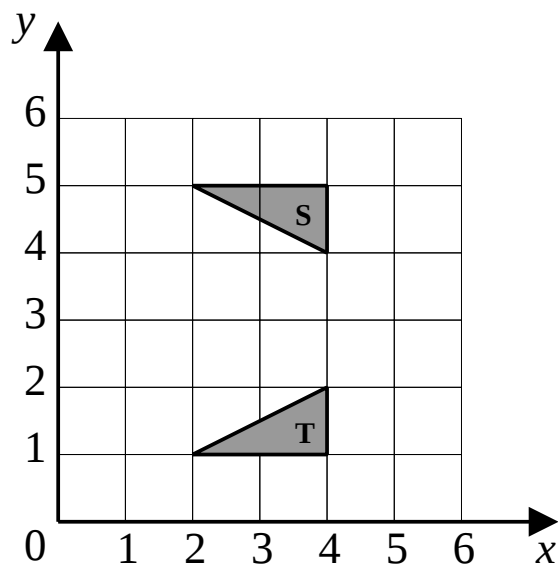
(ii) Enlarge the π by scale factor 4, centre (10, 10)

Question 7



Specify fully the single transformation that maps bag of gold A onto bag of gold B.

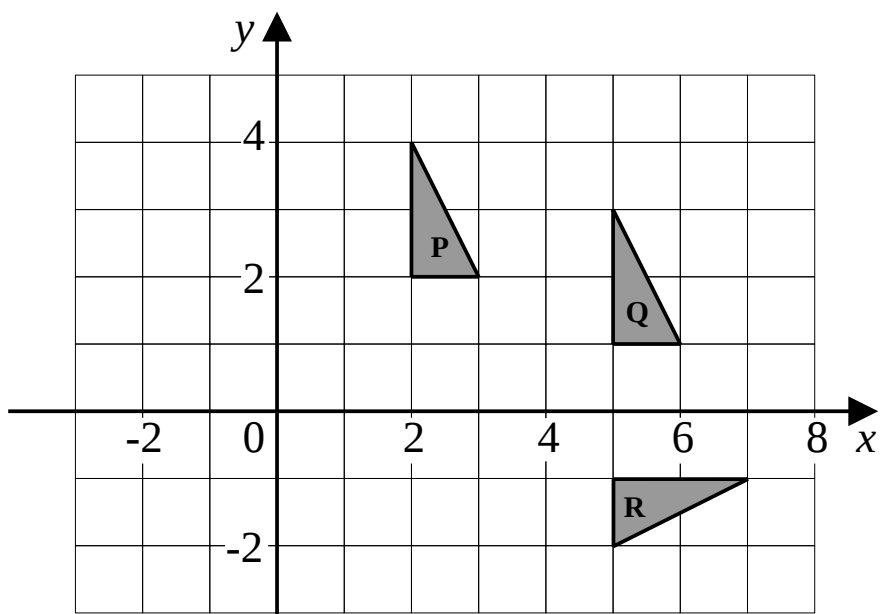
Question 8



Describe fully the single transformation which maps triangle S onto triangle T.

[2 marks]

Question 9



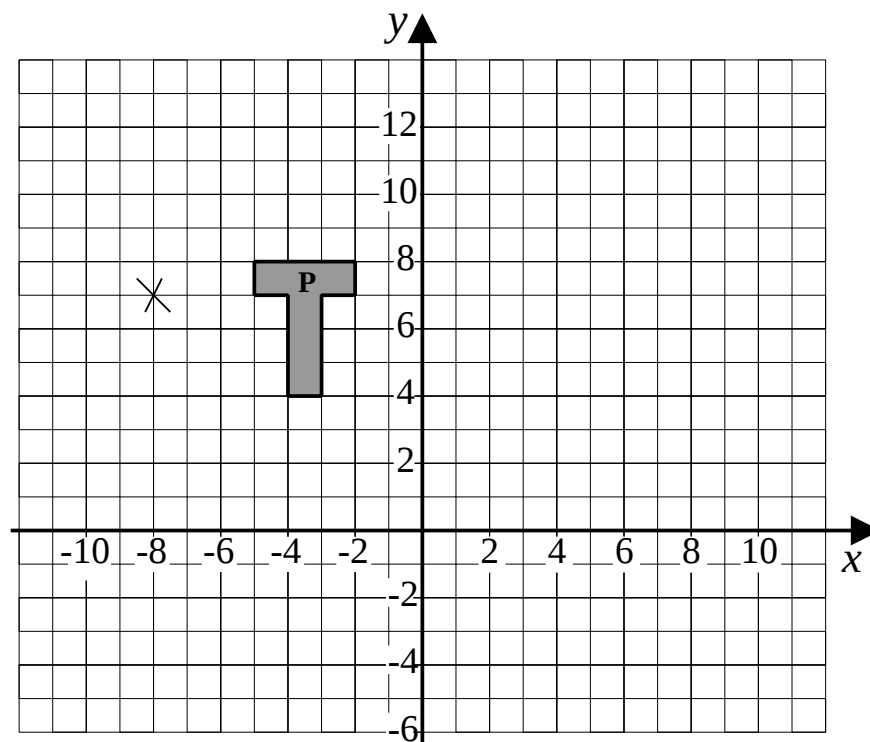
- (i) Describe fully the single transformation which maps triangle **P** onto triangle **Q**.

[2 marks]

- (ii) Describe fully the single transformation which maps triangle **P** onto triangle **R**.

[3 marks]

Question 10



- (a) On the grid, enlarge shape **P** with scale factor 3 and centre $(-8, 7)$.
Label the new shape **Q**.

[3 marks]

- (b) On the grid, rotate shape **P** through 90° clockwise
about the point $(-8, 7)$.
Label the new shape **R**.

[2 marks]

Question 11

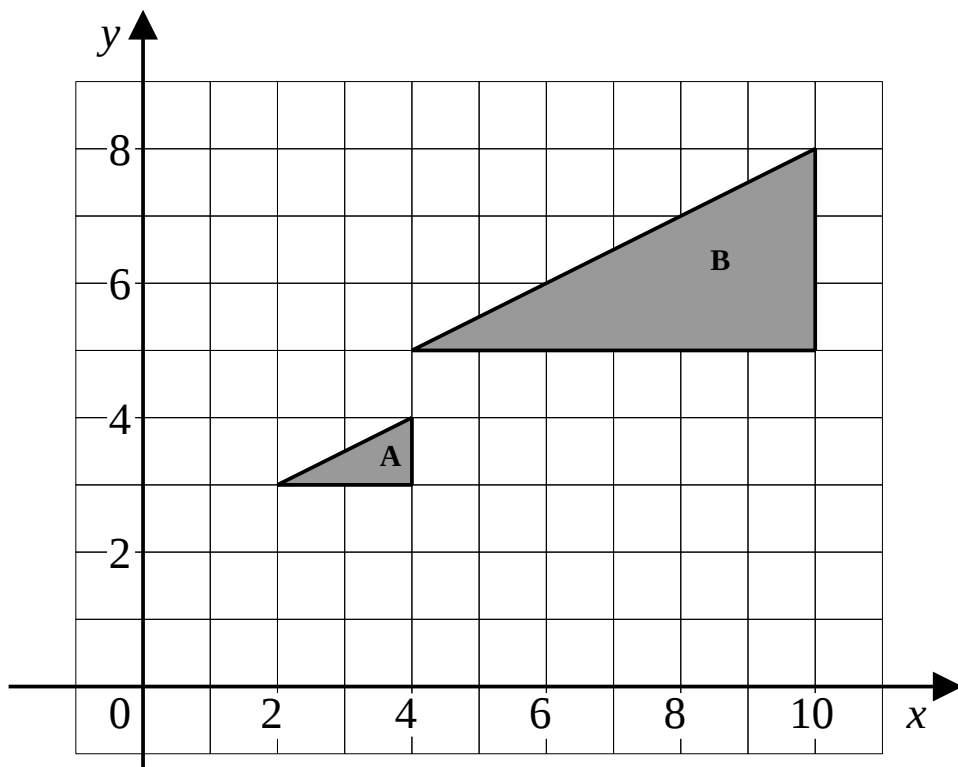
Here are the digits from 1 to 9.

1 2 3 4 5 6 7 8 9

Ignoring any small, fancy font embellishments;

- (i) List the 4 numbers which have mirror symmetry.
- (ii) List the 2 numbers which have rotational symmetry of order 2.
- (iii) There is a BLOCK CAPITAL letter with rotational symmetry of order 4.
Which letter ?

Question 12



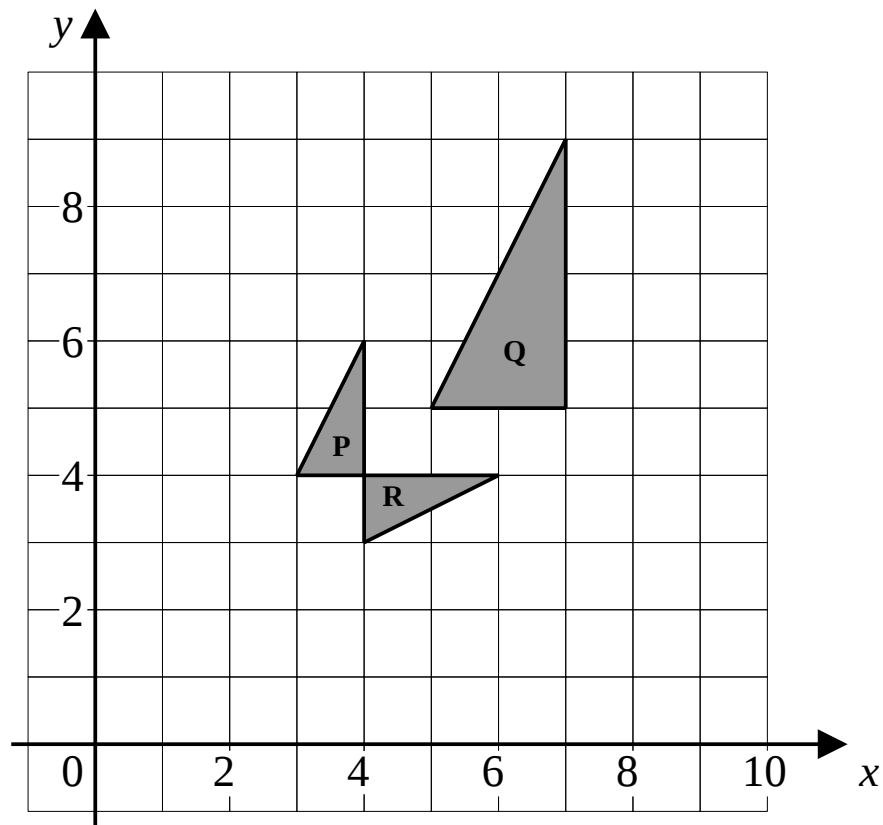
- (a) Describe fully the **single** transformation which maps triangle **A** onto triangle **B**.

[3 marks]

- (b) On the grid, translate triangle **A** by the vector $\begin{pmatrix} -1 \\ 3 \end{pmatrix}$.
Label the new shape **C**.

[2 marks]

Question 13



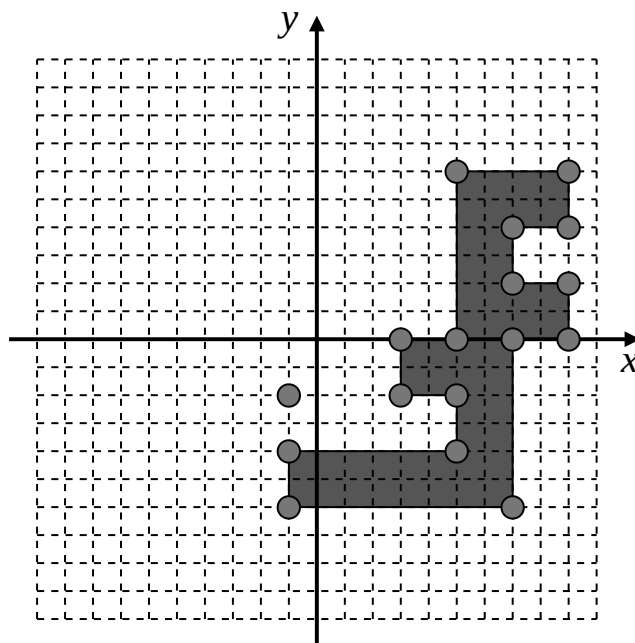
- (a) Describe fully the single transformation which maps triangle **P** onto triangle **Q**.

[3 marks]

- (b) Describe fully the single transformation which maps triangle **P** onto triangle **R**.

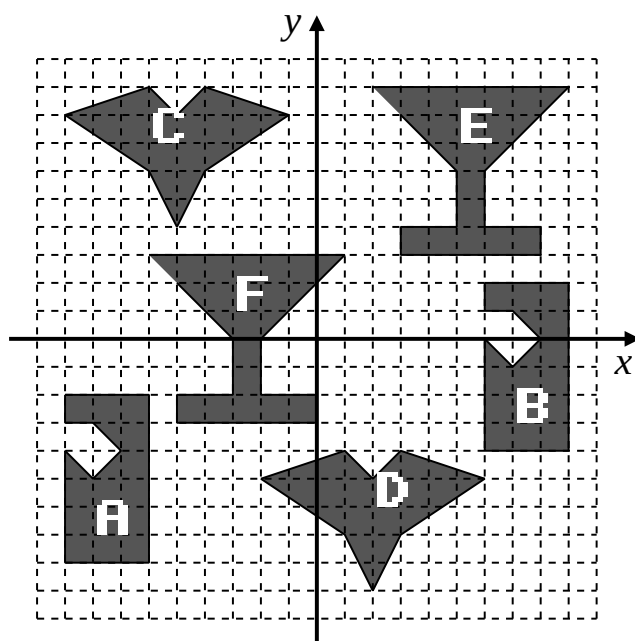
[2 marks]

Question 14



Enlarge the shape shown by scale factor -0.5 , centre $(-1, -2)$.

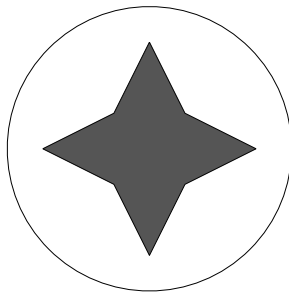
Question 15



Write down the vector of the translation that maps:

- (a) A onto B (b) C onto D (c) E onto F.

Question 16



Suppose there exists a circular mathematical mirror.

Inside the circle is placed a star.

Draw the image of the star under reflection in the circular mirror.

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In October 2020, Shrewsbury School was voted “**Independent School of the Year 2020**”

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Teachers may obtain detailed worked solutions to the exercises by email from mhh@shrewsbury.org.uk