

# Rigid or Not Rigid Transformations

Name \_\_\_\_\_

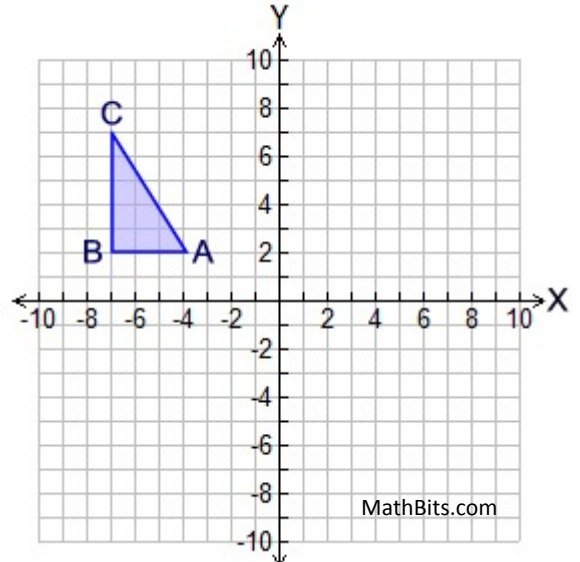
1.  $\triangle ABC$  plotted at  $A(-4,2)$ ,  $B(-7,2)$  and  $C(-7,7)$ , is to be translated according to the rule  $(x, y) \rightarrow (x+10, y-8)$ .

a) Plot the image of  $\triangle ABC$  under this translation and label it  $\triangle A'B'C'$ . State the new coordinates:

$A' = \underline{\hspace{2cm}}$   $B' = \underline{\hspace{2cm}}$   $C' = \underline{\hspace{2cm}}$

b) Was length preserved during this translation? \_\_\_\_\_  
Describe how you made your decision.

c) Are translations rigid transformations? \_\_\_\_\_  
Explain.



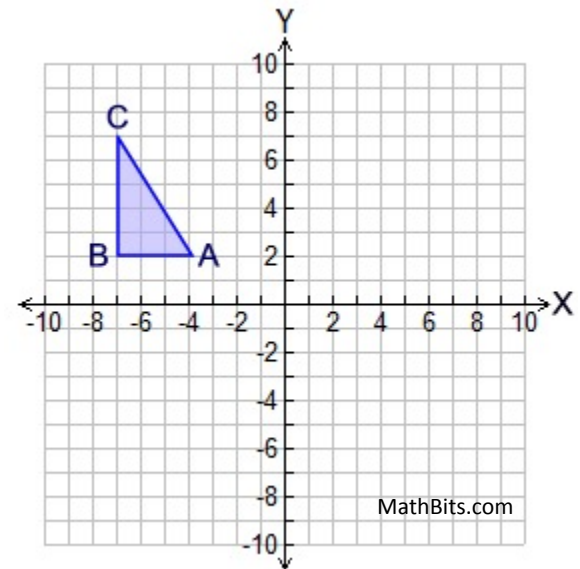
2.  $\triangle ABC$  plotted at  $A(-4,2)$ ,  $B(-7,2)$  and  $C(-7,7)$ , is to be reflected over the  $y$ -axis.

a) Plot the image of  $\triangle ABC$  under this reflection and label it  $\triangle A'B'C'$ . State the new coordinates:

$A' = \underline{\hspace{2cm}}$   $B' = \underline{\hspace{2cm}}$   $C' = \underline{\hspace{2cm}}$

b) Was length preserved during this reflection? \_\_\_\_\_  
Describe how you made your decision.

c) Are reflections rigid transformations? \_\_\_\_\_  
Explain.



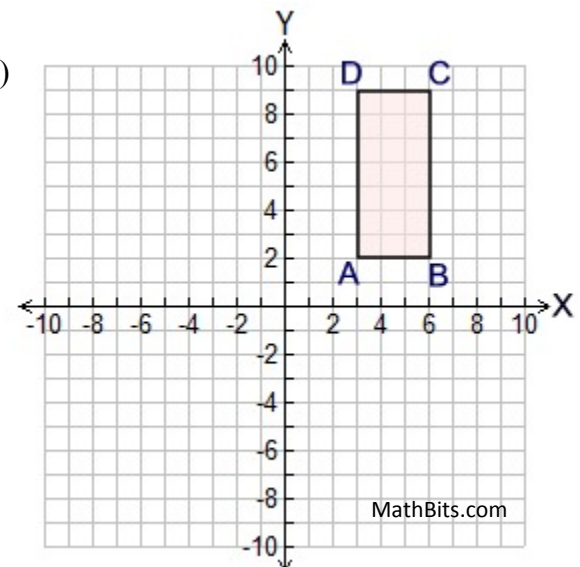
3. Rectangle  $ABCD$  plotted at  $A(3,2)$ ,  $B(6,2)$ ,  $C(6,9)$  and  $D(3,9)$  is to be rotated  $90^\circ$  (center of rotation is the origin).

a) Plot the image of  $ABCD$  under this rotation and label it  $A'B'C'D'$ . State the new coordinates:

$A' = \underline{\hspace{2cm}}$   $B' = \underline{\hspace{2cm}}$   $C' = \underline{\hspace{2cm}}$   $D' = \underline{\hspace{2cm}}$

b) Were the angle measures preserved during this rotation? \_\_\_\_\_  
Describe how you made your decision.

c) Are rotations rigid transformations? \_\_\_\_\_  
Explain.



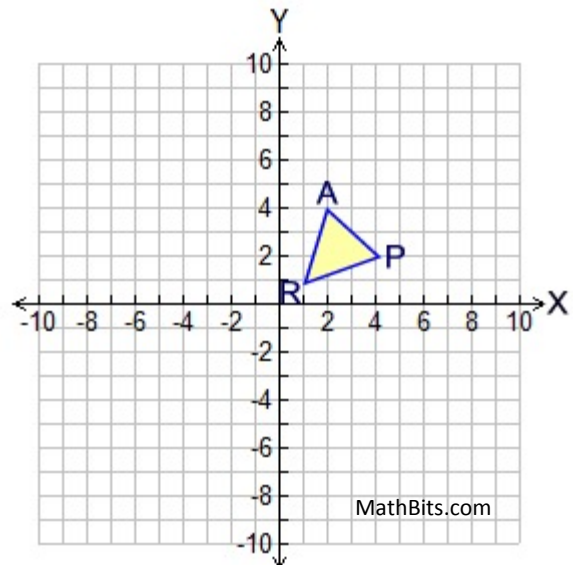
4.  $\triangle RAP$  plotted at  $R(1,1)$ ,  $A(2,4)$  and  $P(4,2)$ , is to be dilated by a scale factor of 2 (center of dilation is origin).

a) Plot the image of  $\triangle RAP$  under this dilation and label it  $\triangle R'A'P'$ . State the new coordinates:

$R' = \underline{\hspace{2cm}}$   $A' = \underline{\hspace{2cm}}$   $P' = \underline{\hspace{2cm}}$

b) Was length preserved during this translation?             
If not, how do the lengths of the image compare to the lengths of the pre-image?

c) Are dilations rigid transformations?             
Explain.



5.  $\triangle ABC$  plotted at  $A(4,2)$ ,  $B(8,2)$  and  $C(6,8)$ , is to be translated  $(x, y) \rightarrow (x-10, y+1)$  and then reflected over the  $x$ -axis.

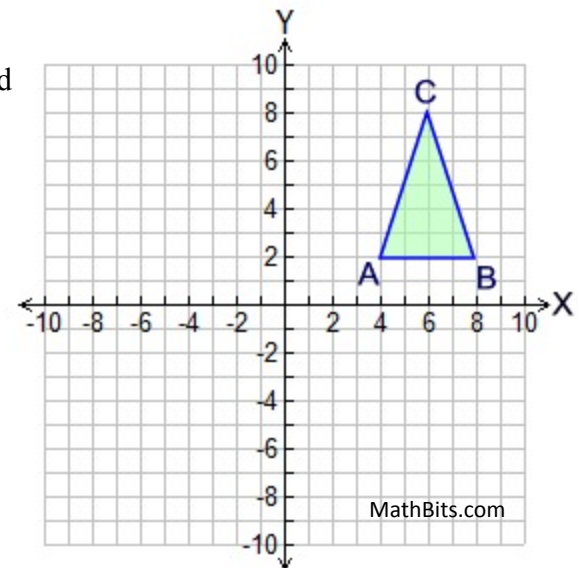
a) Plot the image of  $\triangle ABC$  under this sequence of transformations and label it  $\triangle A'B'C'$ . State coordinates:

$A' = \underline{\hspace{2cm}}$   $B' = \underline{\hspace{2cm}}$   $C' = \underline{\hspace{2cm}}$

b) Were the angle measures preserved during this sequence of transformations?            Why?

c) Was length preserved during this sequence of transformations?            Why?

d) Would this sequence of transformations be called a rigid transformation?            Explain.



6. Rectangle  $ABCD$  plotted at  $A(4,2)$ ,  $B(8,2)$ ,  $C(8,8)$  and  $D(4,8)$  is to be reflected in the line  $x = 1$  and then dilated by a scale factor of  $\frac{1}{2}$ . (center of dilation is the origin).

a) Plot the image of  $ABCD$  under this sequence of transformations and label it  $A'B'C'D'$ . State coordinates:

$A' = \underline{\hspace{2cm}}$   $B' = \underline{\hspace{2cm}}$   $C' = \underline{\hspace{2cm}}$   $D' = \underline{\hspace{2cm}}$

b) Were the angle measures preserved during this sequence of transformations?            Why?

c) Was length preserved during this sequence of transformations?            Why?

d) Would this sequence of transformations be called a rigid transformation?             
Explain.

