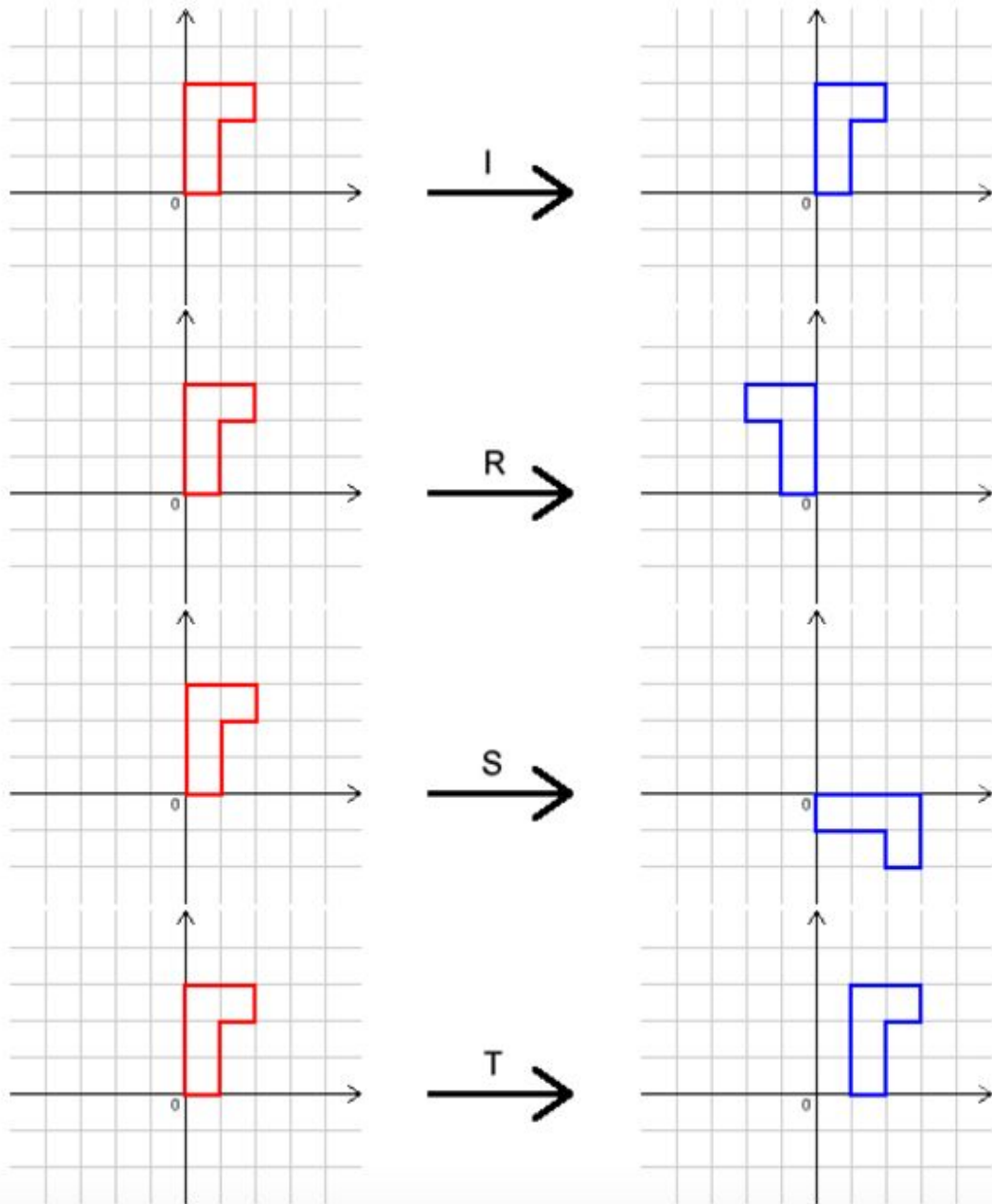


## Creating Images

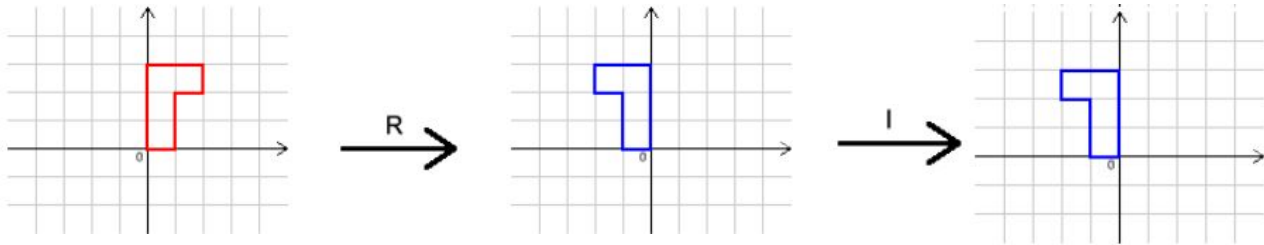
In this problem, we shall use four transformations,  $I$ ,  $R$ ,  $S$  and  $T$ . Their effects are shown below.



We write  $R^{-1}$  for the transformation that “undoes”  $R$  (the inverse of  $R$ ).

And we write  $RS$  for the transformation “do  $S$  and then do  $R$ ”.

So follow the actions of  $R$  and  $I$ , under the transformation  $IR$  (“do  $R$  then do  $I$ ”).



And we can write  $R^2$  for  $RR$  and  $T^{-3}$  for  $T^{-1}T^{-1}T^{-1}$ .

Investigate:

Is it true that  $SR$  is the same transformation as  $RS$ ? Explain your decision.

What combinations of transformations  $I$ ,  $R$ ,  $S$ ,  $T$ , and their inverses could undo  $RS$ ?

Justify your choice.

What other relationships do you notice about combinations of these transformations and their inverses?