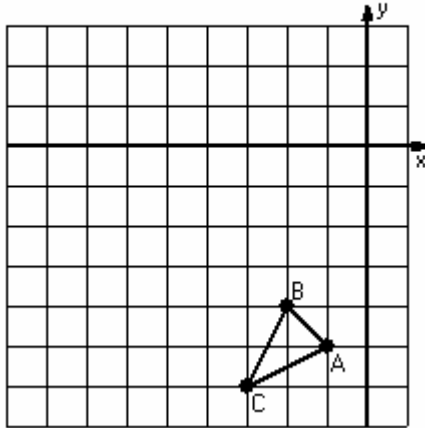


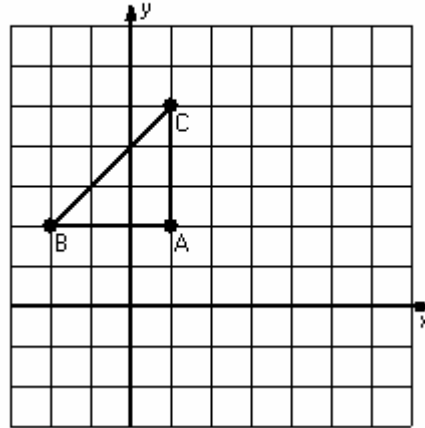
## Three-Step Transformations (A)

Instructions: Transform each triangle three times using the instructions in the order given.  
Draw and label each transformation.

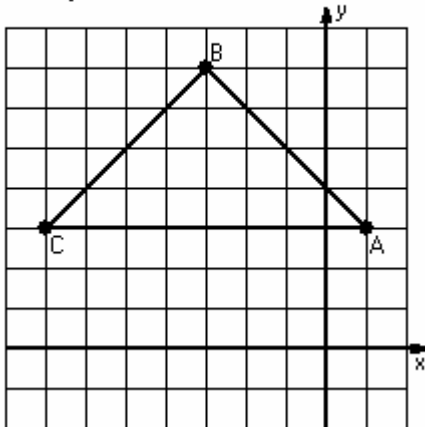
- 1) Translation (1,4)  
Reflection  $y = -3$   
Rotation  $180^\circ$ , center  $R(-3,-2)$



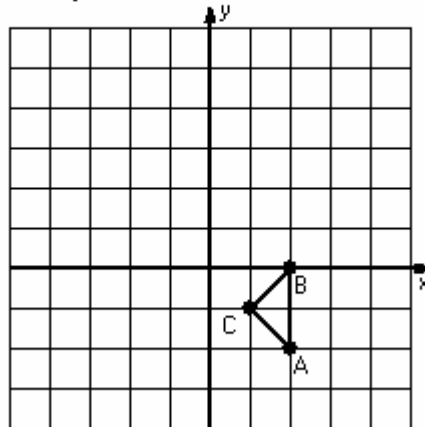
- 2) Dilation scale =  $1/3$ , center  $D(4,2)$   
Reflection  $x = 1$   
Translation (3,-2)



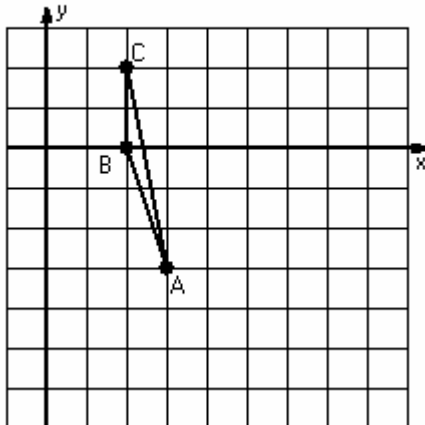
- 3) Dilation scale =  $1/4$ , center  $D(-3,3)$   
Translation (-3,-2)  
Reflection  $y = 3$



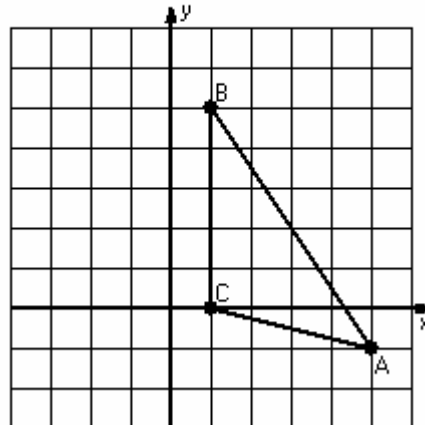
- 4) Translation (-2,3)  
Rotation  $90^\circ$  counterclockwise, center  $R(2,0)$   
Reflection  $y = 0$



- 5) Translation (1,0)  
Rotation  $180^\circ$ , center  $R(2,-1)$   
Reflection  $x = 4$



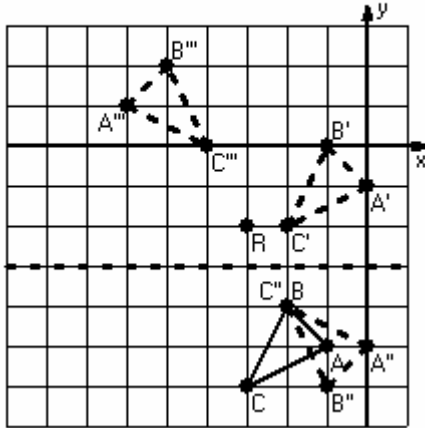
- 6) Rotation  $90^\circ$  counterclockwise, center  $R(3,0)$   
Translation (-1,4)  
Reflection  $x = 1$



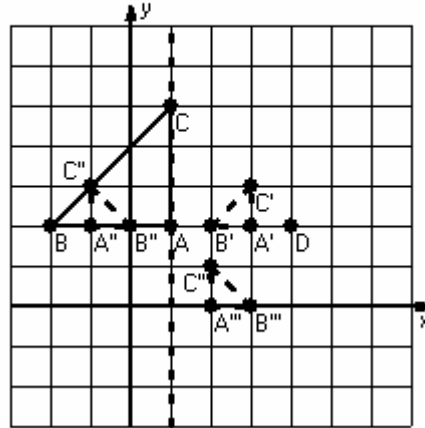
## Three-Step Transformations Answer (A)

Instructions: Transform each triangle three times using the instructions in the order given.  
Draw and label each transformation.

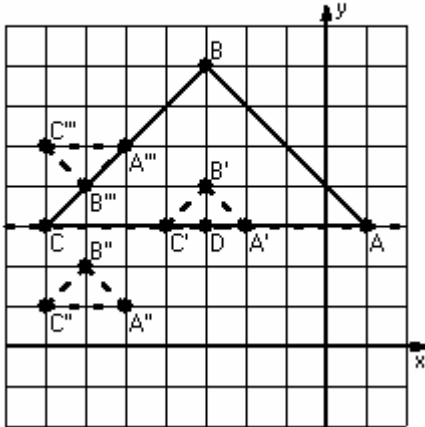
- 1) Translation (1,4)  
Reflection  $y = -3$   
Rotation  $180^\circ$ , center  $R(-3,-2)$



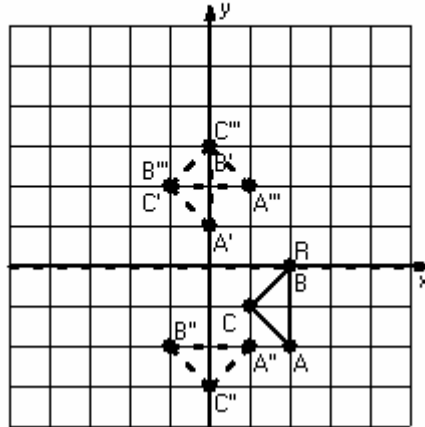
- 2) Dilation scale =  $1/3$ , center  $D(4,2)$   
Reflection  $x = 1$   
Translation (3,-2)



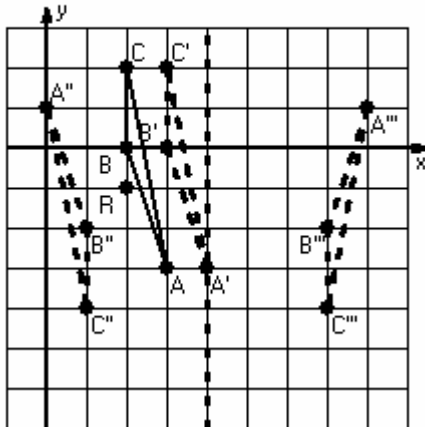
- 3) Dilation scale =  $1/4$ , center  $D(-3,3)$   
Translation (-3,-2)  
Reflection  $y = 3$



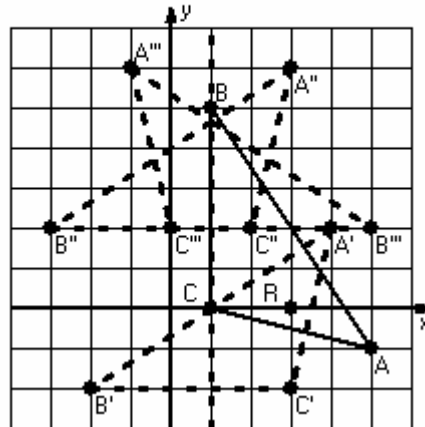
- 4) Translation (-2,3)  
Rotation  $90^\circ$  counterclockwise, center  $R(2,0)$   
Reflection  $y = 0$



- 5) Translation (1,0)  
Rotation  $180^\circ$ , center  $R(2,-1)$   
Reflection  $x = 4$



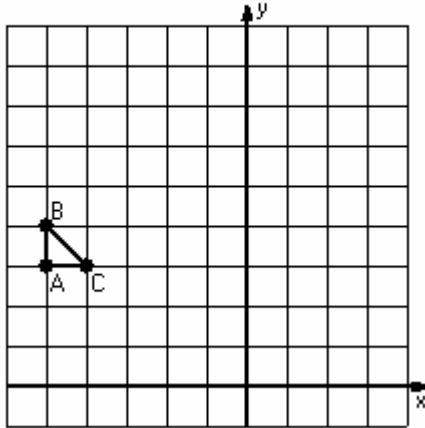
- 6) Rotation  $90^\circ$  counterclockwise, center  $R(3,0)$   
Translation (-1,4)  
Reflection  $x = 1$



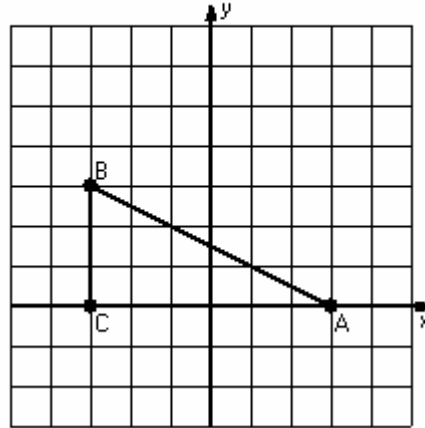
## Three-Step Transformations (B)

Instructions: Transform each triangle three times using the instructions in the order given.  
Draw and label each transformation.

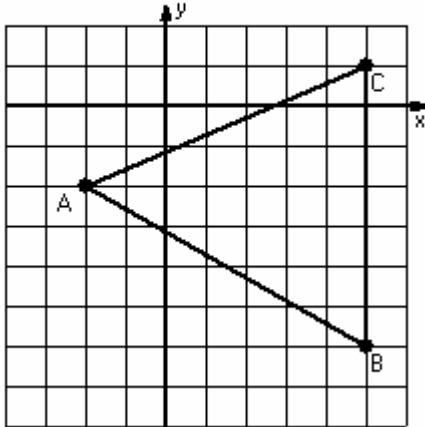
- 1) Reflection  $y = 2$   
Rotation  $180^\circ$ , center  $R(-3,4)$   
Translation  $(4,-5)$



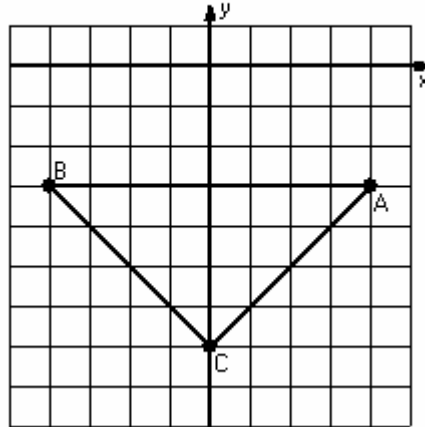
- 2) Dilation scale =  $1/3$ , center  $D(3,3)$   
Reflection  $y = 4$   
Translation  $(-4,-4)$



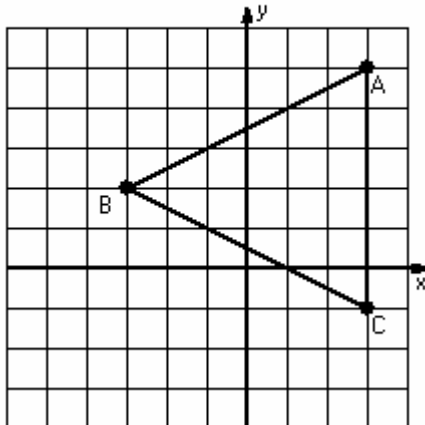
- 3) Reflection  $x = 1$   
Translation  $(1,-1)$   
Rotation  $90^\circ$  clockwise, center  $R(1,-3)$



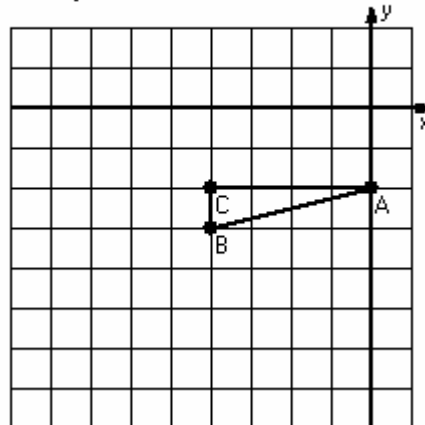
- 4) Dilation scale =  $1/4$ , center  $D(0,-3)$   
Rotation  $180^\circ$ , center  $R(-1,-5)$   
Reflection  $x = 0$



- 5) Dilation scale =  $1/3$ , center  $D(-3,-1)$   
Translation  $(4,4)$   
Reflection  $x = -1$



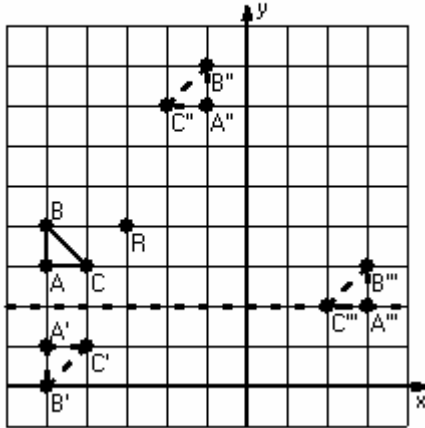
- 6) Translation  $(-3,-4)$   
Rotation  $180^\circ$ , center  $R(-5,-5)$   
Reflection  $y = -2$



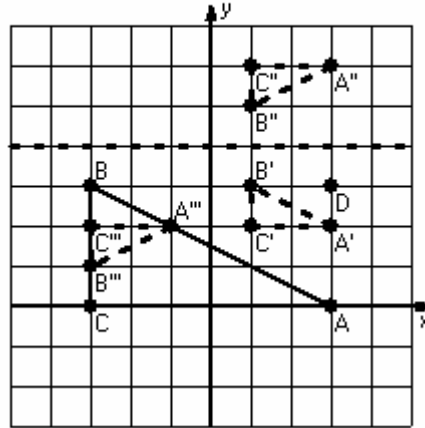
## Three-Step Transformations Answer (B)

Instructions: Transform each triangle three times using the instructions in the order given.  
Draw and label each transformation.

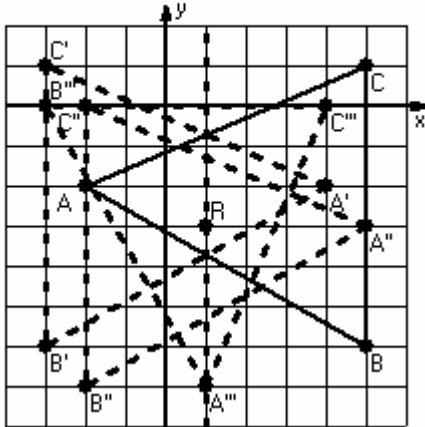
- 1) Reflection  $y = 2$   
Rotation  $180^\circ$ , center  $R(-3,4)$   
Translation  $(4,-5)$



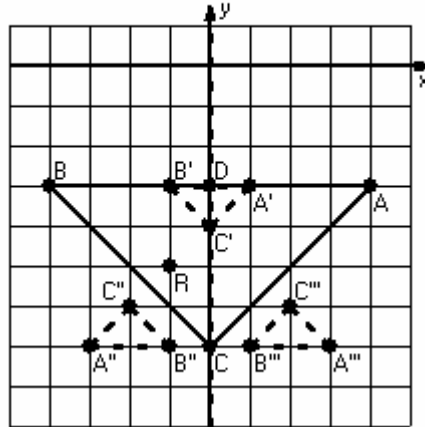
- 2) Dilation scale =  $1/3$ , center  $D(3,3)$   
Reflection  $y = 4$   
Translation  $(-4,-4)$



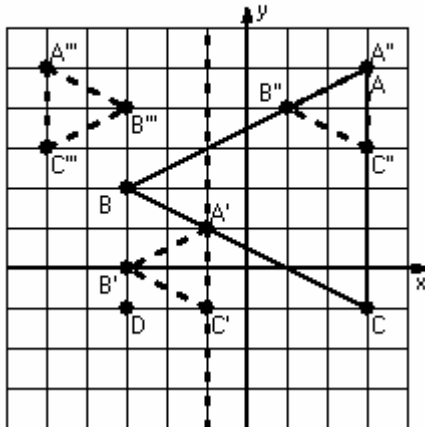
- 3) Reflection  $x = 1$   
Translation  $(1,-1)$   
Rotation  $90^\circ$  clockwise, center  $R(1,-3)$



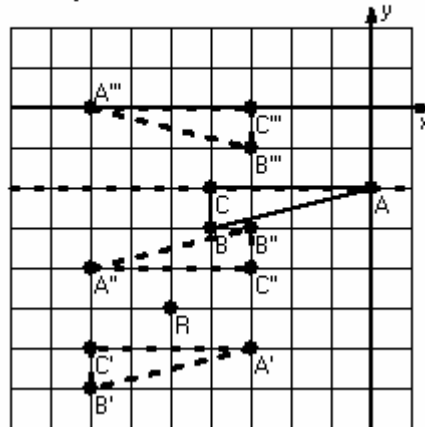
- 4) Dilation scale =  $1/4$ , center  $D(0,-3)$   
Rotation  $180^\circ$ , center  $R(-1,-5)$   
Reflection  $x = 0$



- 5) Dilation scale =  $1/3$ , center  $D(-3,-1)$   
Translation  $(4,4)$   
Reflection  $x = -1$



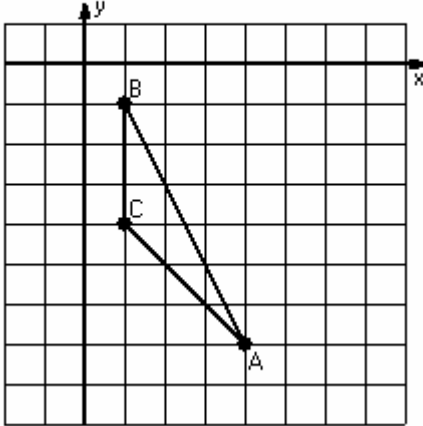
- 6) Translation  $(-3,-4)$   
Rotation  $180^\circ$ , center  $R(-5,-5)$   
Reflection  $y = -2$



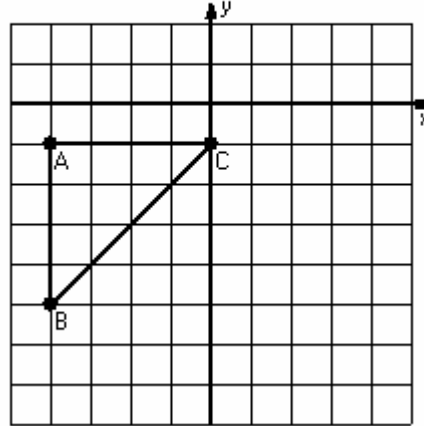
## Three-Step Transformations (C)

Instructions: Transform each triangle three times using the instructions in the order given.  
Draw and label each transformation.

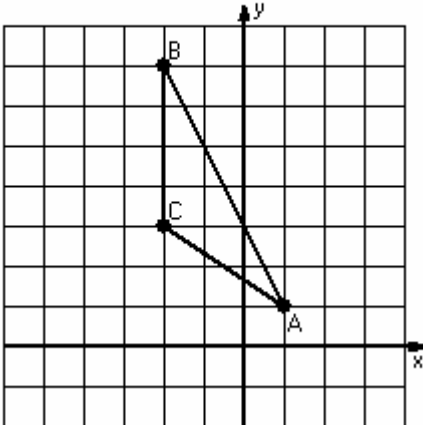
- 1) Dilation scale =  $\frac{1}{3}$ , center  $D(4,-1)$   
 Rotation  $90^\circ$  counterclockwise, center  $R(4,-5)$   
 Reflection  $x = 3$



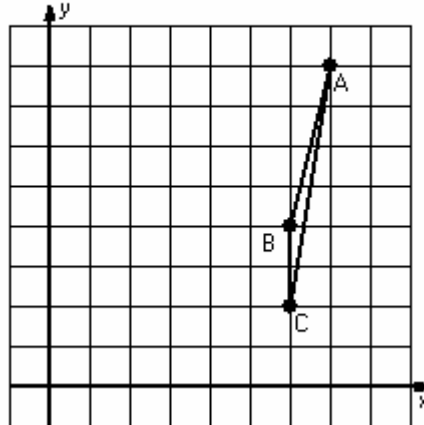
- 2) Dilation scale =  $\frac{1}{4}$ , center  $D(0,-5)$   
 Translation  $(2,5)$   
 Reflection  $y = -2$



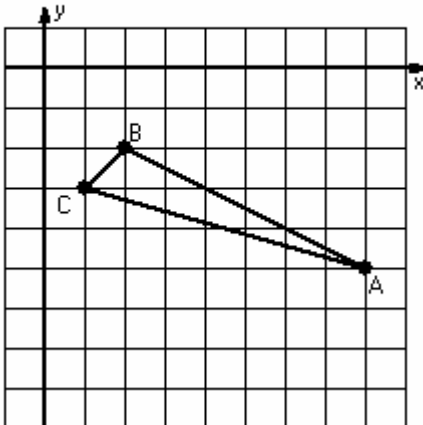
- 3) Translation  $(2,-1)$   
 Rotation  $180^\circ$ , center  $R(-1,3)$   
 Reflection  $x = -1$



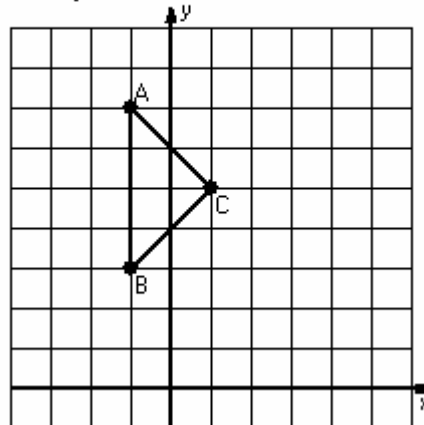
- 4) Rotation  $90^\circ$  clockwise, center  $R(4,4)$   
 Translation  $(-1,6)$   
 Reflection  $y = 6$



- 5) Rotation  $180^\circ$ , center  $R(4,-5)$   
 Translation  $(0,1)$   
 Reflection  $x = 4$



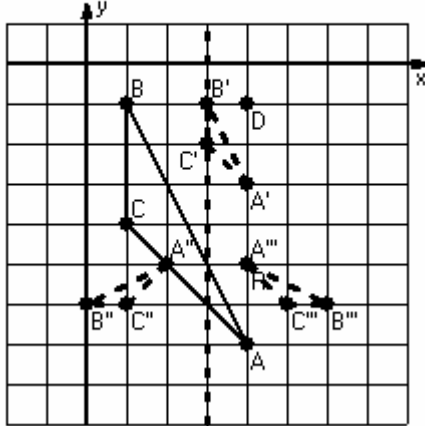
- 6) Dilation scale =  $\frac{1}{2}$ , center  $D(1,1)$   
 Rotation  $90^\circ$  clockwise, center  $R(2,2)$   
 Reflection  $y = 2$



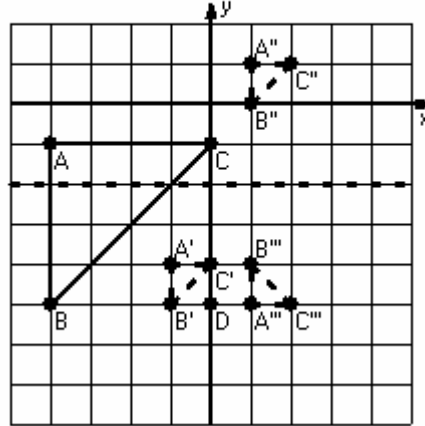
## Three-Step Transformations Answer (C)

Instructions: Transform each triangle three times using the instructions in the order given.  
Draw and label each transformation.

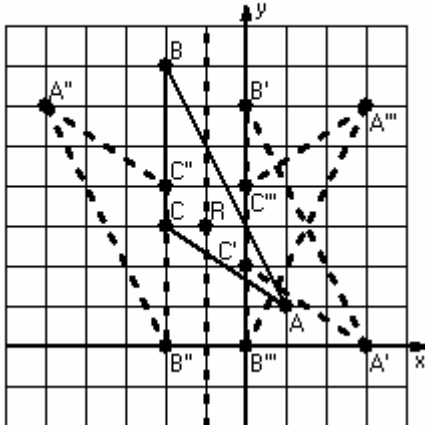
- 1) Dilation scale =  $1/3$ , center  $D(4,-1)$   
 Rotation  $90^\circ$  counterclockwise, center  $R(4,-5)$   
 Reflection  $x = 3$



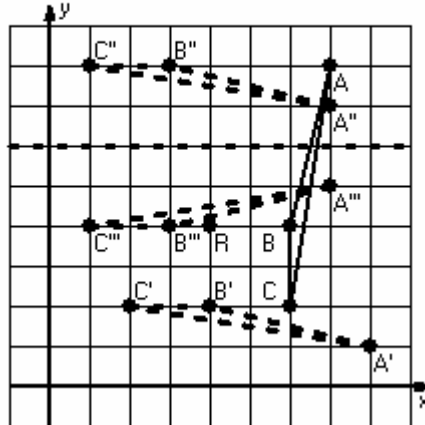
- 2) Dilation scale =  $1/4$ , center  $D(0,-5)$   
 Translation (2,5)  
 Reflection  $y = -2$



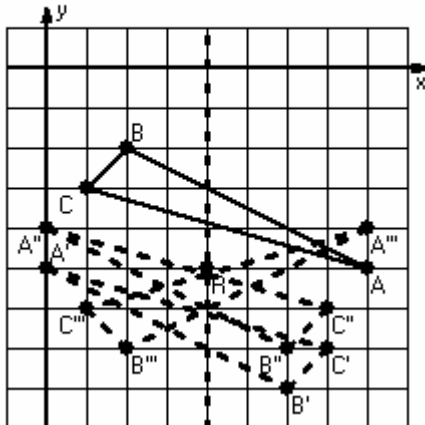
- 3) Translation (2,-1)  
 Rotation  $180^\circ$ , center  $R(-1,3)$   
 Reflection  $x = -1$



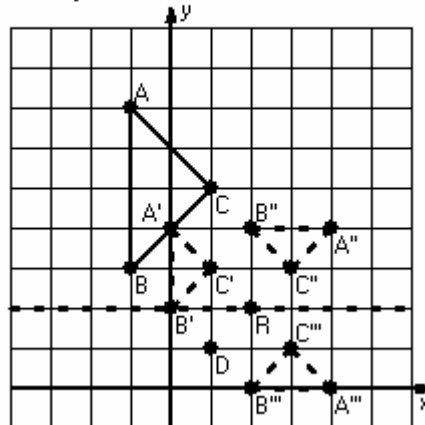
- 4) Rotation  $90^\circ$  clockwise, center  $R(4,4)$   
 Translation (-1,6)  
 Reflection  $y = 6$



- 5) Rotation  $180^\circ$ , center  $R(4,-5)$   
 Translation (0,1)  
 Reflection  $x = 4$



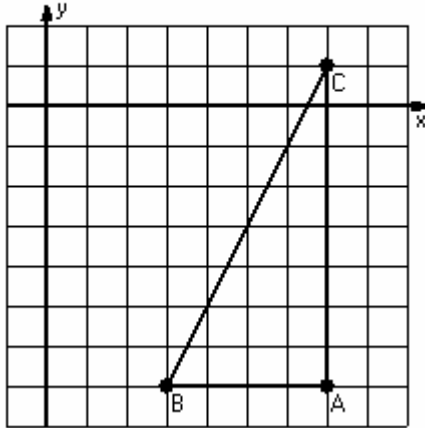
- 6) Dilation scale =  $1/2$ , center  $D(1,1)$   
 Rotation  $90^\circ$  clockwise, center  $R(2,2)$   
 Reflection  $y = 2$



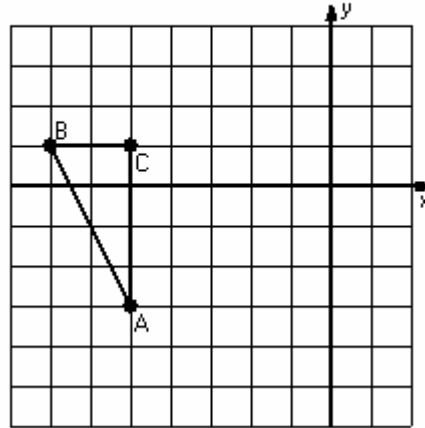
## Three-Step Transformations (D)

Instructions: Transform each triangle three times using the instructions in the order given.  
Draw and label each transformation.

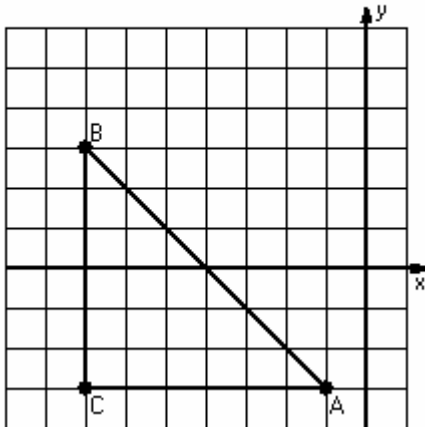
- 1) Dilation scale =  $\frac{1}{4}$ , center  $D(7,-3)$   
Reflection  $x = 4$   
Translation  $(2,-3)$



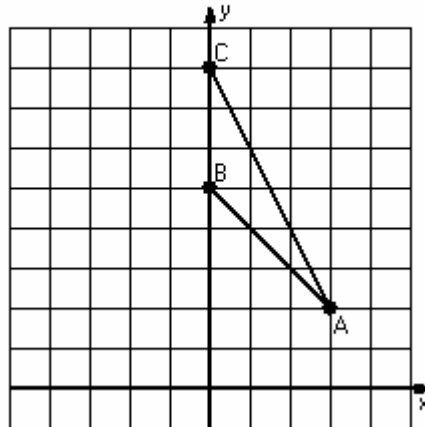
- 2) Reflection  $y = 0$   
Translation  $(3,-2)$   
Rotation  $90^\circ$  clockwise, center  $R(-2,-1)$



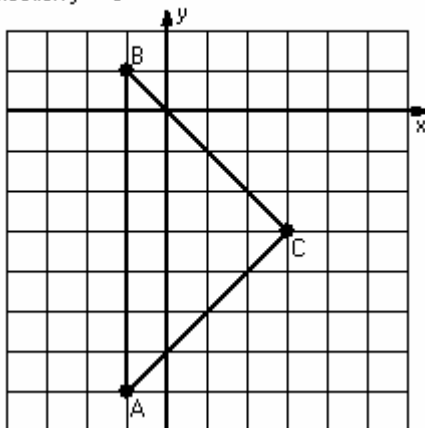
- 3) Dilation scale =  $\frac{1}{3}$ , center  $D(-1,3)$   
Rotation  $90^\circ$  counterclockwise, center  $R(-2,1)$   
Reflection  $x = -5$



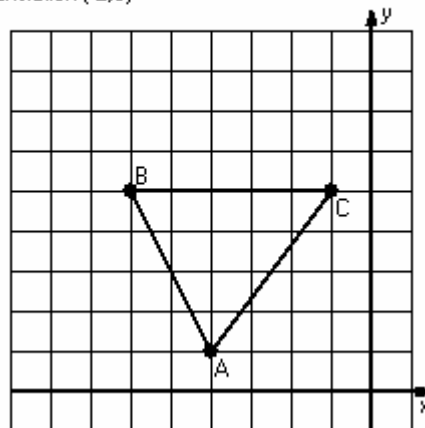
- 4) Dilation scale =  $\frac{1}{3}$ , center  $D(-3,2)$   
Translation  $(1,3)$   
Reflection  $x = -2$



- 5) Dilation scale =  $\frac{1}{4}$ , center  $D(-1,-3)$   
Translation  $(3,-2)$   
Reflection  $y = -3$



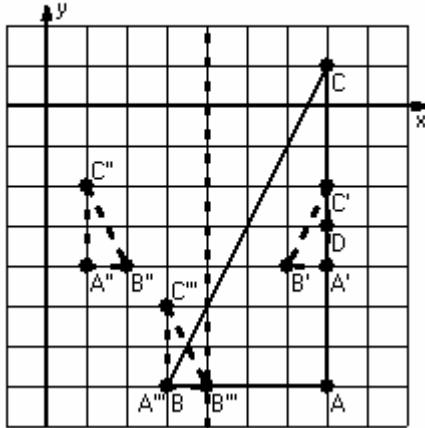
- 6) Reflection  $y = 4$   
Rotation  $180^\circ$ , center  $R(-3,5)$   
Translation  $(-2,0)$



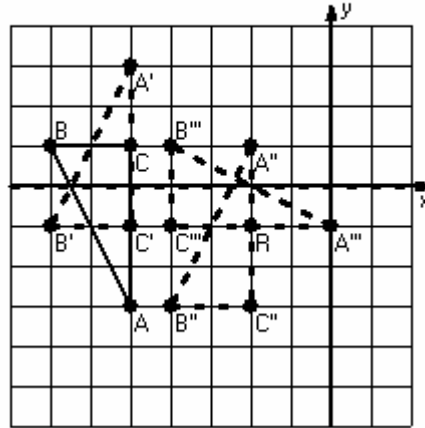
## Three-Step Transformations Answer (D)

Instructions: Transform each triangle three times using the instructions in the order given.  
Draw and label each transformation.

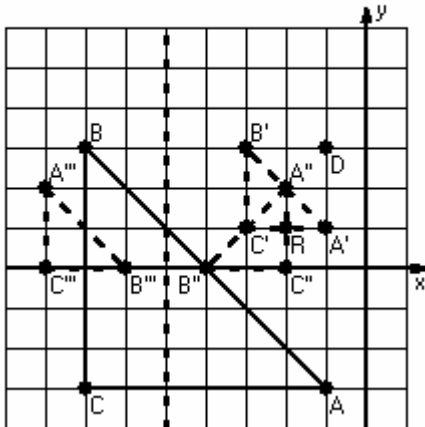
- 1) Dilation scale =  $1/4$ , center  $D(7,-3)$   
Reflection  $x = 4$   
Translation  $(2,-3)$



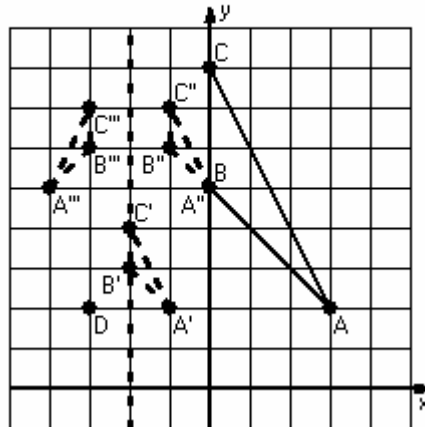
- 2) Reflection  $y = 0$   
Translation  $(3,-2)$   
Rotation  $90^\circ$  clockwise, center  $R(-2,-1)$



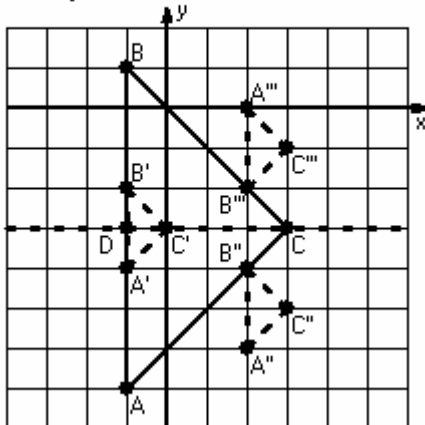
- 3) Dilation scale =  $1/3$ , center  $D(-1,3)$   
Rotation  $90^\circ$  counterclockwise, center  $R(-2,1)$   
Reflection  $x = -5$



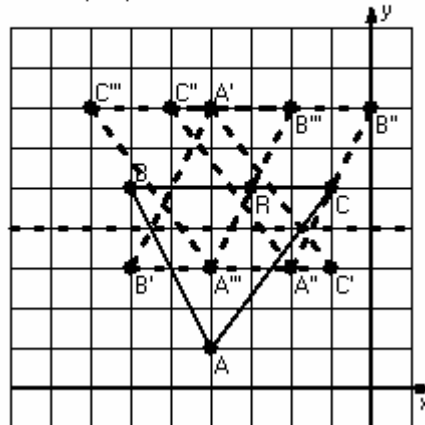
- 4) Dilation scale =  $1/3$ , center  $D(-3,2)$   
Translation  $(1,3)$   
Reflection  $x = -2$



- 5) Dilation scale =  $1/4$ , center  $D(-1,-3)$   
Translation  $(3,-2)$   
Reflection  $y = -3$



- 6) Reflection  $y = 4$   
Rotation  $180^\circ$ , center  $R(-3,5)$   
Translation  $(-2,0)$

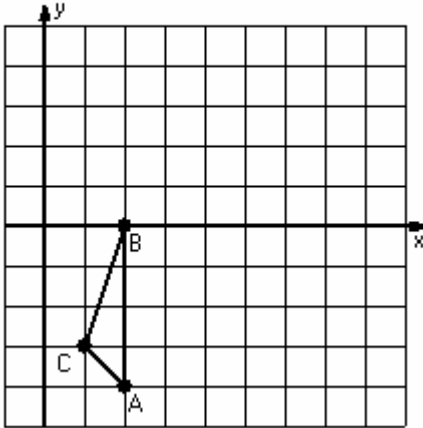




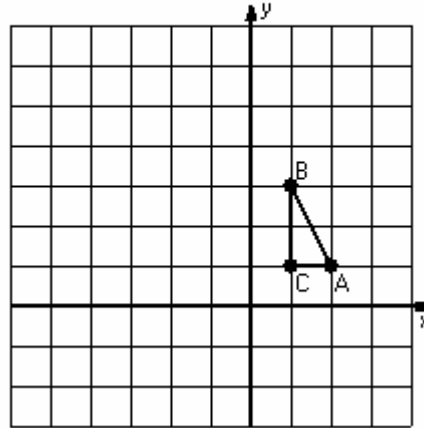
## Three-Step Transformations (E)

Instructions: Transform each triangle three times using the instructions in the order given.  
Draw and label each transformation.

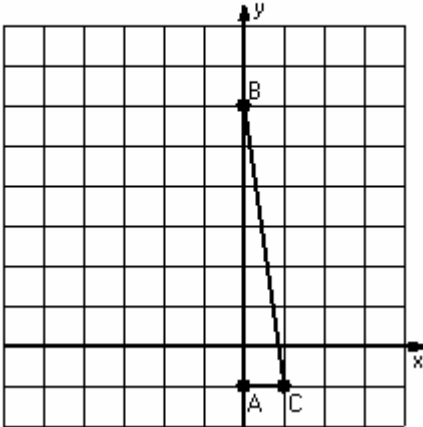
- 1) Translation (6,2)  
Rotation  $90^\circ$  counterclockwise, center R(4,-2)  
Reflection  $y = 0$



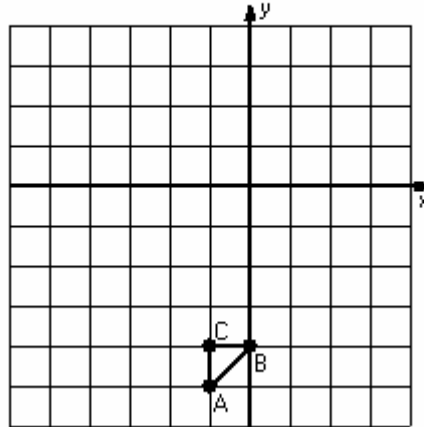
- 2) Dilation scale = 4, center D(2,2)  
Translation (1,0)  
Reflection  $x = 0$



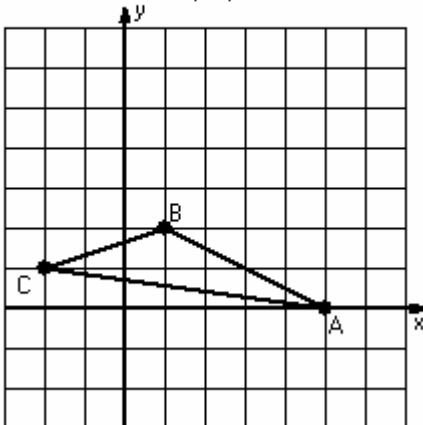
- 3) Rotation  $90^\circ$  counterclockwise, center R(1,1)  
Translation (-1,1)  
Reflection  $y = 4$



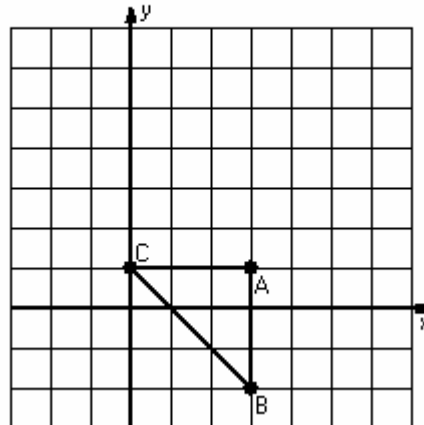
- 4) Translation (-3,2)  
Reflection  $x = -1$   
Rotation  $90^\circ$  counterclockwise, center R(-1,-1)



- 5) Reflection  $y = 3$   
Translation (1,-6)  
Rotation  $180^\circ$ , center R(2,2)



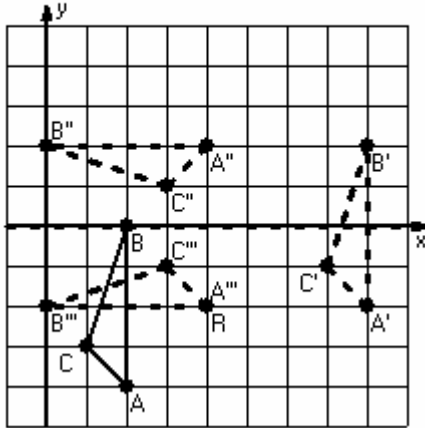
- 6) Dilation scale =  $1/3$ , center D(3,4)  
Rotation  $180^\circ$ , center R(4,1)  
Reflection  $x = 3$



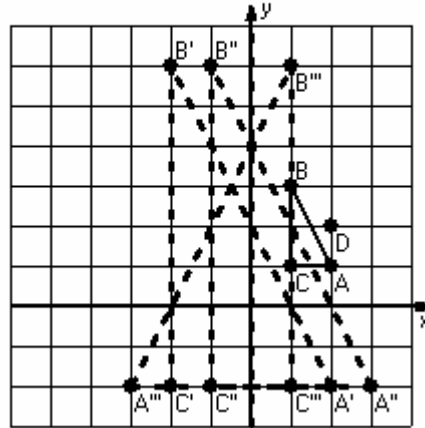
## Three-Step Transformations Answer (E)

Instructions: Transform each triangle three times using the instructions in the order given.  
Draw and label each transformation.

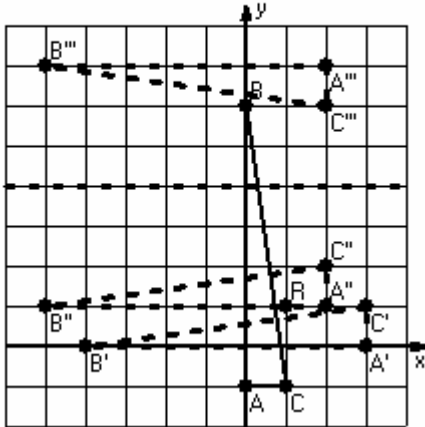
- 1) Translation (6,2)  
Rotation  $90^\circ$  counterclockwise, center R(4,-2)  
Reflection  $y = 0$



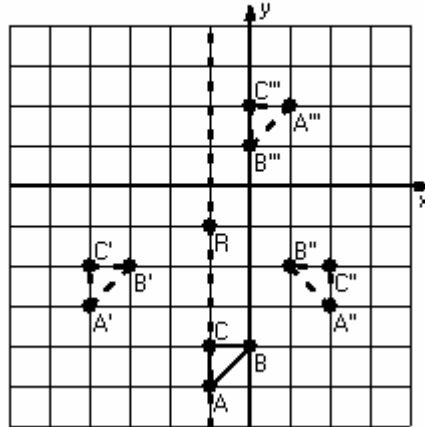
- 2) Dilation scale = 4, center D(2,2)  
Translation (1,0)  
Reflection  $x = 0$



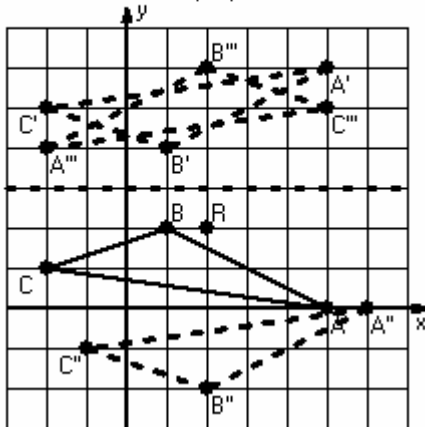
- 3) Rotation  $90^\circ$  counterclockwise, center R(1,1)  
Translation (-1,1)  
Reflection  $y = 4$



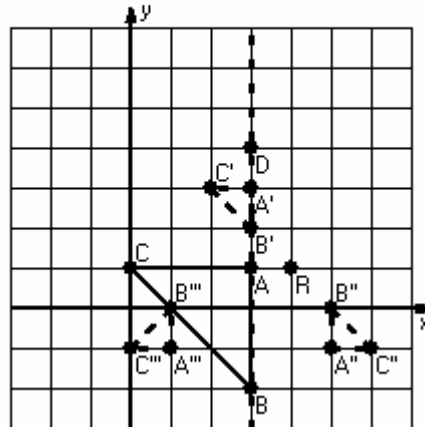
- 4) Translation (-3,2)  
Reflection  $x = -1$   
Rotation  $90^\circ$  counterclockwise, center R(-1,-1)



- 5) Reflection  $y = 3$   
Translation (1,-6)  
Rotation  $180^\circ$ , center R(2,2)



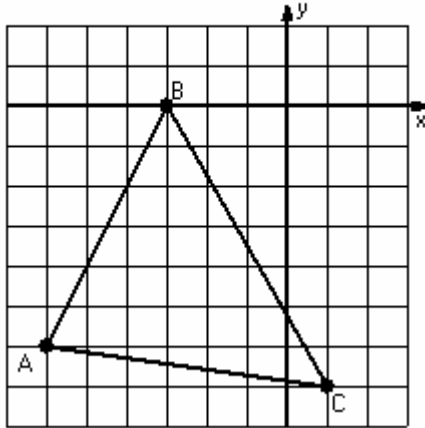
- 6) Dilation scale =  $1/3$ , center D(3,4)  
Rotation  $180^\circ$ , center R(4,1)  
Reflection  $x = 3$



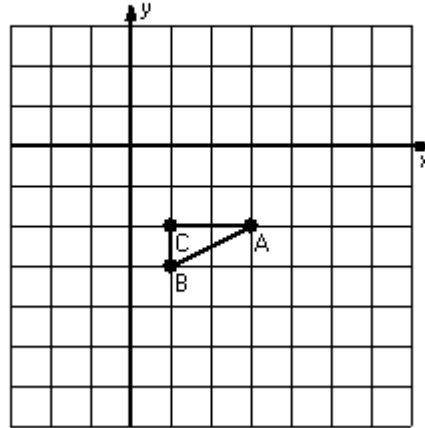
## Three-Step Transformations (F)

Instructions: Transform each triangle three times using the instructions in the order given.  
Draw and label each transformation.

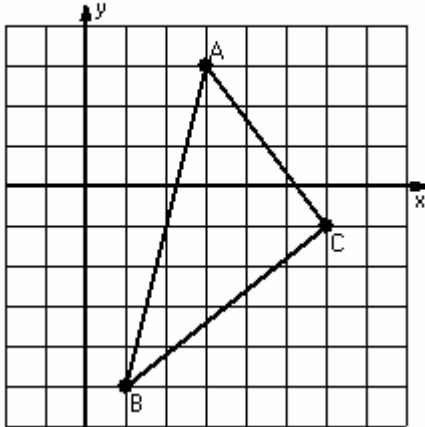
- 1) Reflection  $x = -2$   
 Rotation  $90^\circ$  clockwise, center  $R(-1,-3)$   
 Translation  $(-1,-1)$



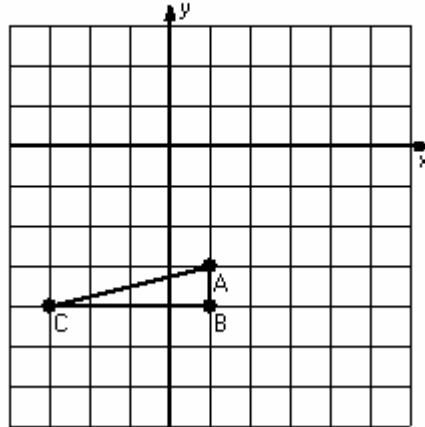
- 2) Dilation scale = 2, center  $D(0,0)$   
 Reflection  $y = -3$   
 Translation  $(-1,0)$



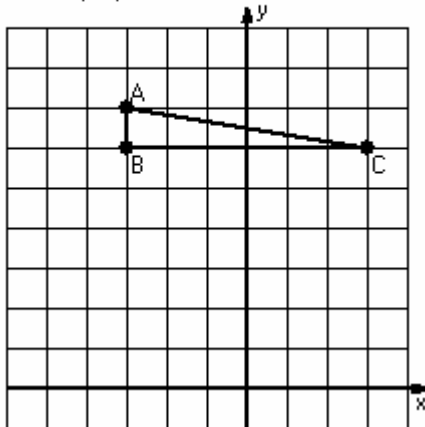
- 3) Reflection  $x = 4$   
 Translation  $(-2,0)$   
 Rotation  $180^\circ$ , center  $R(3,-1)$



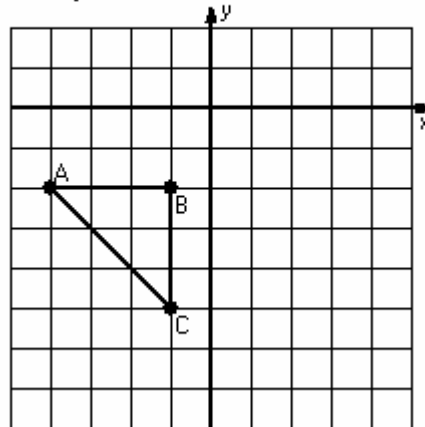
- 4) Reflection  $y = -2$   
 Rotation  $180^\circ$ , center  $R(-1,-2)$   
 Translation  $(4,-2)$



- 5) Rotation  $180^\circ$ , center  $R(0,4)$   
 Reflection  $x = -1$   
 Translation  $(0,3)$



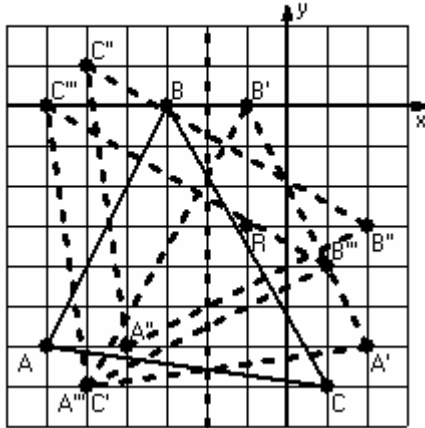
- 6) Dilation scale =  $1/3$ , center  $D(2,-5)$   
 Rotation  $90^\circ$  clockwise, center  $R(-2,-4)$   
 Reflection  $y = -3$



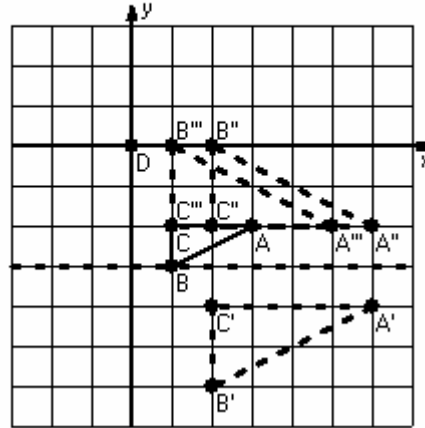
## Three-Step Transformations Answer (F)

Instructions: Transform each triangle three times using the instructions in the order given.  
Draw and label each transformation.

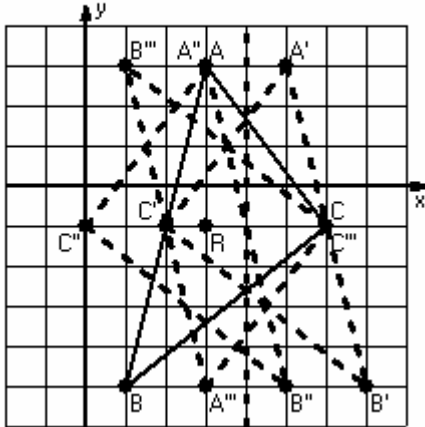
- 1) Reflection  $x = -2$   
Rotation  $90^\circ$  clockwise, center  $R(-1,-3)$   
Translation  $(-1,-1)$



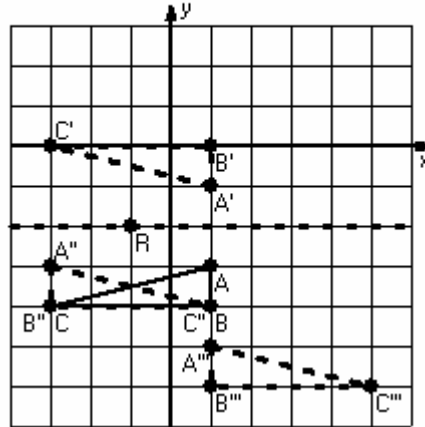
- 2) Dilation scale = 2, center  $D(0,0)$   
Reflection  $y = -3$   
Translation  $(-1,0)$



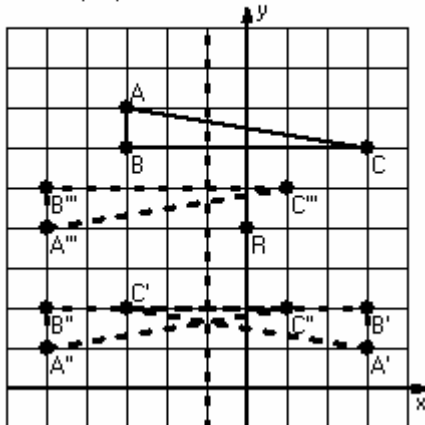
- 3) Reflection  $x = 4$   
Translation  $(-2,0)$   
Rotation  $180^\circ$ , center  $R(3,-1)$



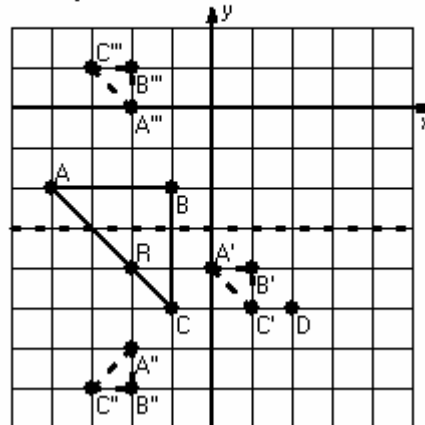
- 4) Reflection  $y = -2$   
Rotation  $180^\circ$ , center  $R(-1,-2)$   
Translation  $(4,-2)$



- 5) Rotation  $180^\circ$ , center  $R(0,4)$   
Reflection  $x = -1$   
Translation  $(0,3)$



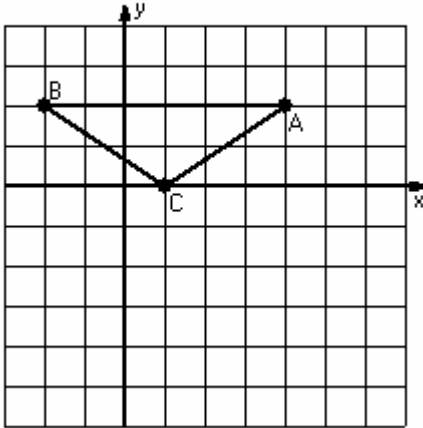
- 6) Dilation scale =  $1/3$ , center  $D(2,-5)$   
Rotation  $90^\circ$  clockwise, center  $R(-2,-4)$   
Reflection  $y = -3$



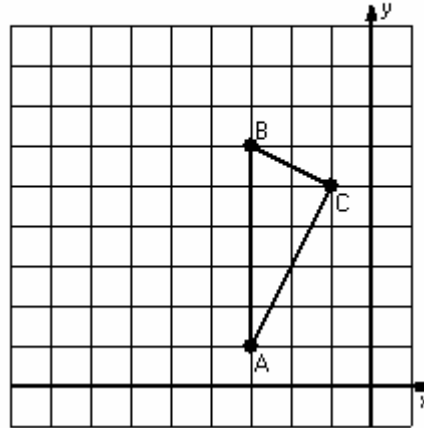
## Three-Step Transformations (G)

Instructions: Transform each triangle three times using the instructions in the order given.  
Draw and label each transformation.

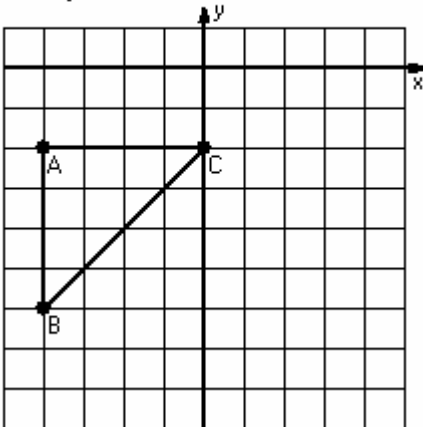
- 1) Translation  $(1,1)$   
Rotation  $90^\circ$  counterclockwise, center  $R(3,0)$   
Reflection  $x = 3$



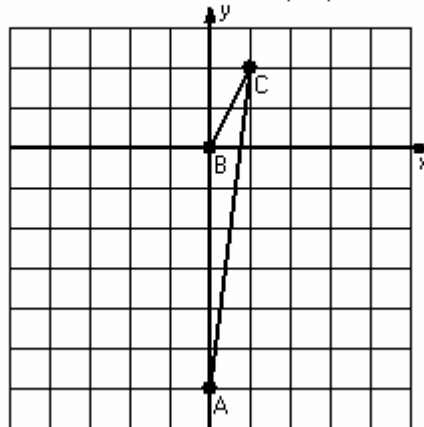
- 2) Reflection  $y = 4$   
Rotation  $90^\circ$  clockwise, center  $R(-4,5)$   
Translation  $(-1,4)$



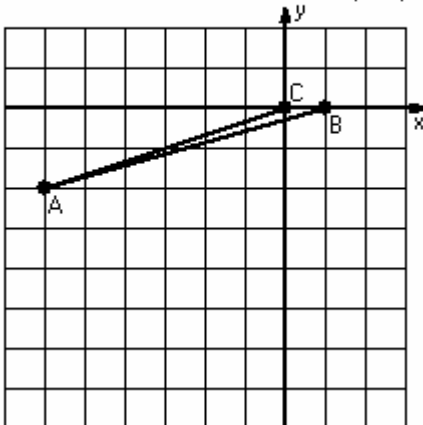
- 3) Dilation scale =  $1/4$ , center  $D(0,-6)$   
Translation  $(2,0)$   
Reflection  $y = -4$



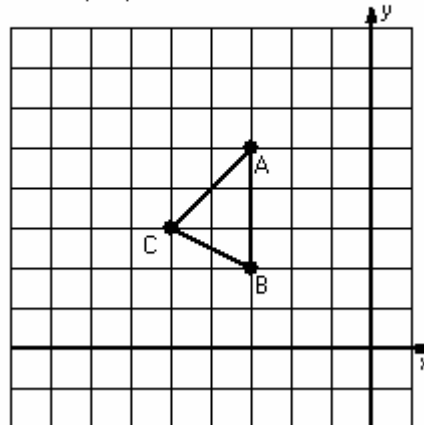
- 4) Reflection  $x = 2$   
Translation  $(-4,0)$   
Rotation  $90^\circ$  clockwise, center  $R(1,-1)$



- 5) Translation  $(1,-1)$   
Reflection  $y = -4$   
Rotation  $90^\circ$  counterclockwise, center  $R(-5,-6)$



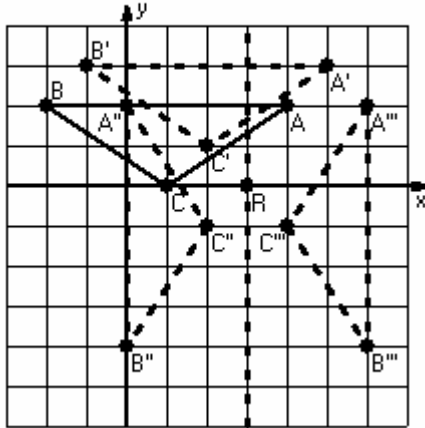
- 6) Dilation scale = 2, center  $D(-4,4)$   
Reflection  $x = -3$   
Translation  $(-4,0)$



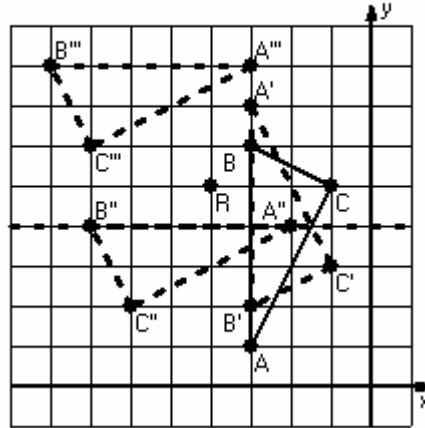
## Three-Step Transformations Answer (G)

Instructions: Transform each triangle three times using the instructions in the order given.  
Draw and label each transformation.

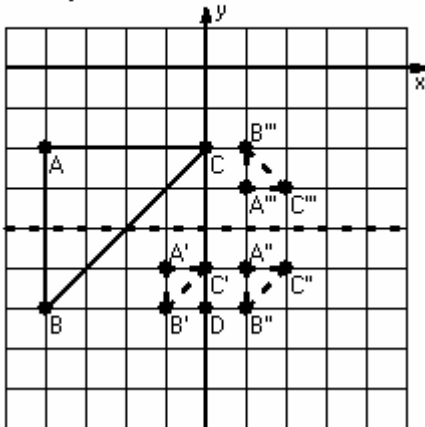
- 1) Translation (1,1)  
Rotation 90° counterclockwise, center R(3,0)  
Reflection  $x = 3$



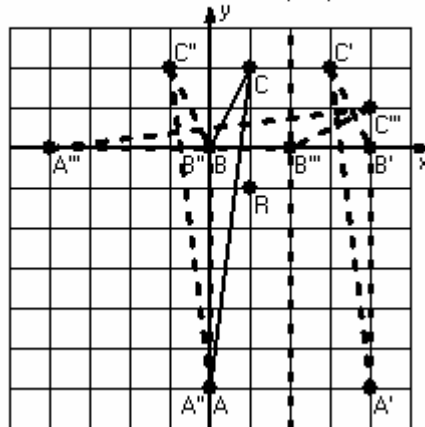
- 2) Reflection  $y = 4$   
Rotation 90° clockwise, center R(-4,5)  
Translation (-1,4)



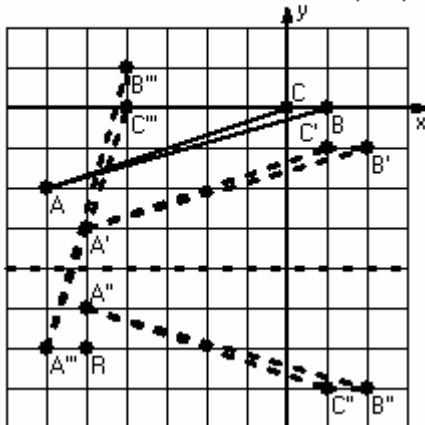
- 3) Dilation scale = 1/4, center D(0,-6)  
Translation (2,0)  
Reflection  $y = -4$



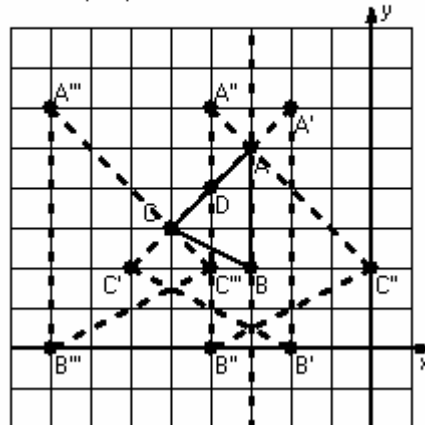
- 4) Reflection  $x = 2$   
Translation (-4,0)  
Rotation 90° clockwise, center R(1,-1)



- 5) Translation (1,-1)  
Reflection  $y = -4$   
Rotation 90° counterclockwise, center R(-5,-6)



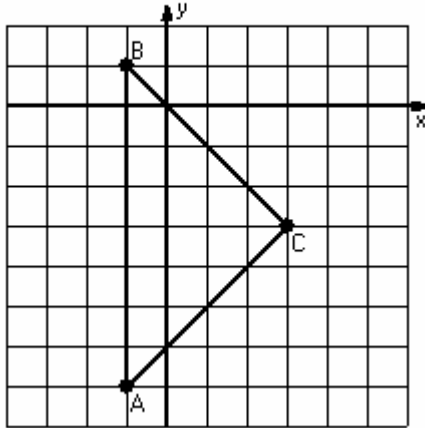
- 6) Dilation scale = 2, center D(-4,4)  
Reflection  $x = -3$   
Translation (-4,0)



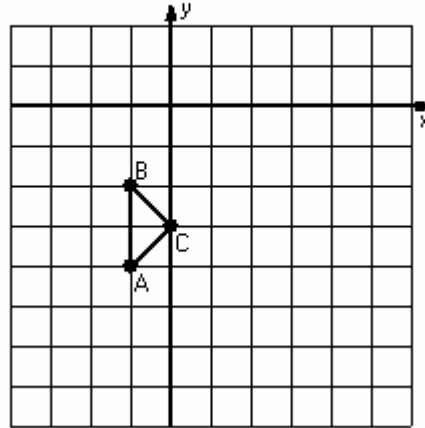
## Three-Step Transformations (H)

Instructions: Transform each triangle three times using the instructions in the order given.  
Draw and label each transformation.

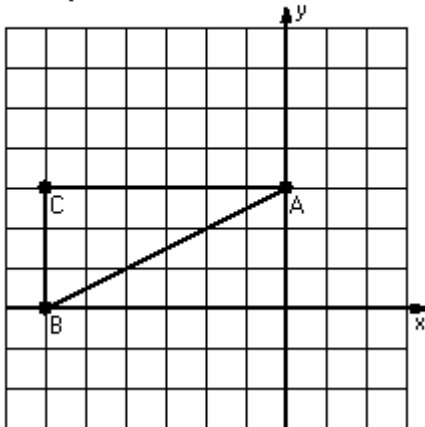
- 1) Dilation scale =  $\frac{1}{4}$ , center  $D(-1,-3)$   
Reflection  $x = 1$   
Translation  $(-2,2)$



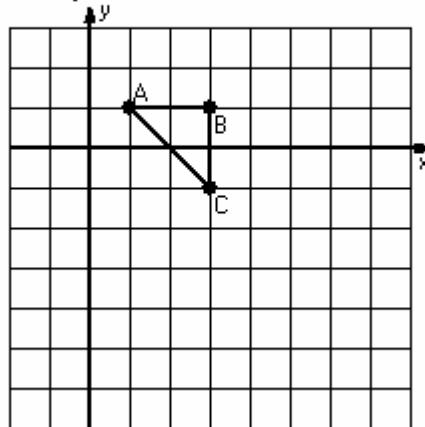
- 2) Dilation scale = 4, center  $D(-1,-3)$   
Reflection  $x = 0$   
Translation  $(2,0)$



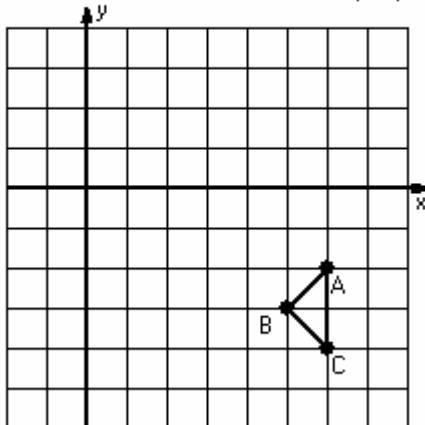
- 3) Dilation scale =  $\frac{1}{3}$ , center  $D(0,0)$   
Rotation  $90^\circ$  counterclockwise, center  $R(-4,1)$   
Reflection  $y = 2$



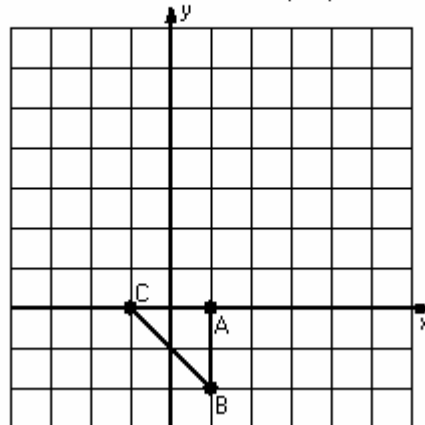
- 4) Rotation  $90^\circ$  clockwise, center  $R(0,-1)$   
Translation  $(1,0)$   
Reflection  $y = -1$



- 5) Reflection  $x = 3$   
Translation  $(2,4)$   
Rotation  $90^\circ$  counterclockwise, center  $R(4,-3)$



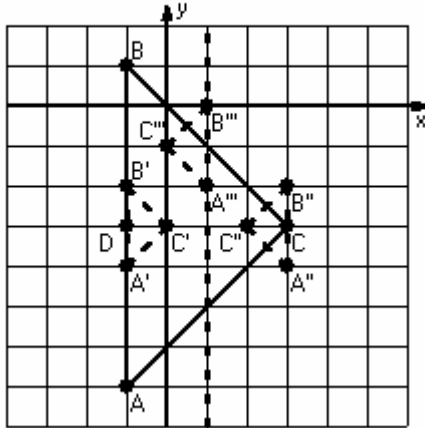
- 6) Translation  $(1,2)$   
Reflection  $y = 3$   
Rotation  $90^\circ$  clockwise, center  $R(-1,1)$



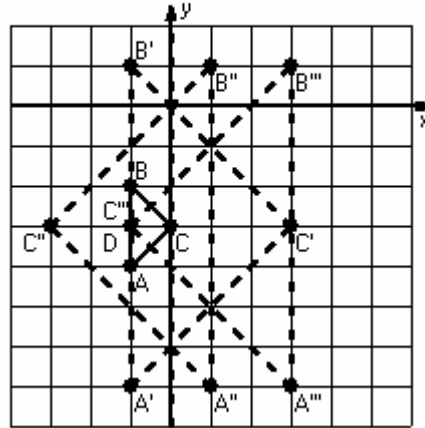
## Three-Step Transformations Answer (H)

Instructions: Transform each triangle three times using the instructions in the order given.  
Draw and label each transformation.

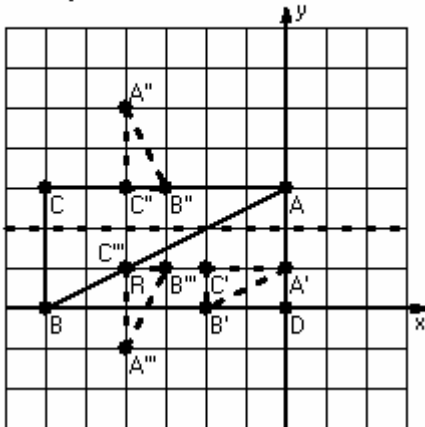
- 1) Dilation scale =  $1/4$ , center  $D(-1,-3)$   
Reflection  $x = 1$   
Translation  $(-2,2)$



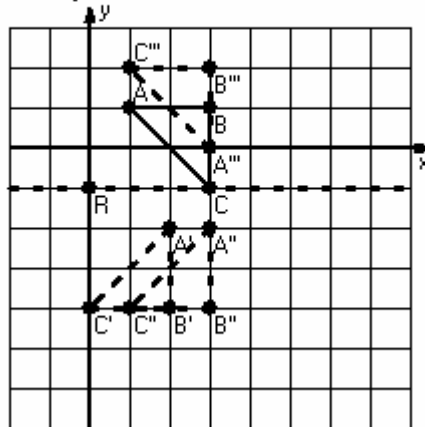
- 2) Dilation scale = 4, center  $D(-1,-3)$   
Reflection  $x = 0$   
Translation  $(2,0)$



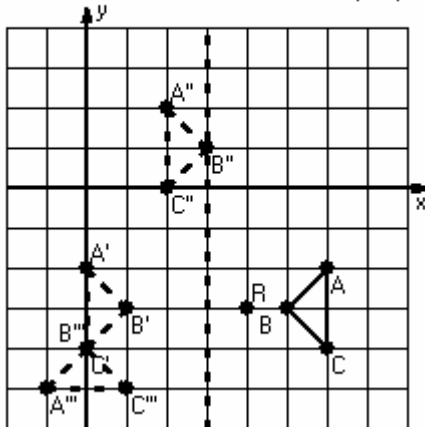
- 3) Dilation scale =  $1/3$ , center  $D(0,0)$   
Rotation  $90^\circ$  counterclockwise, center  $R(-4,1)$   
Reflection  $y = 2$



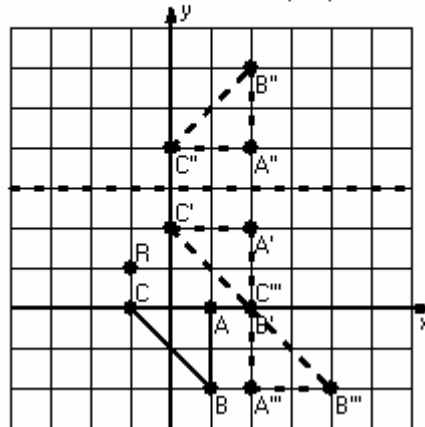
- 4) Rotation  $90^\circ$  clockwise, center  $R(0,-1)$   
Translation  $(1,0)$   
Reflection  $y = -1$



- 5) Reflection  $x = 3$   
Translation  $(2,4)$   
Rotation  $90^\circ$  counterclockwise, center  $R(4,-3)$



- 6) Translation  $(1,2)$   
Reflection  $y = 3$   
Rotation  $90^\circ$  clockwise, center  $R(-1,1)$

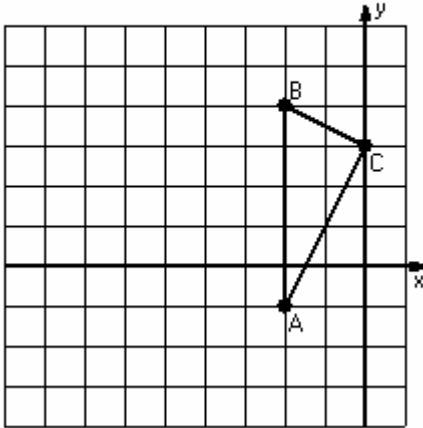




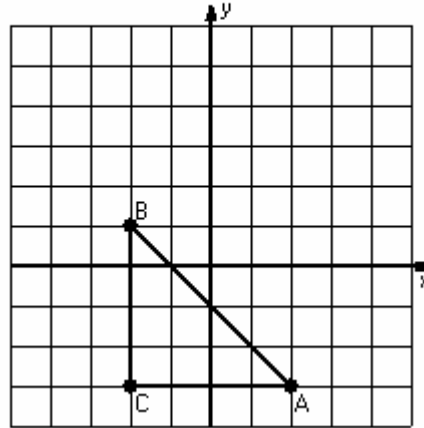
## Three-Step Transformations (I)

Instructions: Transform each triangle three times using the instructions in the order given.  
Draw and label each transformation.

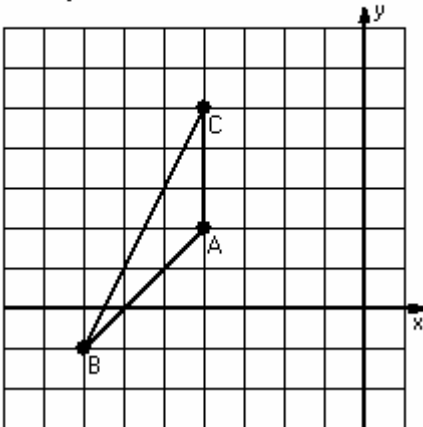
- 1) Translation  $(-2,0)$   
Reflection  $x = -5$   
Rotation  $90^\circ$  counterclockwise, center  $R(-4,3)$



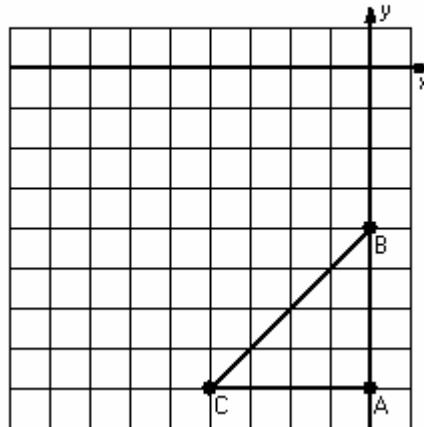
- 2) Dilation scale =  $1/4$ , center  $D(2,1)$   
Rotation  $180^\circ$ , center  $R(-1,2)$   
Reflection  $y = 2$



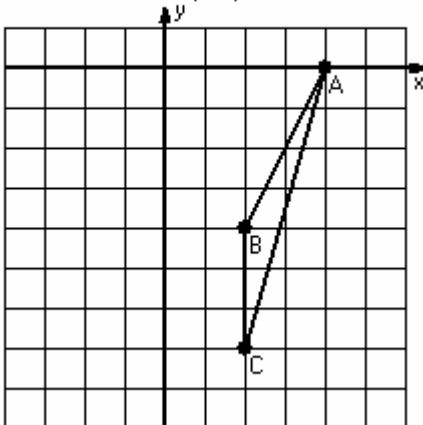
- 3) Dilation scale =  $1/3$ , center  $D(-7,2)$   
Rotation  $90^\circ$  clockwise, center  $R(-4,3)$   
Reflection  $y = 2$



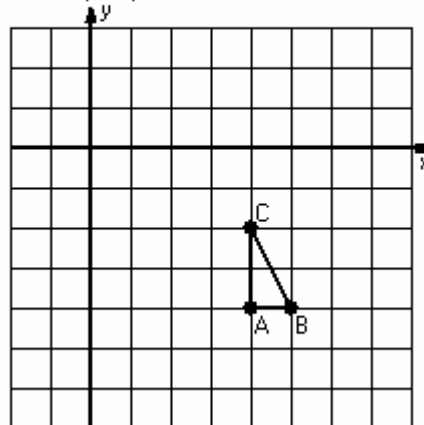
- 4) Dilation scale =  $1/4$ , center  $D(-4,-4)$   
Translation  $(-2,-1)$   
Reflection  $x = -3$



- 5) Translation  $(0,-1)$   
Reflection  $x = 1$   
Rotation  $180^\circ$ , center  $R(1,-4)$



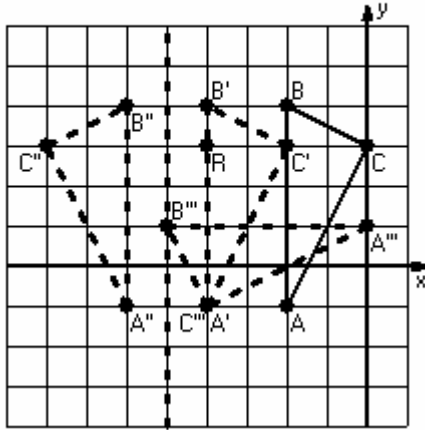
- 6) Dilation scale =  $3$ , center  $D(4,-3)$   
Reflection  $y = -2$   
Translation  $(-5,-1)$



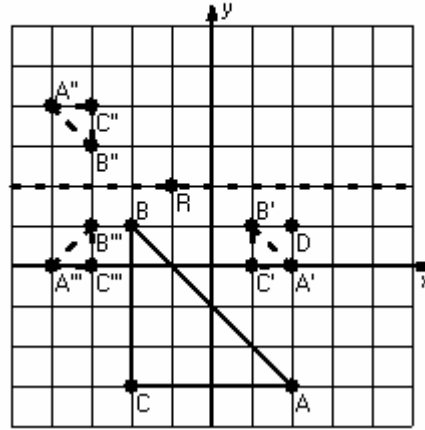
## Three-Step Transformations Answer (I)

Instructions: Transform each triangle three times using the instructions in the order given.  
Draw and label each transformation.

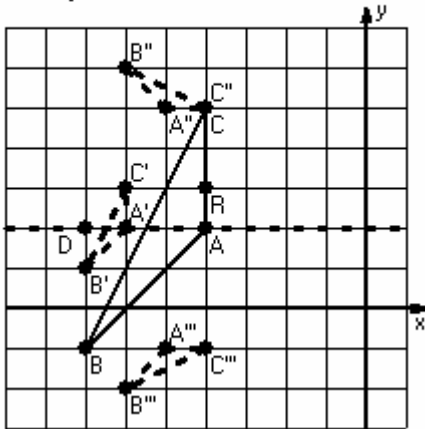
- 1) Translation  $(-2,0)$   
Reflection  $x = -5$   
Rotation  $90^\circ$  counterclockwise, center  $R(-4,3)$



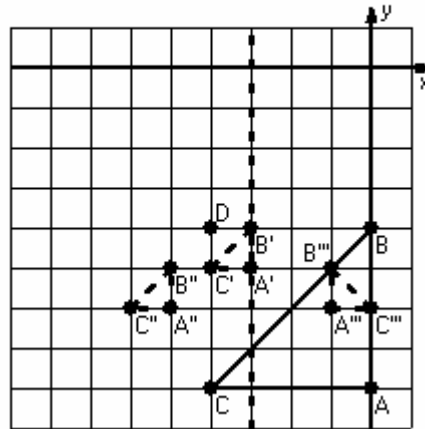
- 2) Dilation scale =  $1/4$ , center  $D(2,1)$   
Rotation  $180^\circ$ , center  $R(-1,2)$   
Reflection  $y = 2$



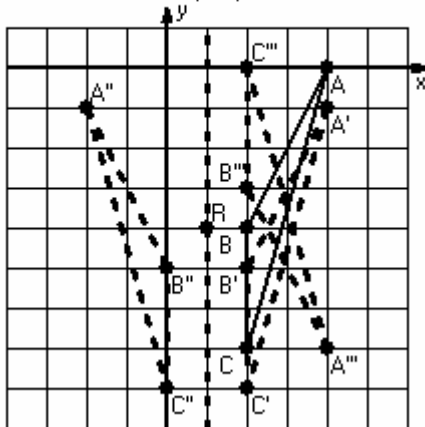
- 3) Dilation scale =  $1/3$ , center  $D(-7,2)$   
Rotation  $90^\circ$  clockwise, center  $R(-4,3)$   
Reflection  $y = 2$



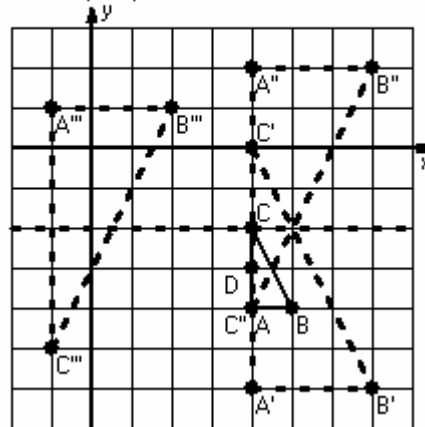
- 4) Dilation scale =  $1/4$ , center  $D(-4,-4)$   
Translation  $(-2,-1)$   
Reflection  $x = -3$



- 5) Translation  $(0,-1)$   
Reflection  $x = 1$   
Rotation  $180^\circ$ , center  $R(1,-4)$



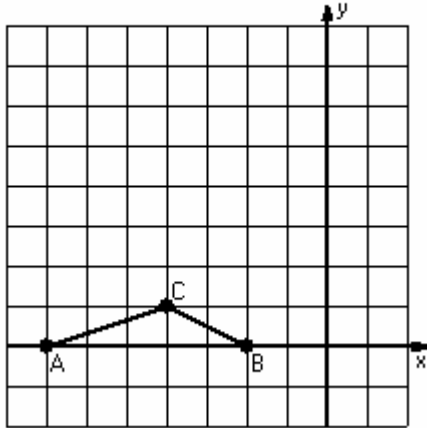
- 6) Dilation scale =  $3$ , center  $D(4,-3)$   
Reflection  $y = -2$   
Translation  $(-5,-1)$



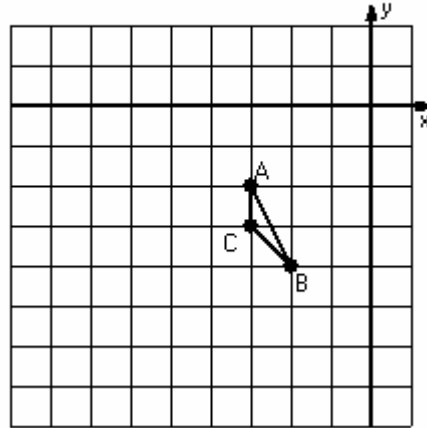
## Three-Step Transformations (J)

Instructions: Transform each triangle three times using the instructions in the order given.  
Draw and label each transformation.

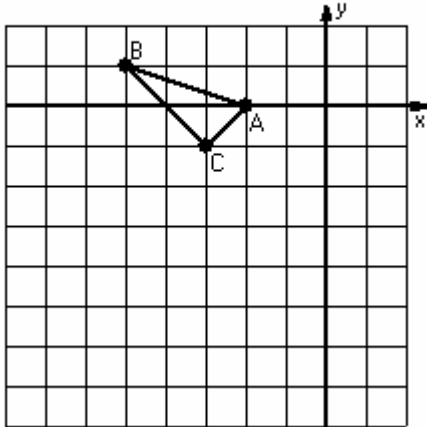
- 1) Translation (1,0)  
Rotation  $180^\circ$ , center R(-4,1)  
Reflection  $y = 3$



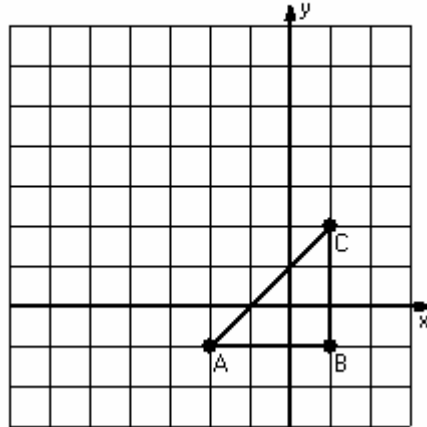
- 2) Dilation scale = 3, center D(-1,-3)  
Reflection  $x = -6$   
Translation (5,1)



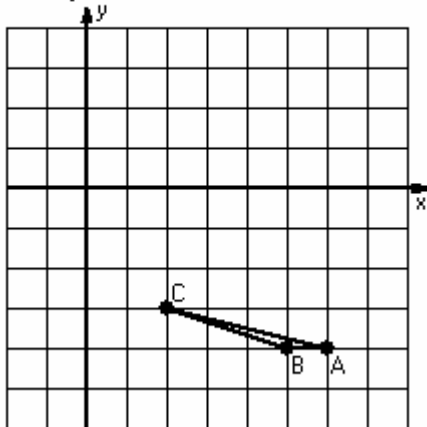
- 3) Reflection  $y = -2$   
Translation (0,-2)  
Rotation  $180^\circ$ , center R(-3,-3)



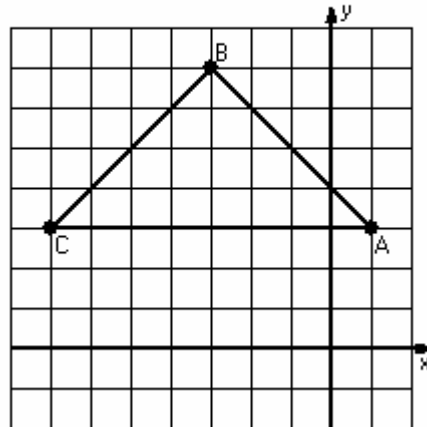
- 4) Dilation scale =  $1/3$ , center D(1,5)  
Rotation  $90^\circ$  counterclockwise, center R(0,0)  
Reflection  $x = -1$



- 5) Rotation  $180^\circ$ , center R(4,-2)  
Translation (-3,0)  
Reflection  $y = 1$



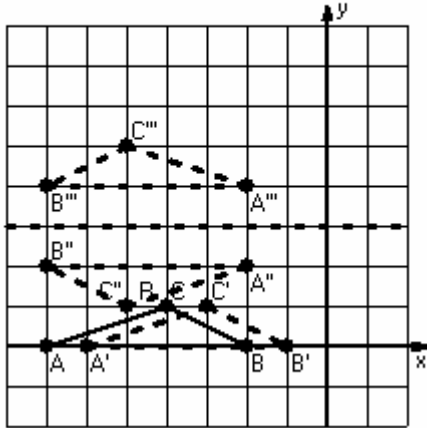
- 6) Dilation scale =  $1/4$ , center D(-3,3)  
Rotation  $90^\circ$  clockwise, center R(-3,1)  
Reflection  $x = -2$



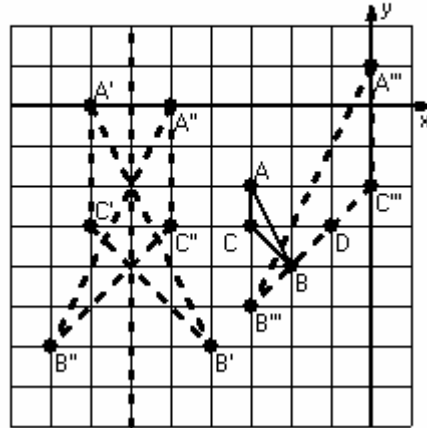
## Three-Step Transformations Answer (J)

Instructions: Transform each triangle three times using the instructions in the order given.  
Draw and label each transformation.

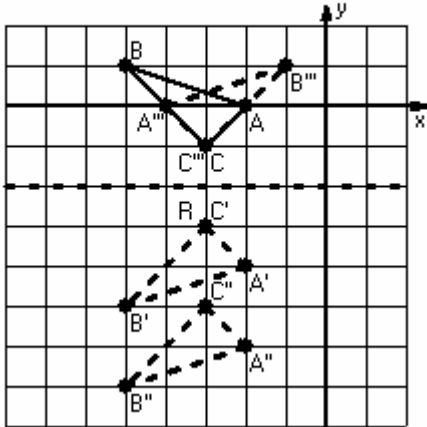
- 1) Translation (1,0)  
Rotation  $180^\circ$ , center R(-4,1)  
Reflection  $y = 3$



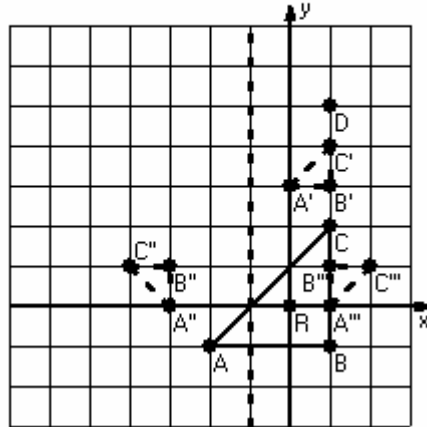
- 2) Dilation scale = 3, center D(-1,-3)  
Reflection  $x = -6$   
Translation (5,1)



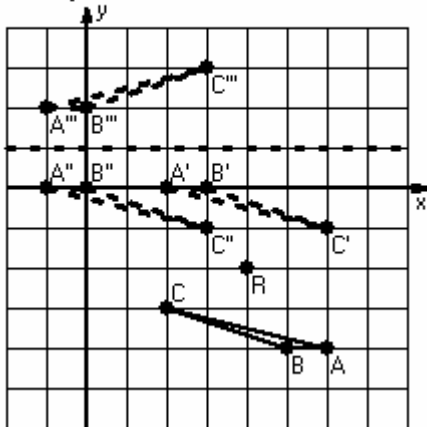
- 3) Reflection  $y = -2$   
Translation (0,-2)  
Rotation  $180^\circ$ , center R(-3,-3)



- 4) Dilation scale = 1/3, center D(1,5)  
Rotation  $90^\circ$  counterclockwise, center R(0,0)  
Reflection  $x = -1$



- 5) Rotation  $180^\circ$ , center R(4,-2)  
Translation (-3,0)  
Reflection  $y = 1$



- 6) Dilation scale = 1/4, center D(-3,3)  
Rotation  $90^\circ$  clockwise, center R(-3,1)  
Reflection  $x = -2$

