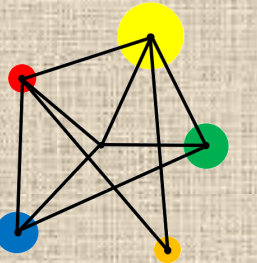


Reflections



Reflect a shape in a line.

Accurately describe a reflection.

Vocabulary

Reflection

A transformation in which every point of a shape is moved to the opposite side of a line.

Image

The shape resulting from a reflection.

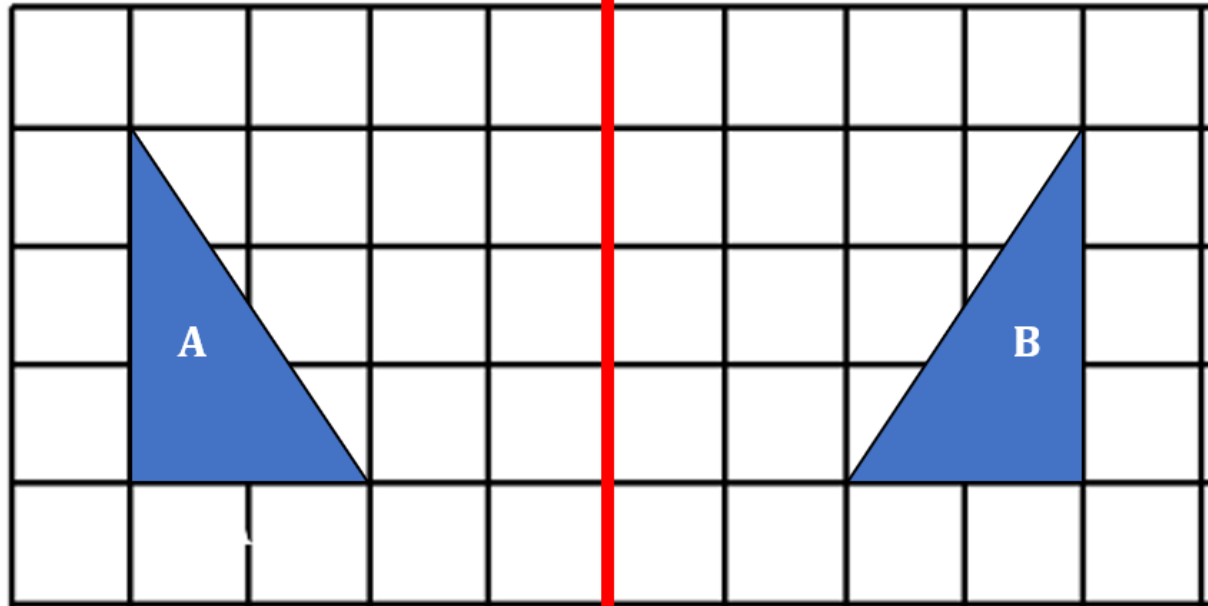
Congruent

Congruent shapes are exactly the same. All the angles are the same and corresponding sides are equal.

Key Facts

Shape B is a reflection of shape A in the red line.

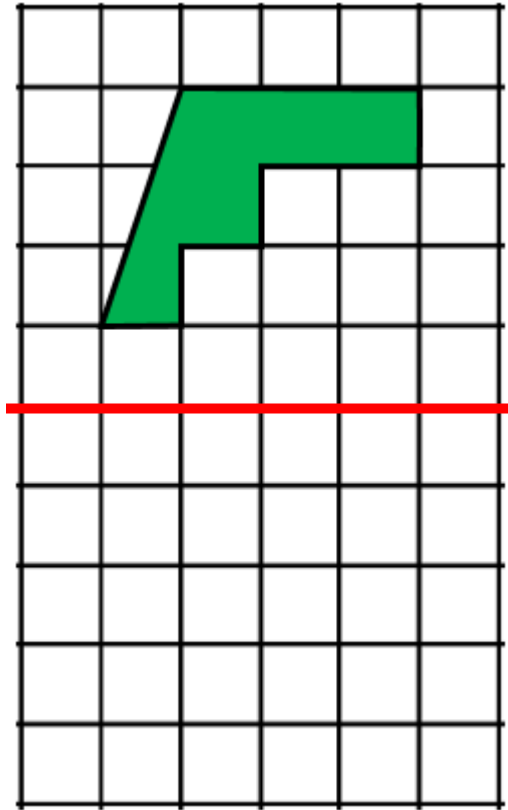
Shape B is called the **image** of shape A under reflection in the red line.



All points in the image are the same distance from the line as the corresponding points in the original shape.

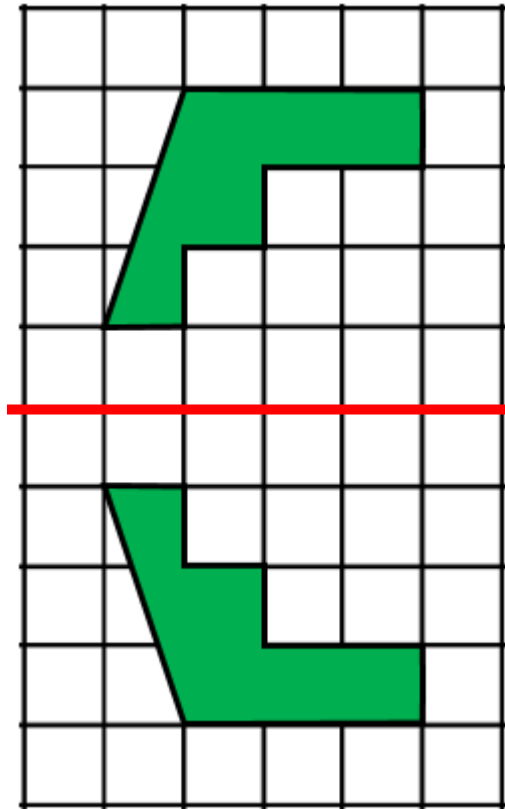
Example

Reflect the green shape in the red mirror line.



Solution

Reflect the green shape in the red mirror line.



Draw the reflection of each shape in the given mirror line.

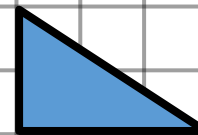
a)



b)



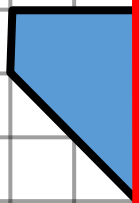
c)



d)



e)



f)



g)

4



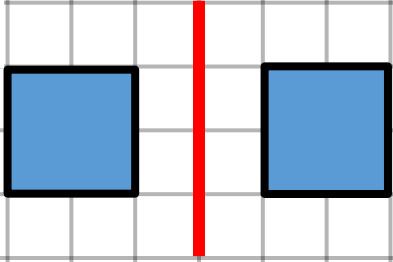
h)

5

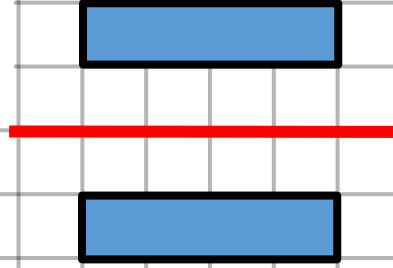


Solutions

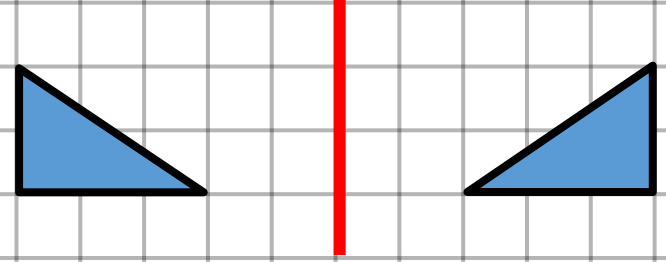
a)



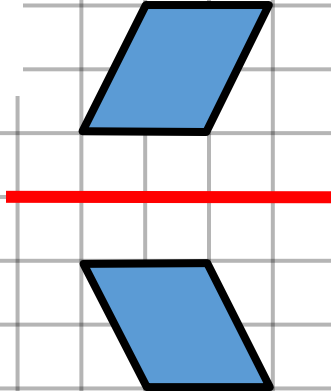
b)



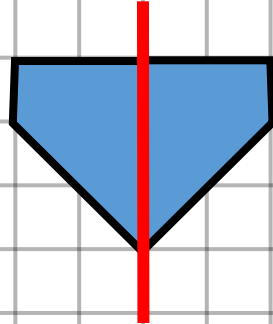
c)



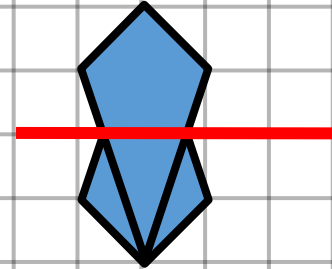
d)



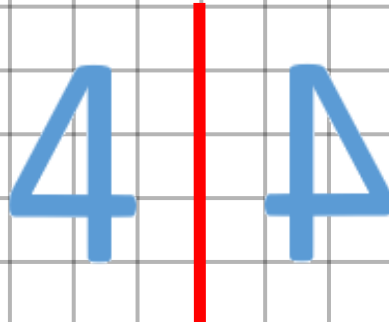
e)



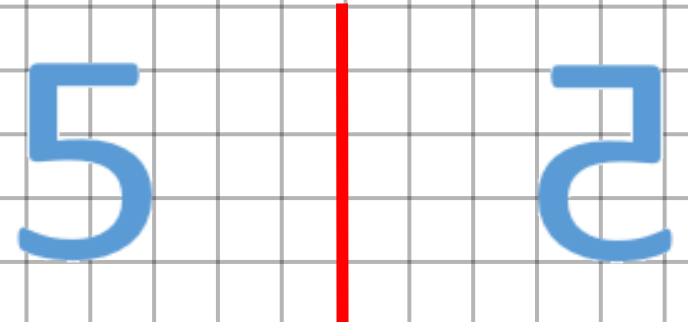
f)



g)

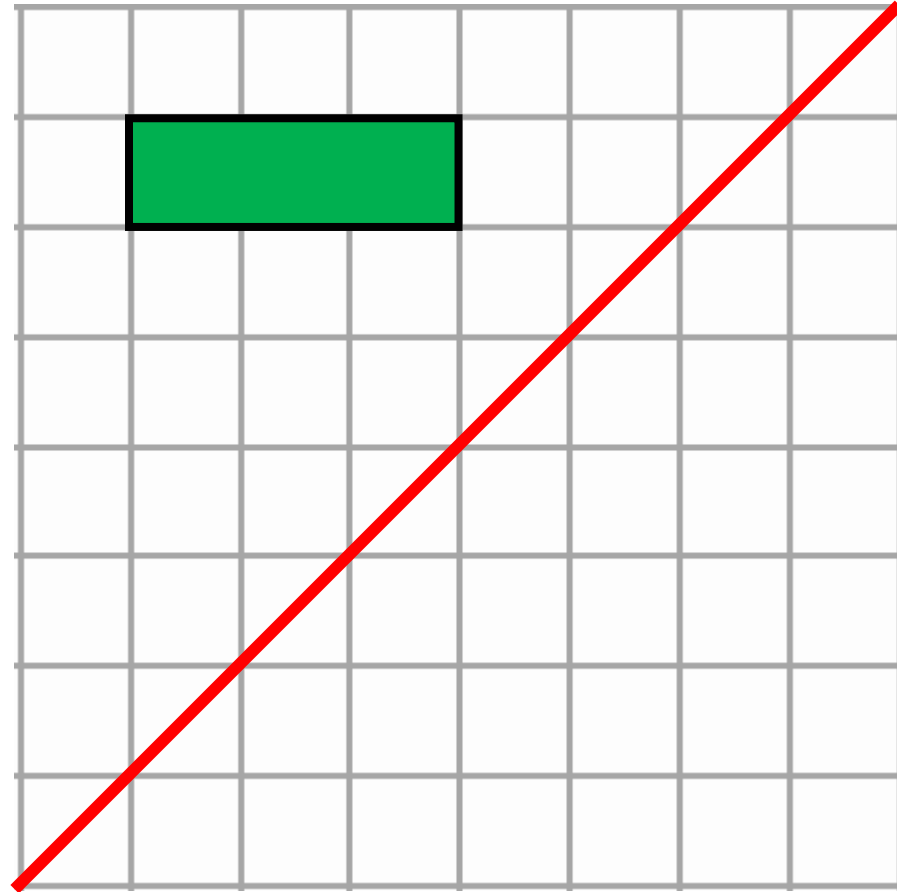


h)



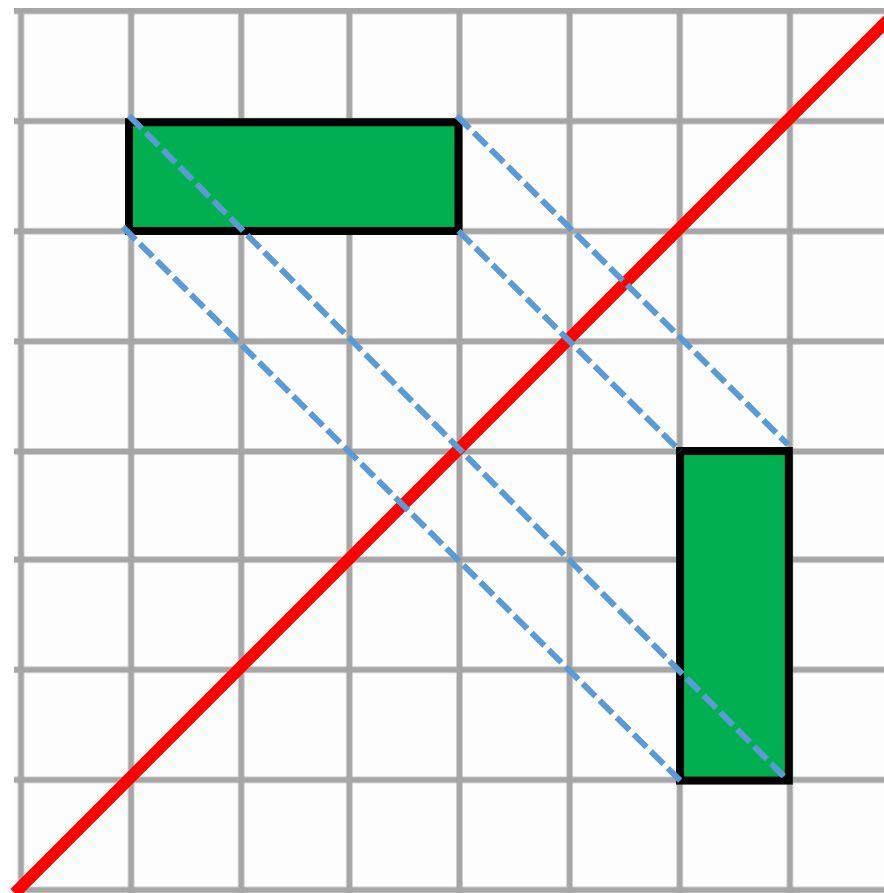
Example : Diagonal Lines

Reflect the green shape in the red mirror line.

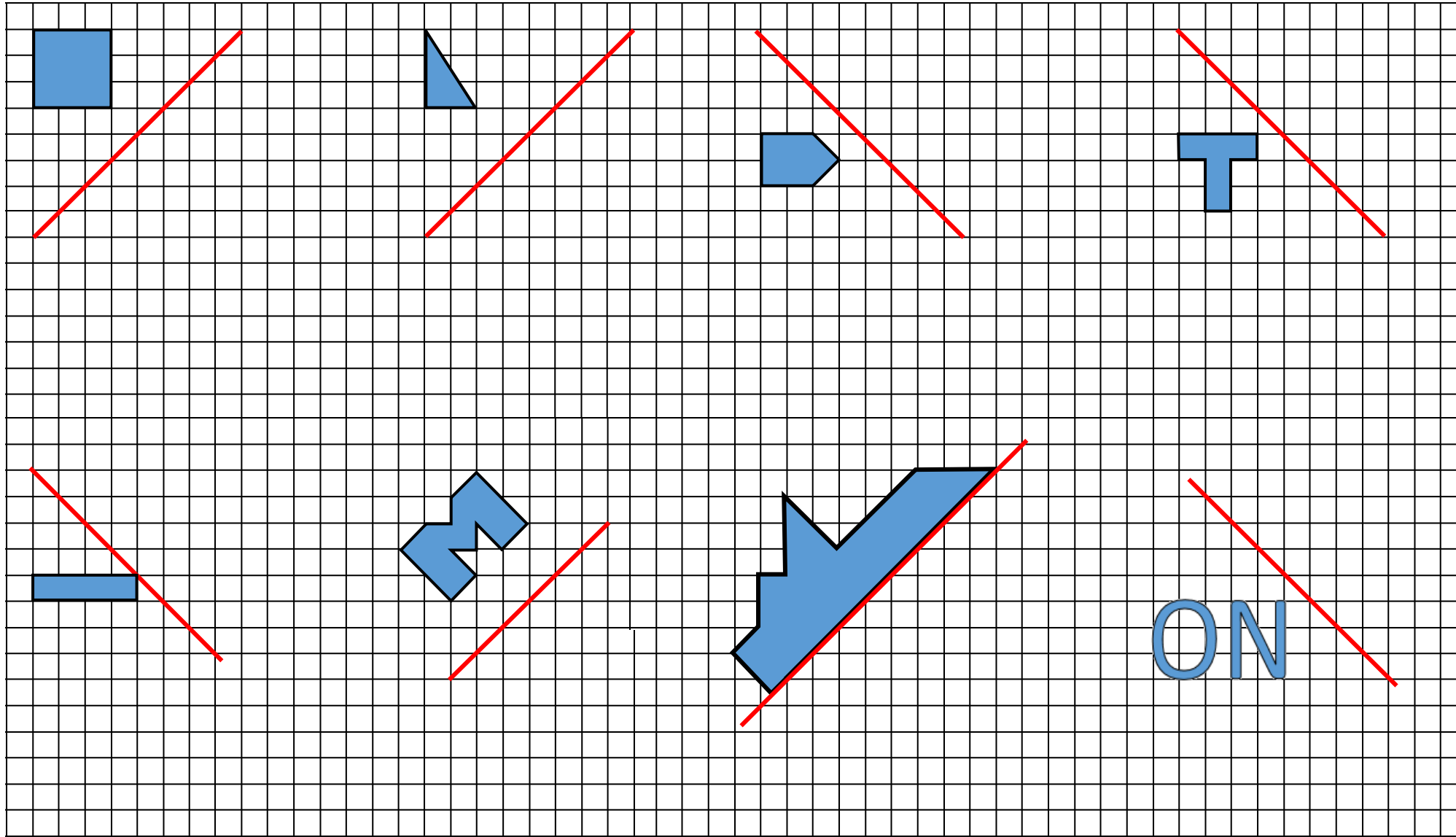


Solution

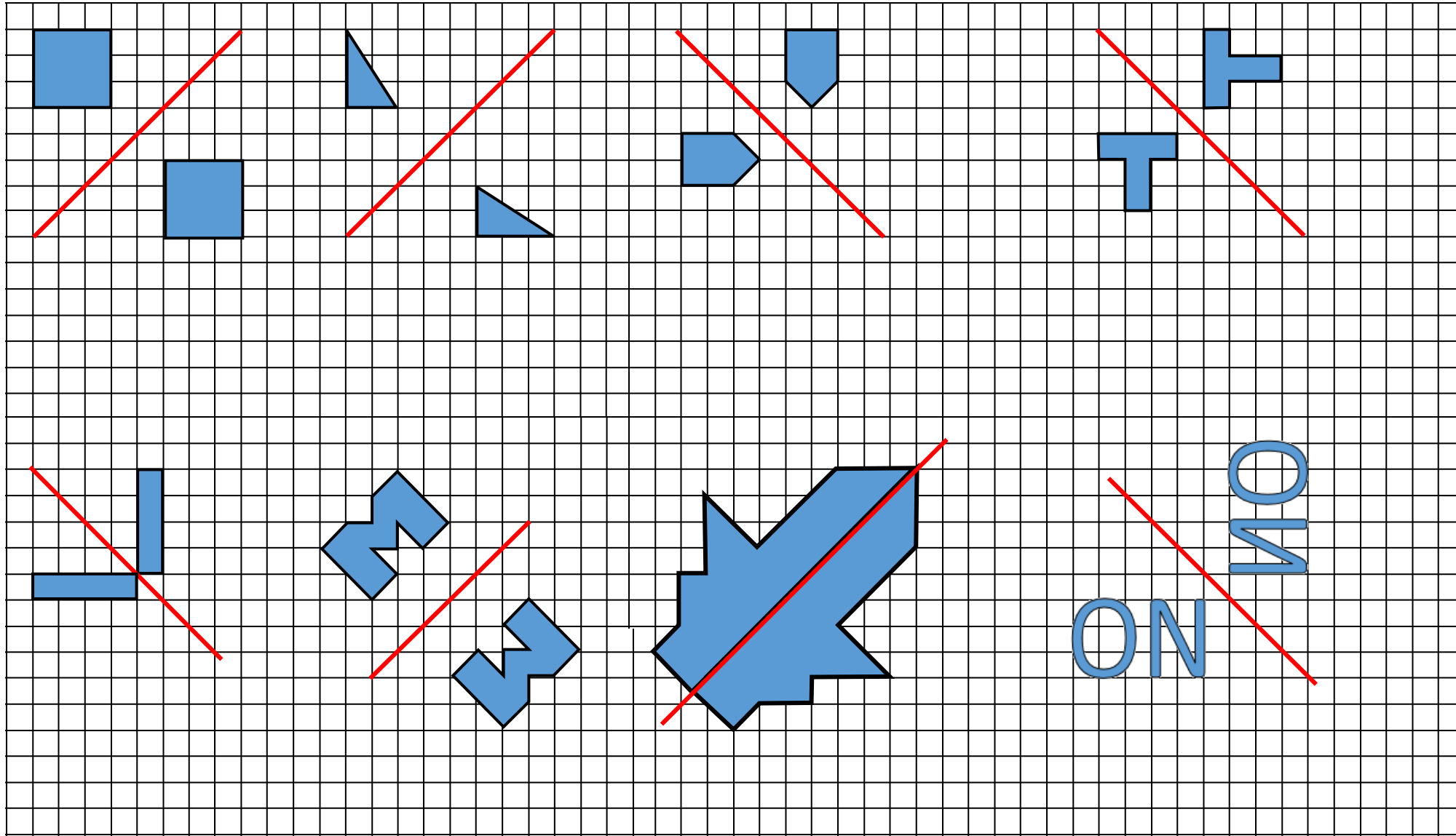
Reflect the green shape in the red mirror line.



Draw the reflection of each shape in the given mirror line

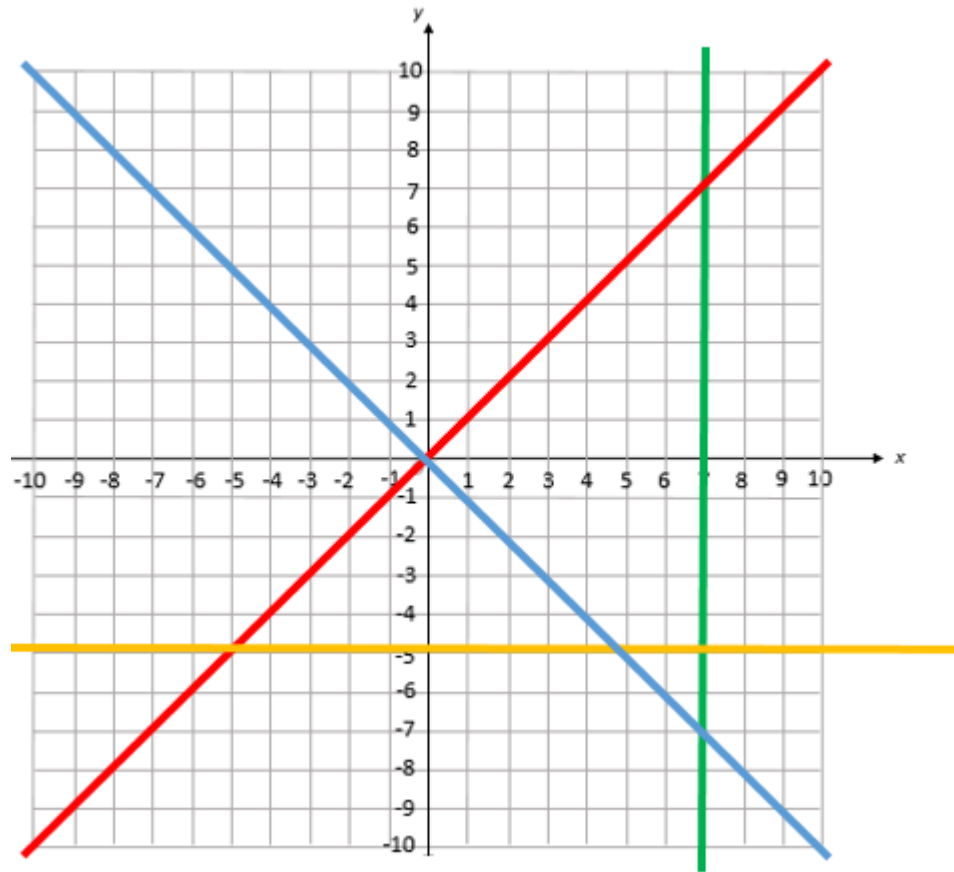


Draw the reflection of each shape in the given mirror line



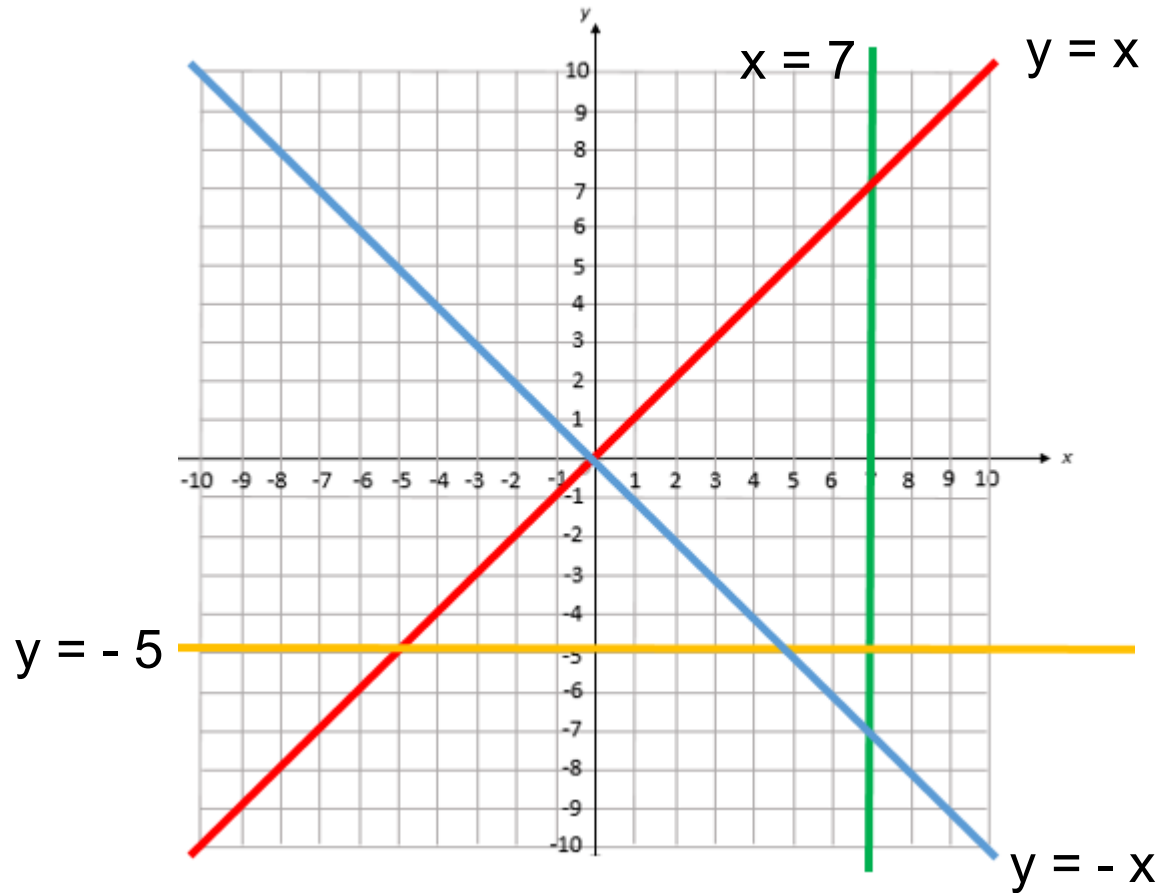
Recap – Equations of lines

Write down the equations of these linear graphs.



Solutions

Write down the equations of these linear graphs.



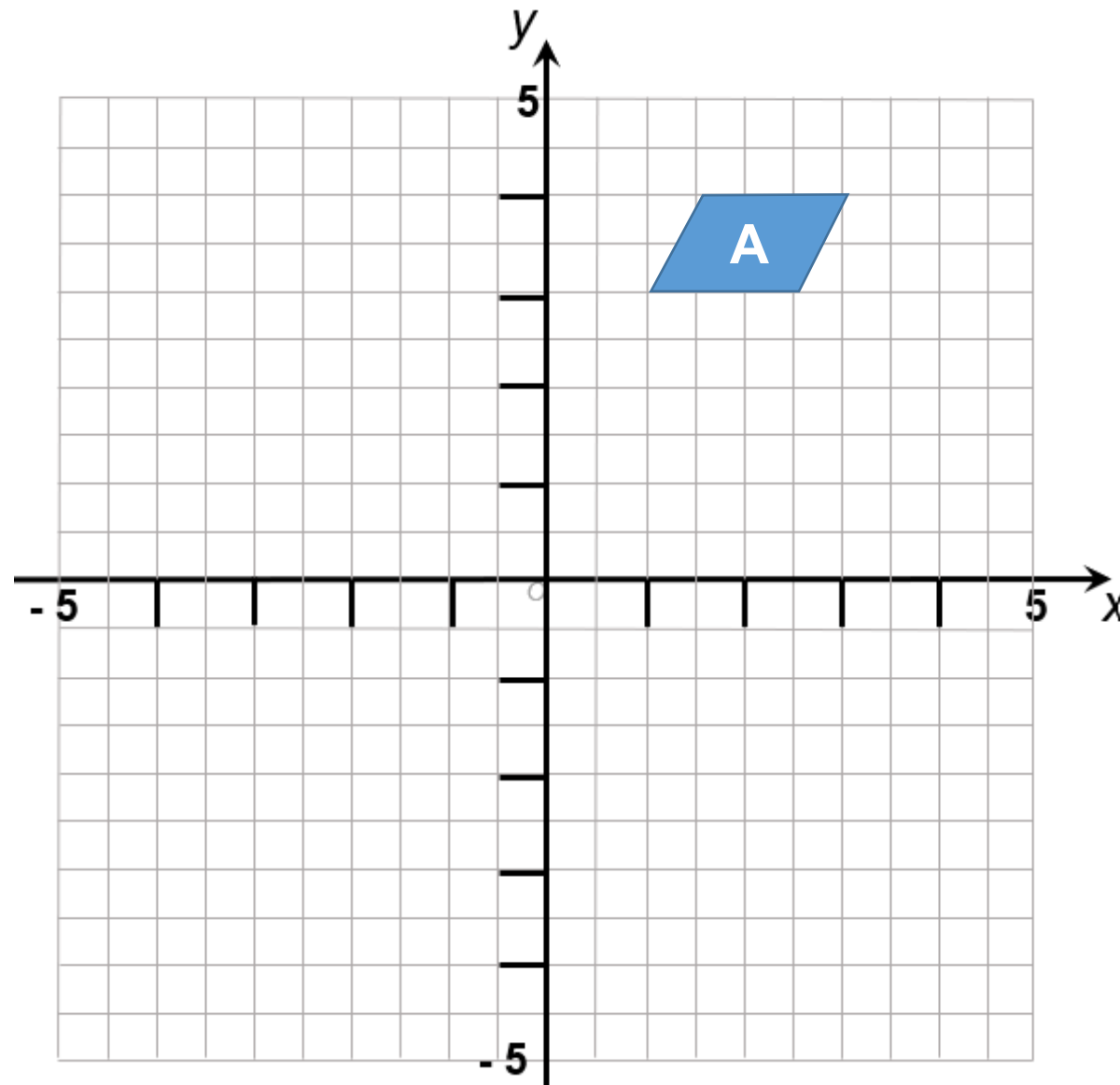
Example

- a) Shape A is reflected in the line $y = 2$ to give shape B.

Draw shape B on the grid.

- b) Shape B is then reflected in the line $x = -1$ to give shape C.

Draw shape C on the grid.



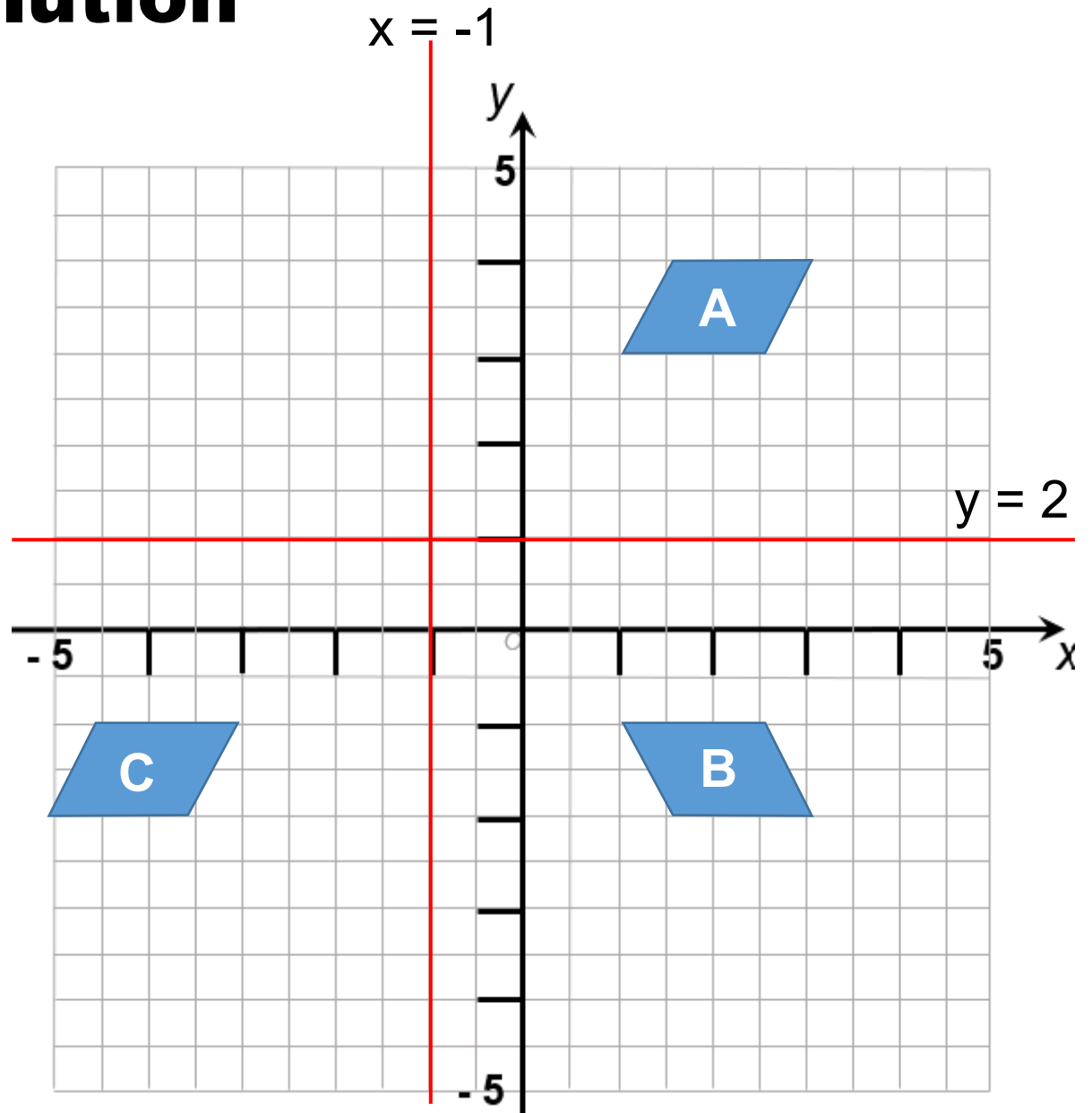
Solution

- a) Shape A is reflected in the line $y = 2$ to give shape B.

Draw shape B on the grid.

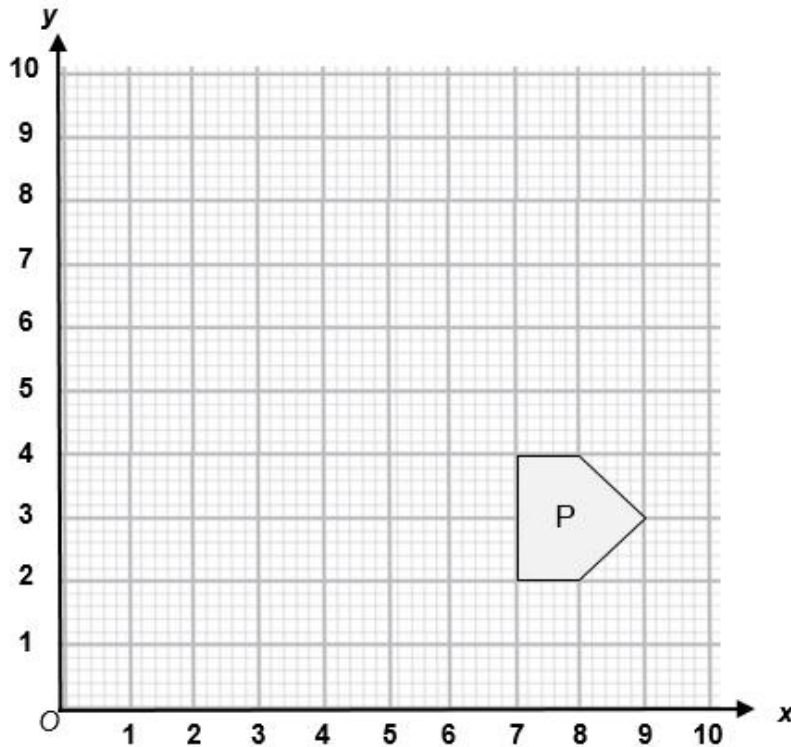
- b) Shape B is then reflected in the line $x = -1$ to give shape C.

Draw shape C on the grid.



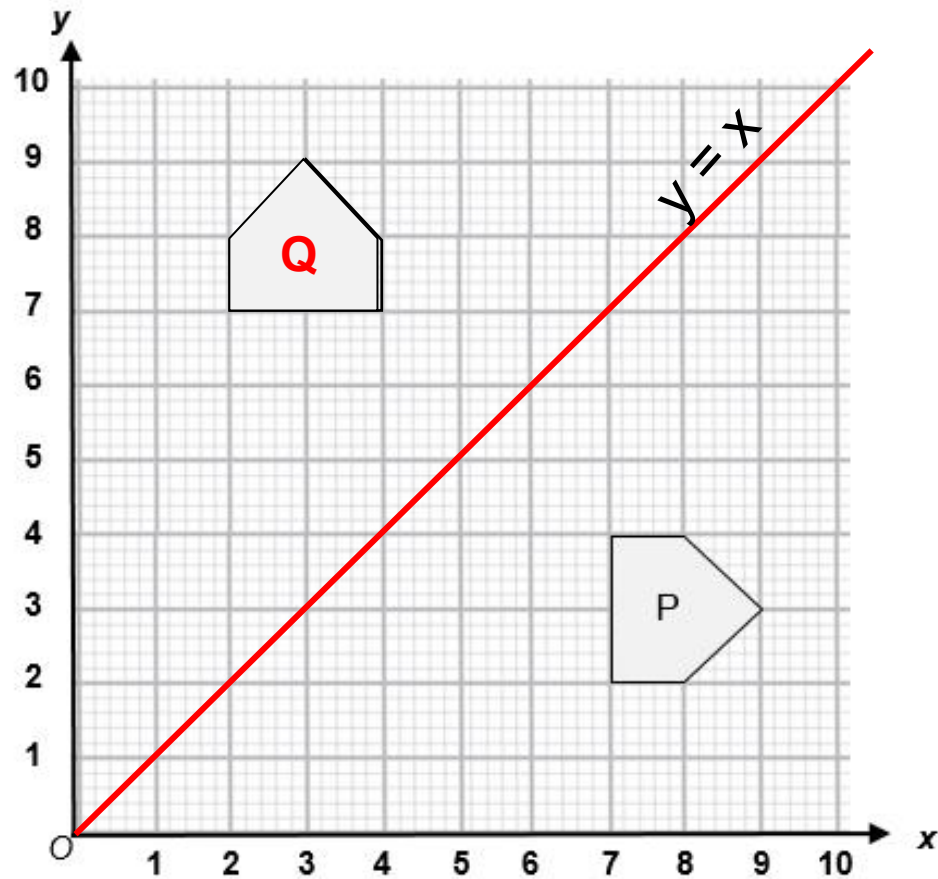
Example

Reflect shape P in the line $y = x$.
Label the new shape Q.



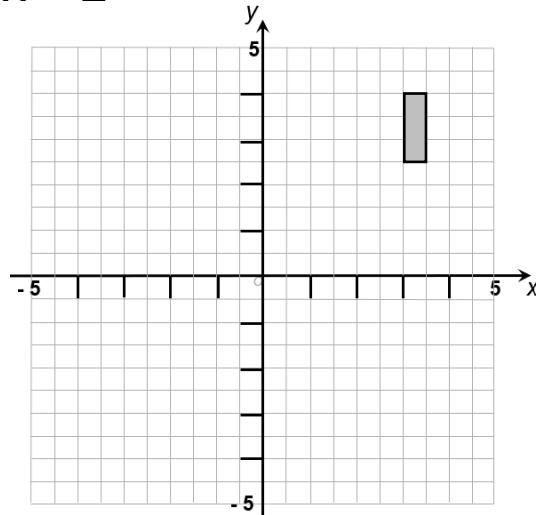
Solution

Reflect shape P in the line $y = x$.
Label the new shape Q.

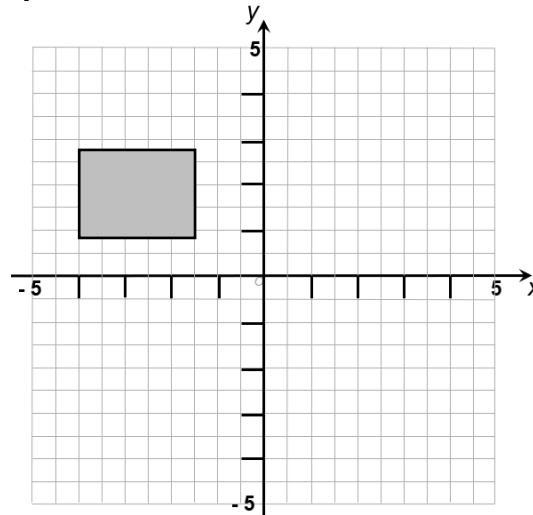


Reflect each shape in the given line.

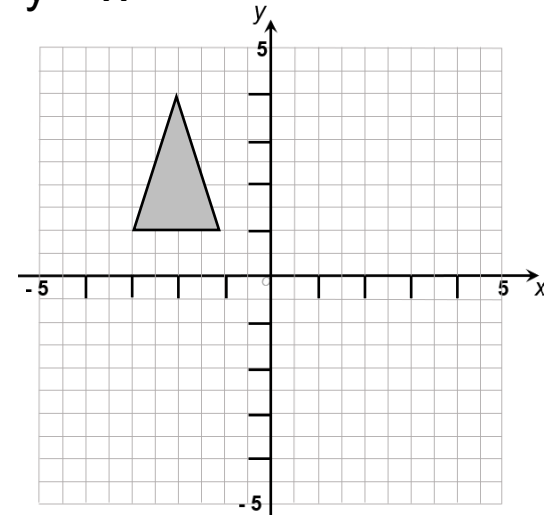
$x = 2$



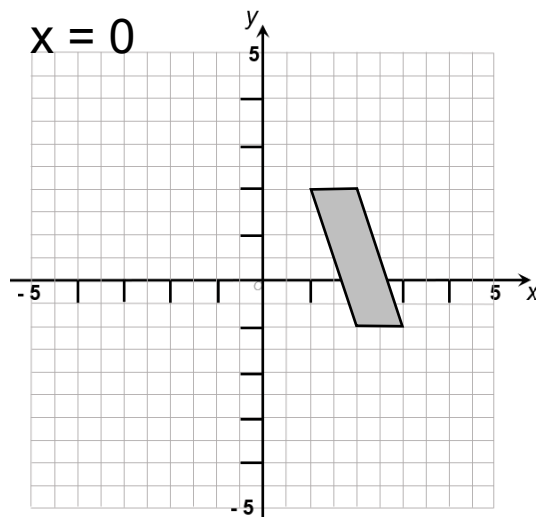
$y = -1$



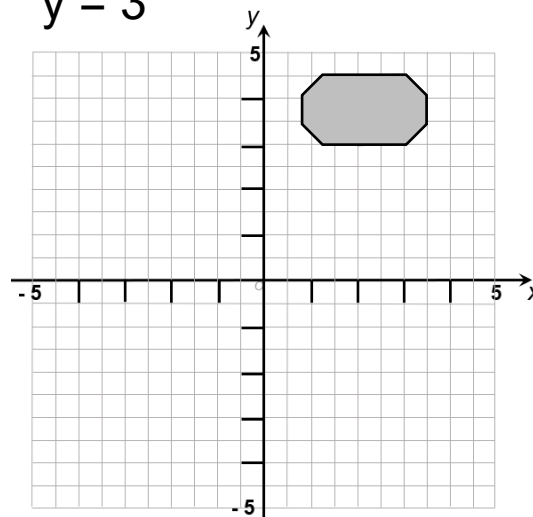
$y = x$



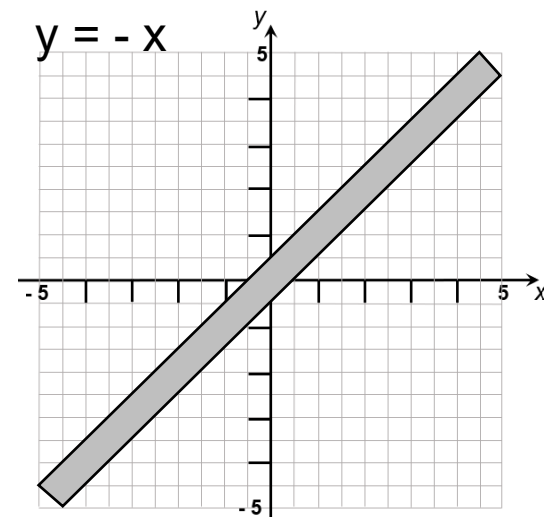
$x = 0$



$y = 3$

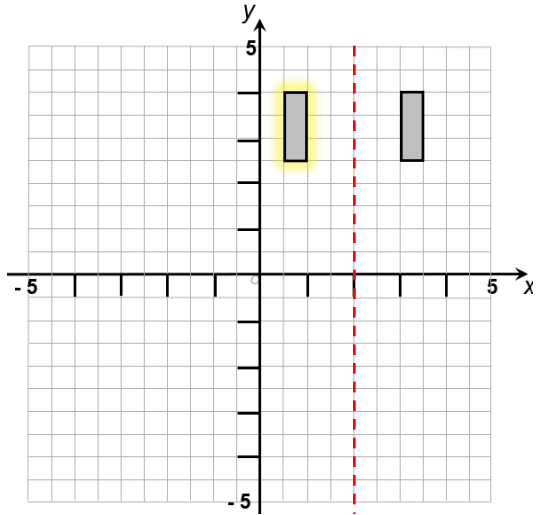


$y = -x$

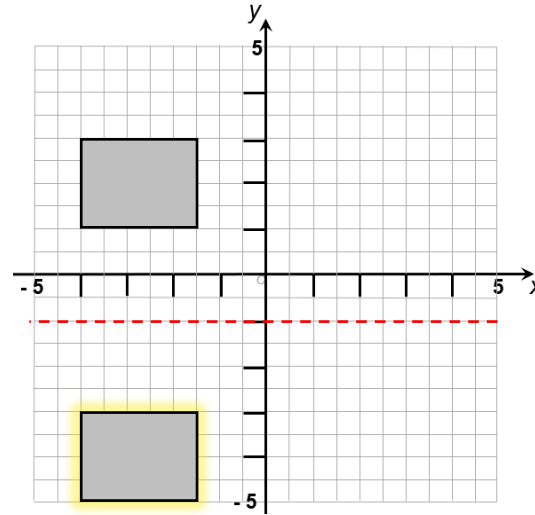


Solutions

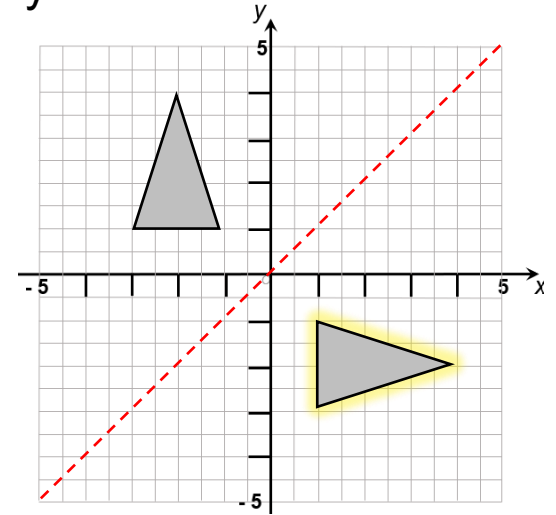
$x = 2$



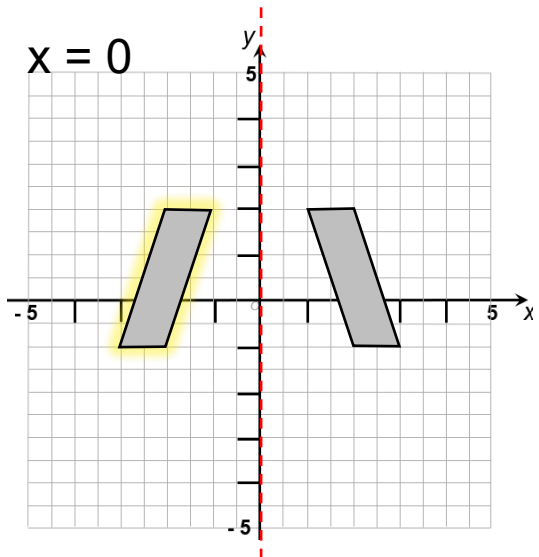
$y = -1$



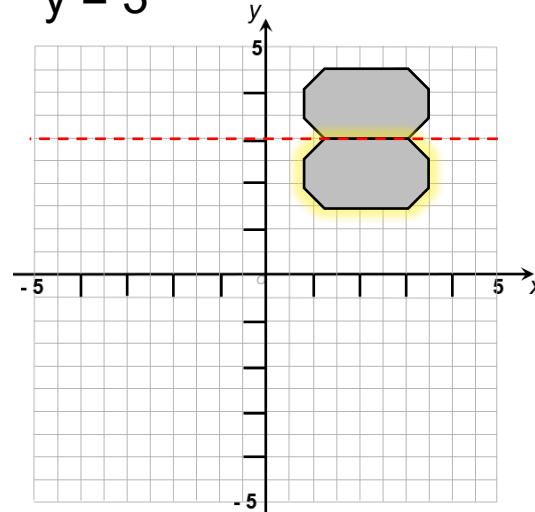
$y = x$



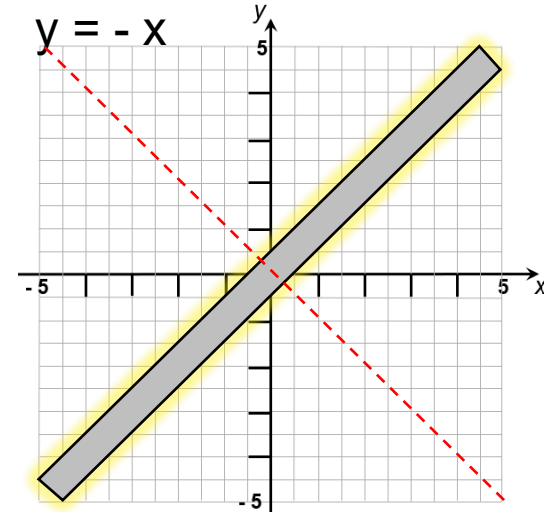
$x = 0$



$y = 3$

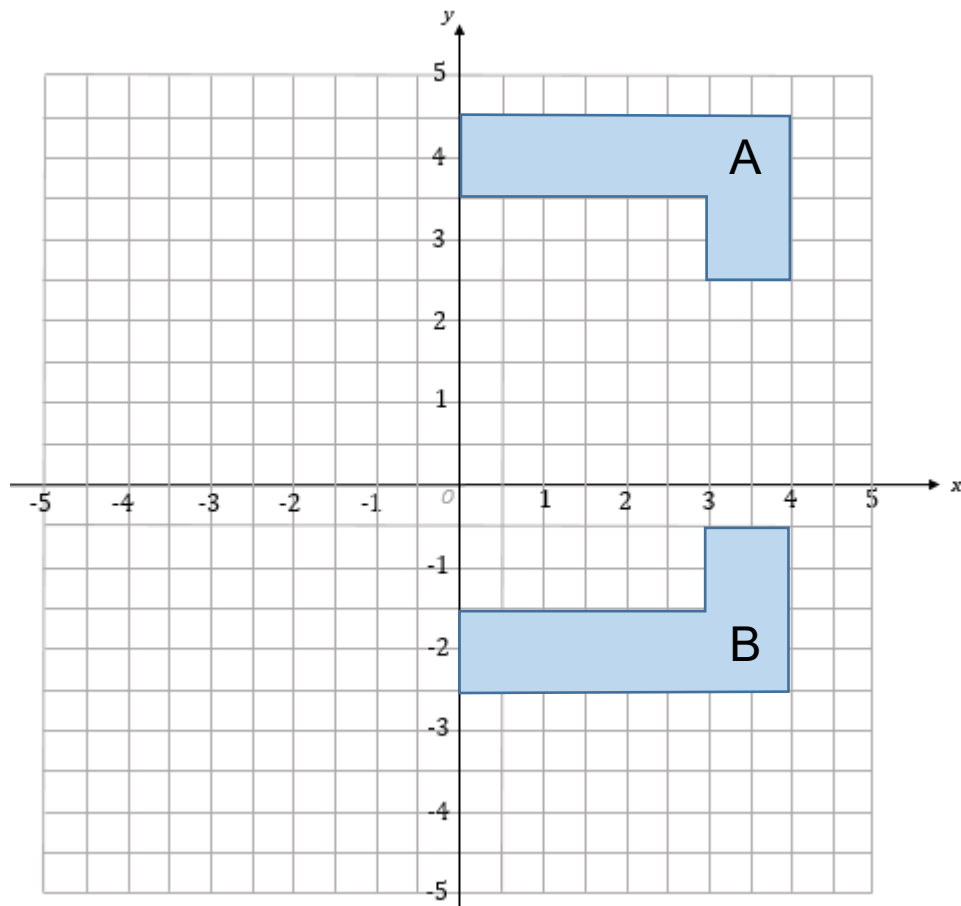


$y = -x$



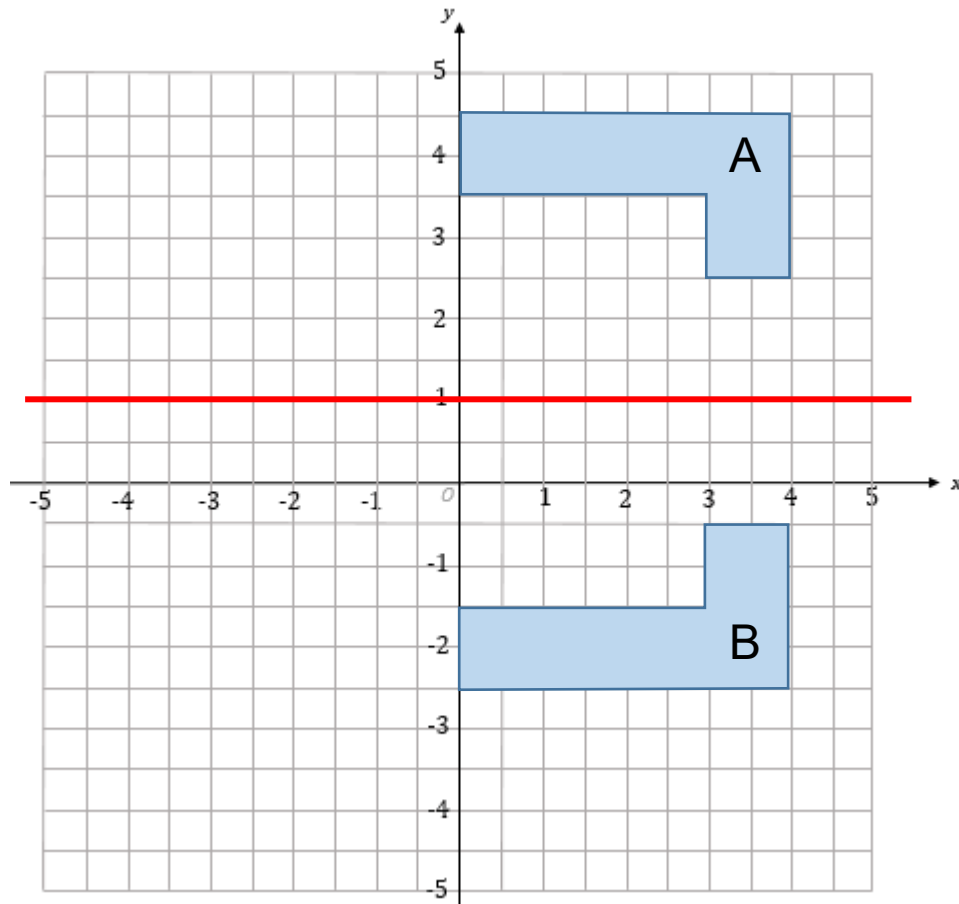
Describing Reflections

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



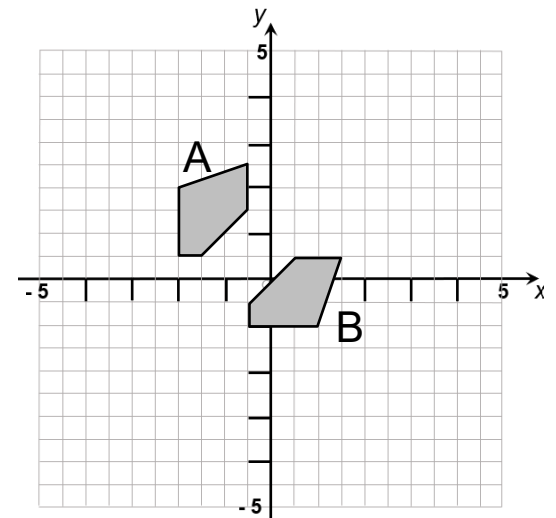
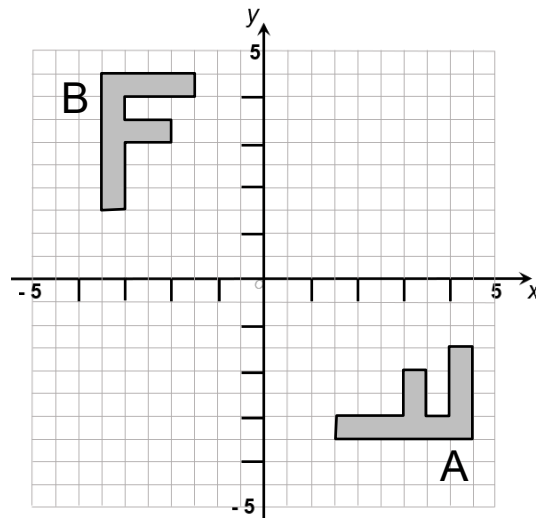
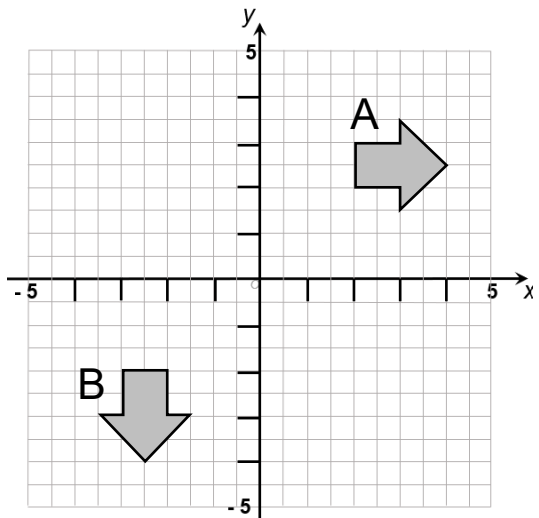
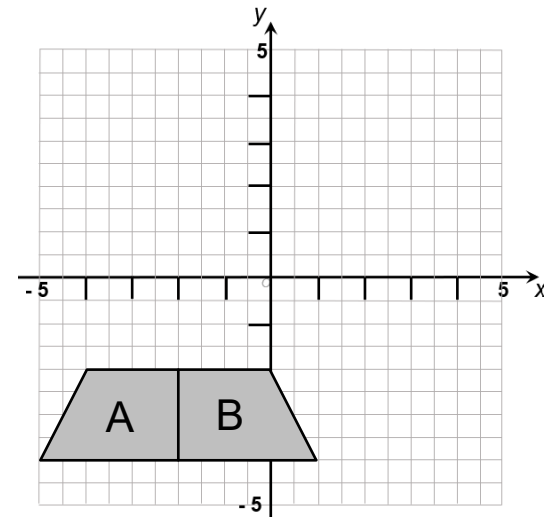
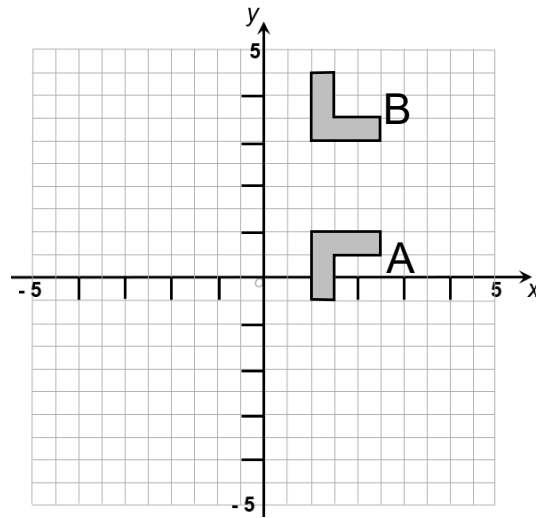
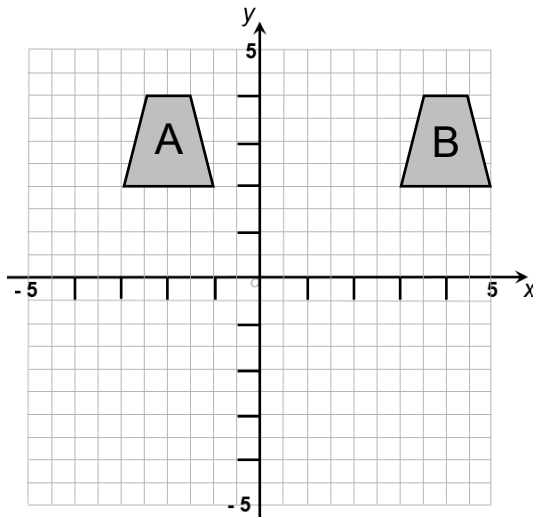
Solution

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

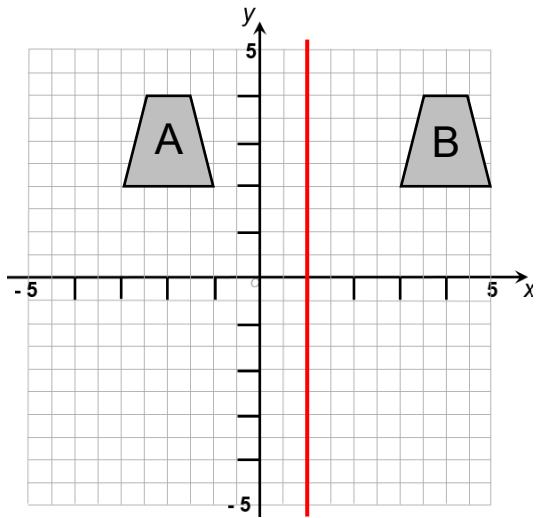


**A reflection in the
line $y = 1$**

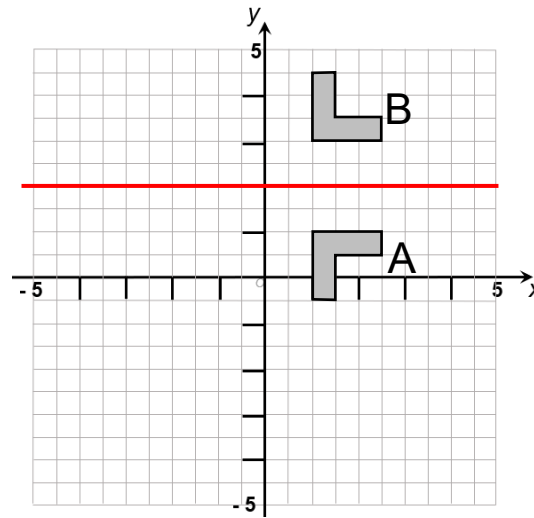
In each diagram, describe the reflection that takes shape A to shape B.



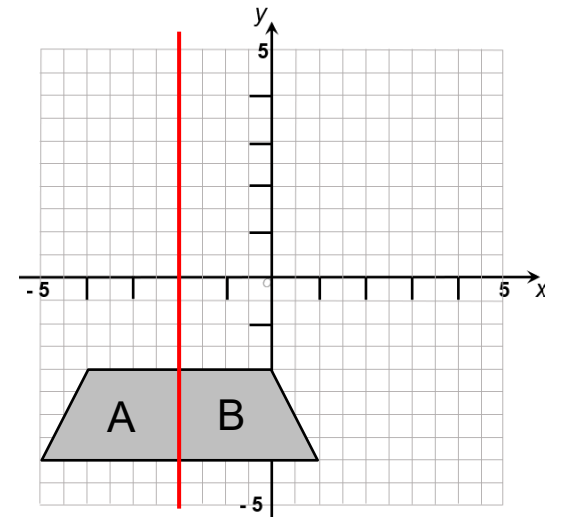
In each diagram, describe the reflection that takes shape A to shape B.



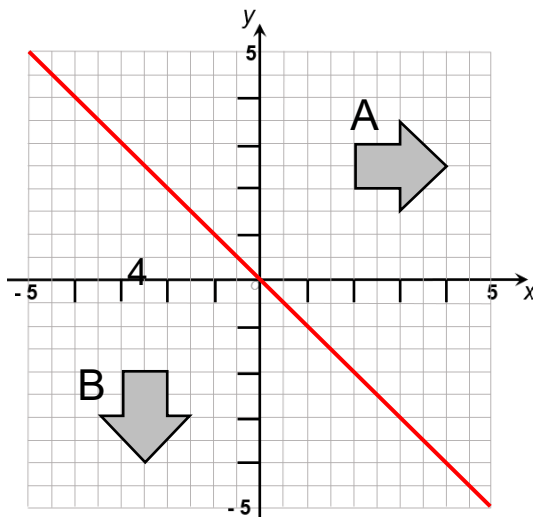
Reflection in the line $x = 1$



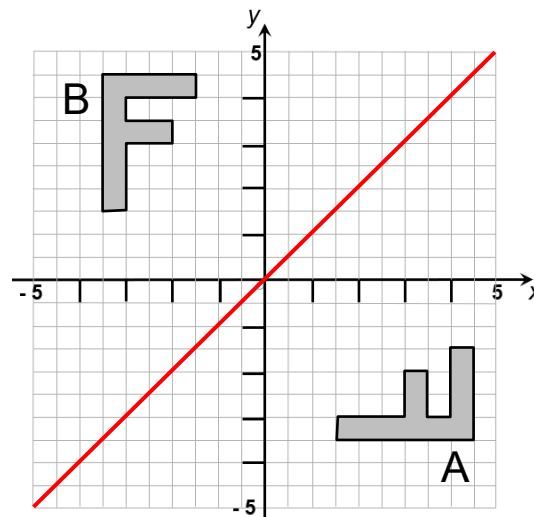
Reflection in the line $y = 2$



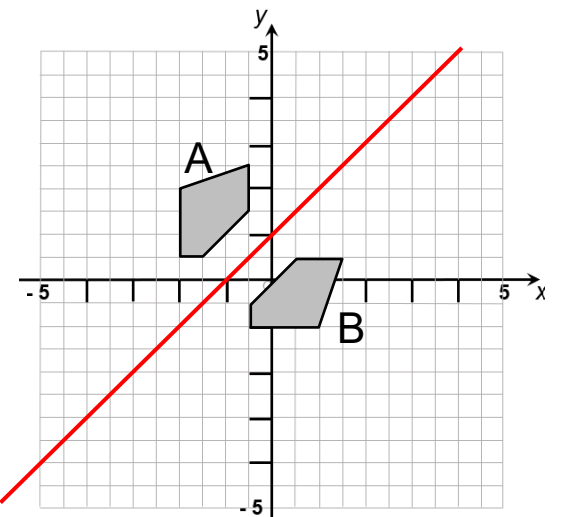
Reflection in the line $x = -2$



Reflection in the line $y = -x$



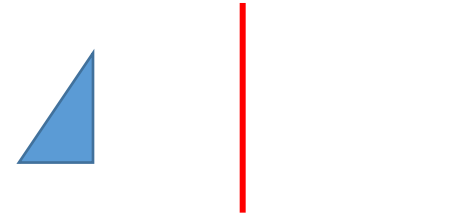
Reflection in the line $y = x$



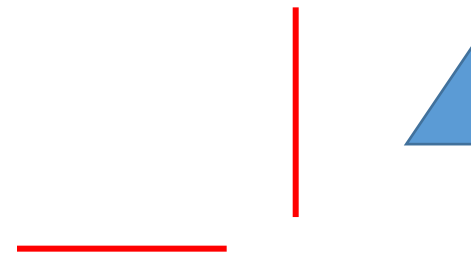
Reflection in the line $y = x + 1$

Extension

Investigate what happens when you reflect a shape in a line and then reflect the image in a parallel line.



Investigate what happens when you reflect a shape in a line and then reflect the image in a perpendicular line.



Exam Style Question

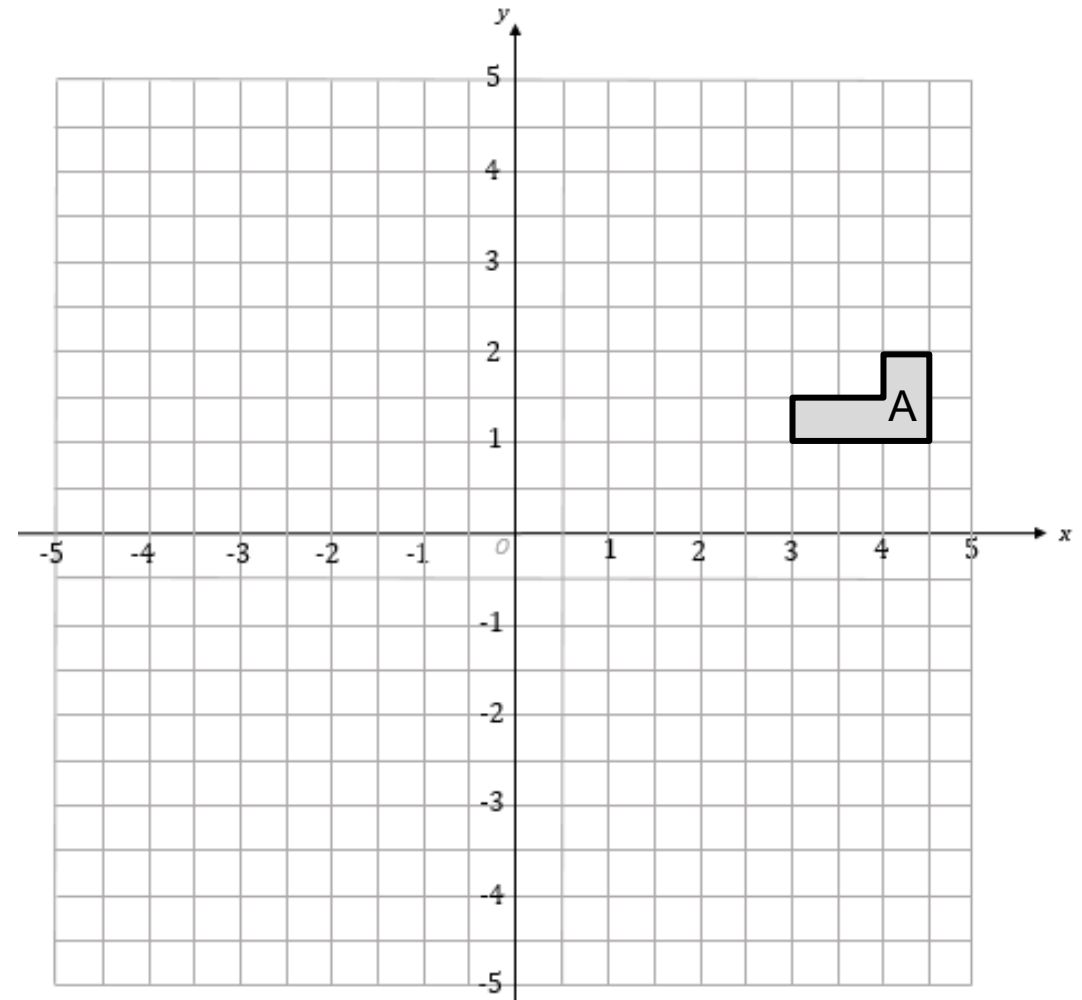
Cerise reflects shape A in the y -axis to get shape B.
She then reflects shape B in the line $y = -x$ to get shape C

Kayla reflects shape A in the line $y = -x$ to get shape D.
She then reflects shape B in the y -axis to get shape E.

Kayla says that shape E should be in the same position as shape C.

Is Kayla correct?

You must show how you get your answer.



Solution

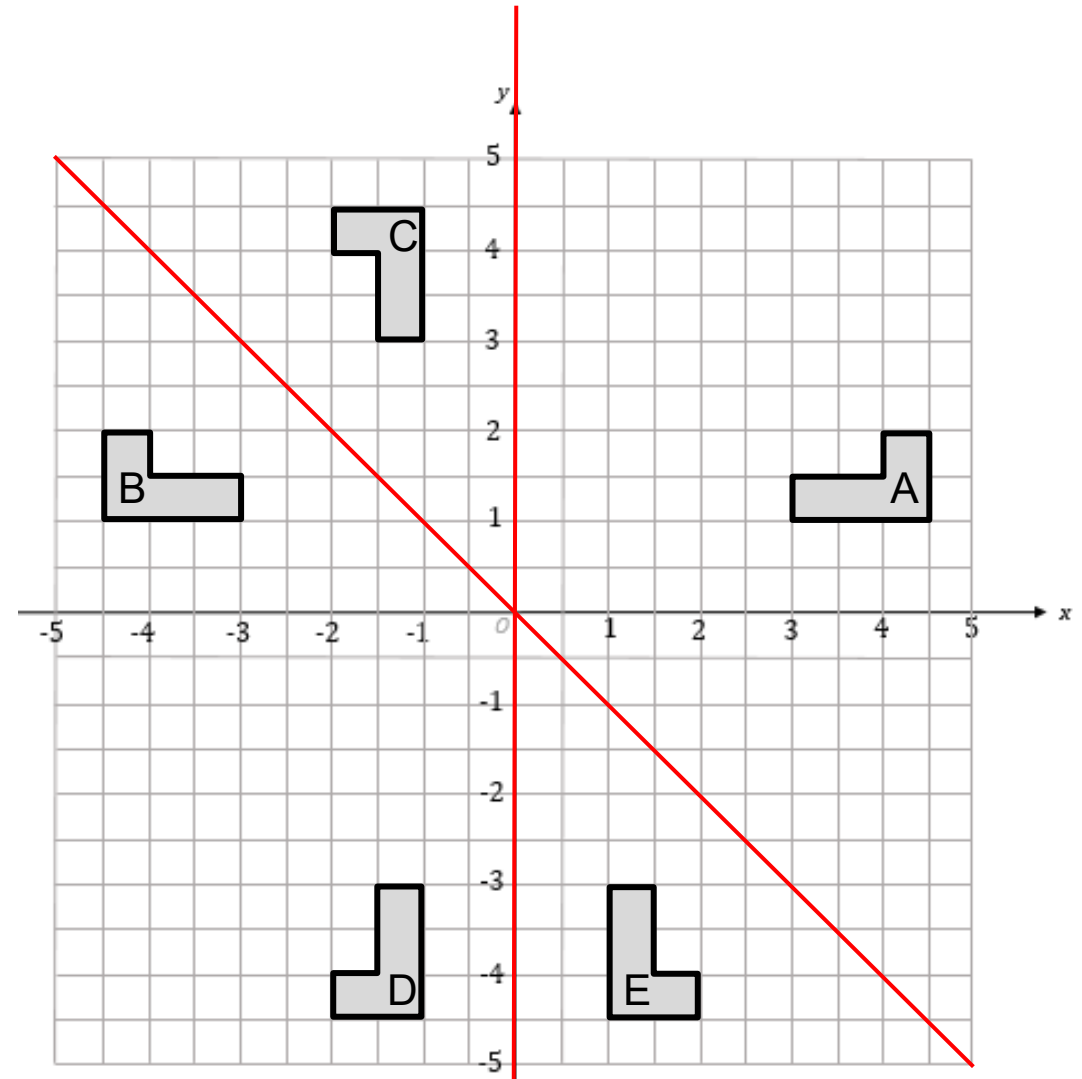
Cerise reflects shape A in the y-axis to get shape B.
She then reflects shape B in the line $y = -x$ to get shape C

Kayla reflects shape A in the line $y = -x$ to get shape D.
She then reflects shape B in the y-axis to get shape E.

Kayla says that shape E should be in the same position as shape C.

Is Kayla correct?

You must show how you get your answer.



Kayla is not correct.

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