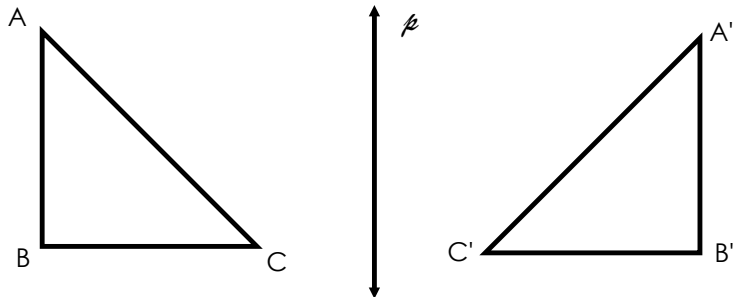


# 1.4 Reflections

That ugly thing you see in the mirror everyday - thats your reflection.

## What is a reflection?

A reflection is transformation in which a geometric figure is flipped \_\_\_\_\_, creating a \_\_\_\_\_ image.

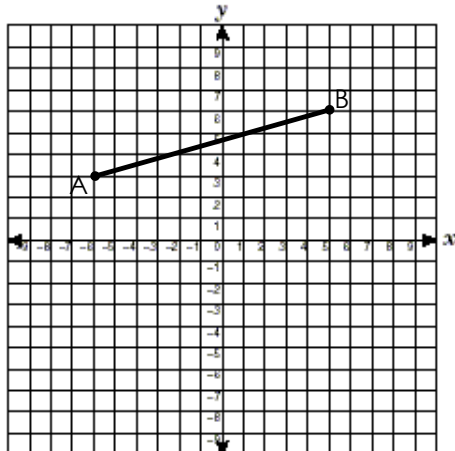


### IMPORTANT FACT

To reflect an object you MUST have a line of reflection to reflect over.

Line of reflection

## Reflections over the x-axis



Reflect line AB over the x-axis. State the coordinates of pre-image and image of AB

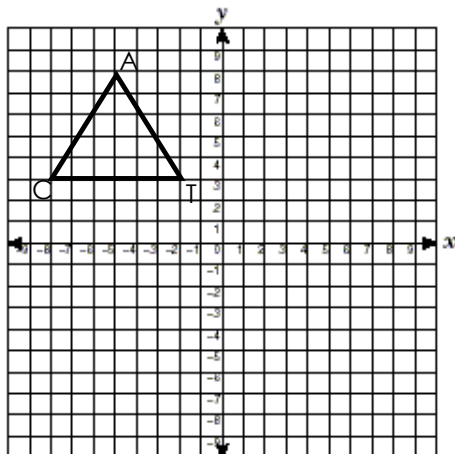
Reflection over x -axis

$(x,y) \longrightarrow (x,-y)$

$A(\underline{\quad}, \underline{\quad}) \longrightarrow A'(\underline{\quad}, \underline{\quad})$

$B(\underline{\quad}, \underline{\quad}) \longrightarrow B'(\underline{\quad}, \underline{\quad})$

## Reflections over the y-axis



Reflect  $\triangle$ CAT over the y-axis. State the coordinates of pre-image and image of  $\triangle$ CAT

Reflection over y -axis

$(x,y) \longrightarrow (-x,y)$

$C(\underline{\quad}, \underline{\quad}) \longrightarrow C'(\underline{\quad}, \underline{\quad})$

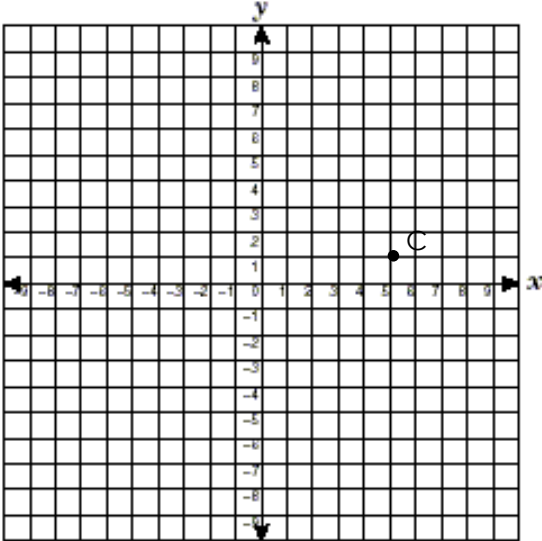
$A(\underline{\quad}, \underline{\quad}) \longrightarrow A'(\underline{\quad}, \underline{\quad})$

$T(\underline{\quad}, \underline{\quad}) \longrightarrow T'(\underline{\quad}, \underline{\quad})$

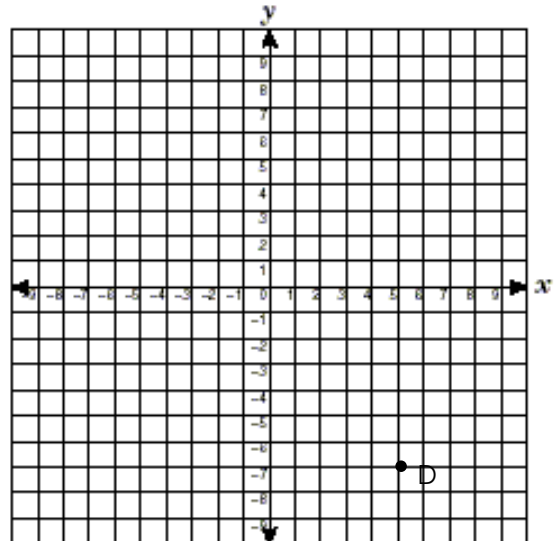
## Reflections Over Other Lines

Start by drawing the line of reflection in each problem.

Reflect point C over the line  $x = 2$ .  
Plot C' and state the coordinate.



Reflect point D over the line  $y = -3$ .  
Plot D' and state the coordinate.



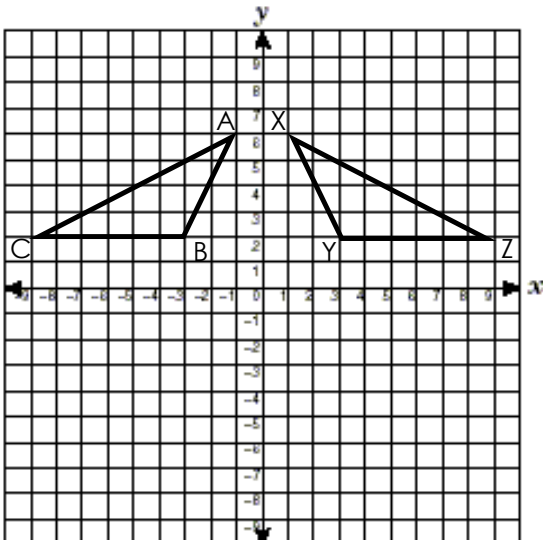
### PRO TIP

If it is  $x =$  then it is a **vertical line**, if it is  $y =$  then it is a **horizontal line**.

C' (\_\_\_\_, \_\_\_\_)

D' (\_\_\_\_, \_\_\_\_)

Describe a transformation that maps  $\triangle ABC$  onto  $\triangle XYZ$



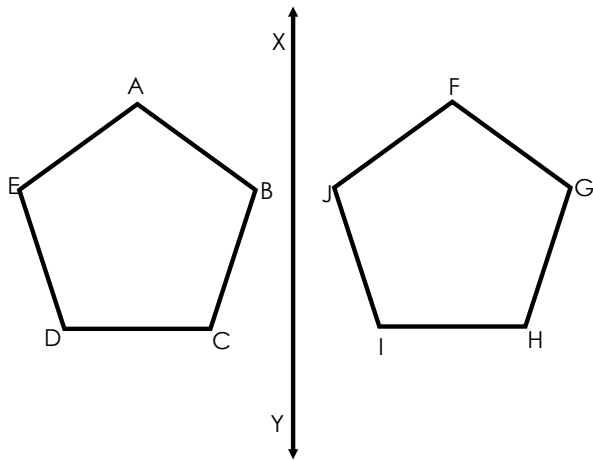
Line of reflection: \_\_\_\_\_

A \_\_\_\_\_  
over \_\_\_\_\_  
maps \_\_\_\_\_ onto \_\_\_\_\_.

Is  $\triangle ABC \cong \triangle XYZ$ ? Explain using the properties of rigid motions.

## Reflections Without the Coordinate Plane

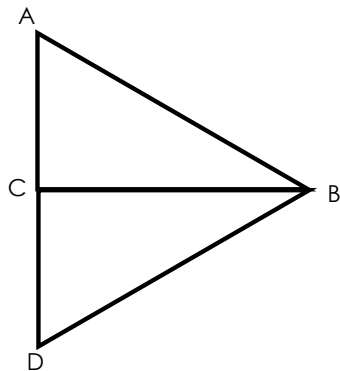
Describe a transformation that would map pentagon ABCDE onto pentagon FJIHG



Line of reflection: \_\_\_\_\_

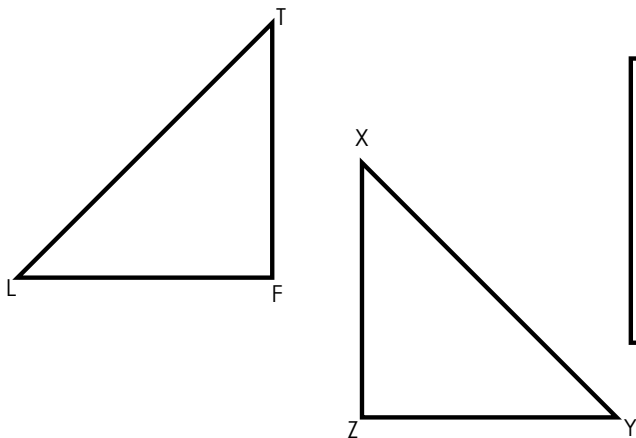
A \_\_\_\_\_  
 over the line \_\_\_\_\_ maps  
 \_\_\_\_\_ onto \_\_\_\_\_

Describe a transformation that would map  $\triangle ABC$  onto  $\triangle DBC$



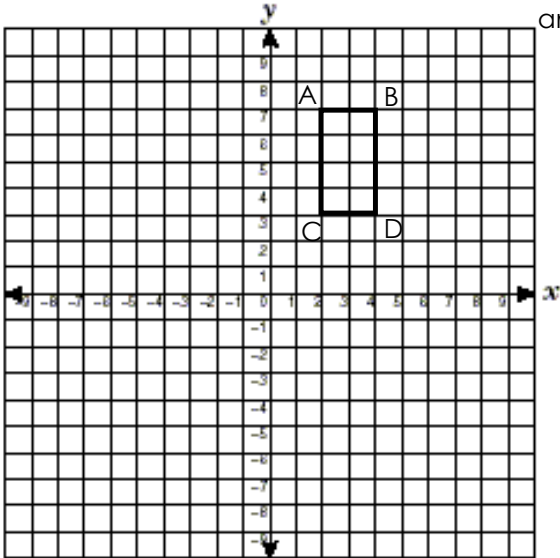
Line of reflection: \_\_\_\_\_

Describe a series of two transformations that would map  $\triangle LFT$  onto  $\triangle YZX$



## Independent Practice

Draw a reflection of rectangle ABCD over the y-axis. State the coordinates of the pre-image and image of ABCD.



State the rule for reflecting over the y-axis

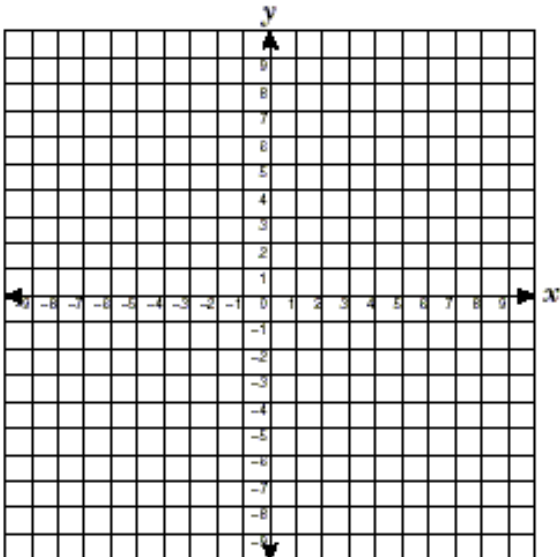
$$A(\underline{\quad}, \underline{\quad}) \longrightarrow A'(\underline{\quad}, \underline{\quad})$$

$$B(\underline{\quad}, \underline{\quad}) \longrightarrow B'(\underline{\quad}, \underline{\quad})$$

$$C(\underline{\quad}, \underline{\quad}) \longrightarrow C'(\underline{\quad}, \underline{\quad})$$

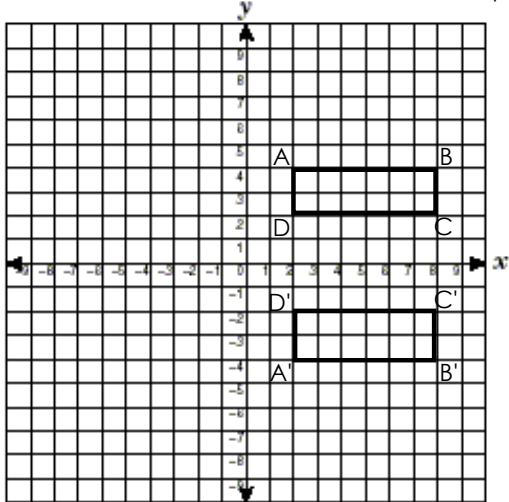
$$D(\underline{\quad}, \underline{\quad}) \longrightarrow D'(\underline{\quad}, \underline{\quad})$$

$\triangle$  ABC has coordinates A(3,2), B(5,6) and C(4,-2). Draw a reflection of ABC over the x-axis. State the coordinates of the pre-image and the image of ABC.



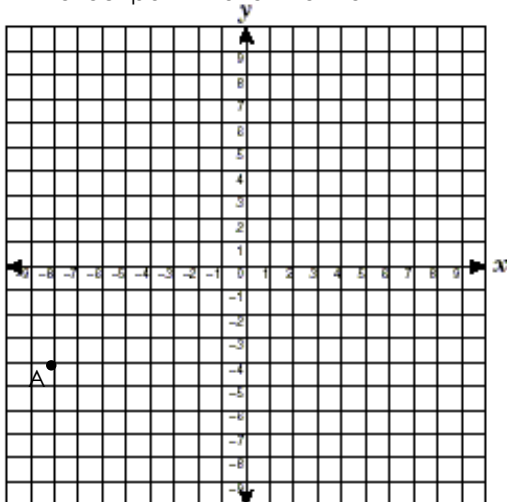
State the rule for reflecting over the x-axis

What transformation would map rectangle ABCD onto rectangle A'B'C'D'?

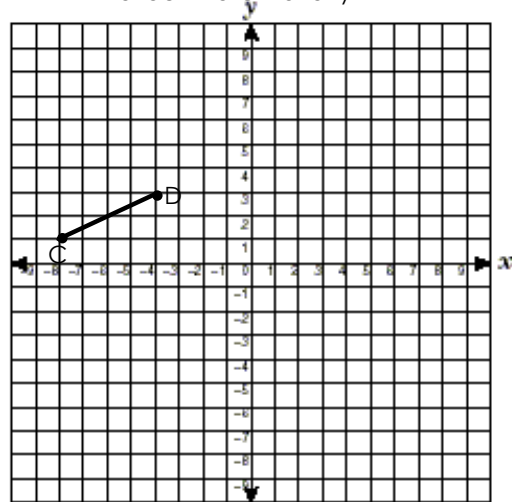


Is  $\square ABCD \cong \square A'B'C'D'$ ? Explain using the properties of rigid motions.

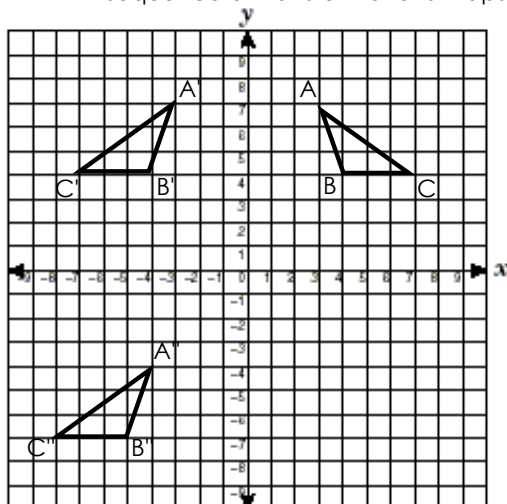
Reflect point A over the line  $x = -2$



Reflect line CD over  $y = -1$

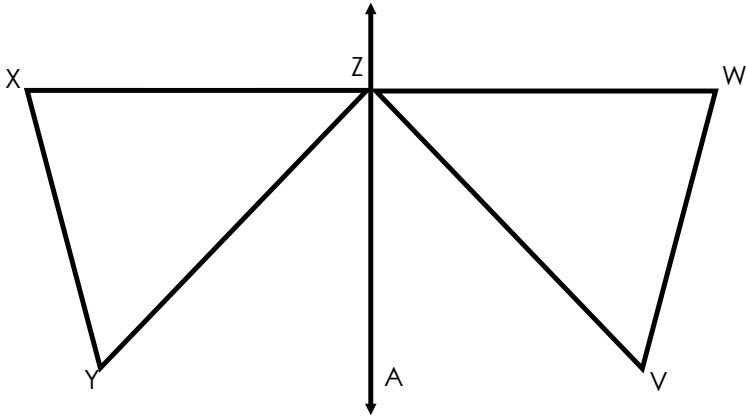


A sequence of transformations maps  $\triangle ABC$  onto  $\triangle A''B''C''$ .



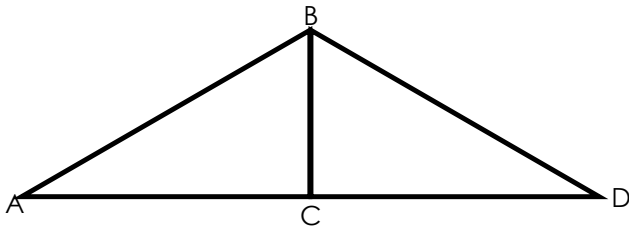
What sequence of transformations maps  $\triangle ABC$  onto  $\triangle A'B'C'$  and then maps  $\triangle A'B'C'$  onto  $\triangle A''B''C''$ ?

Describe a rigid motion that would map triangle XYZ onto triangle WVZ



A \_\_\_\_\_  
over the line \_\_\_\_\_  
maps \_\_\_\_\_ onto \_\_\_\_\_.

Describe a transformation that would map  $\triangle ABC$  onto  $\triangle DBC$



\_\_\_\_\_

Describe a sequence of transformation that would map  $\triangle XYZ$  onto  $\triangle MON$

