Key

H Math 2
Unit 1: Transformations

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1) Verbal

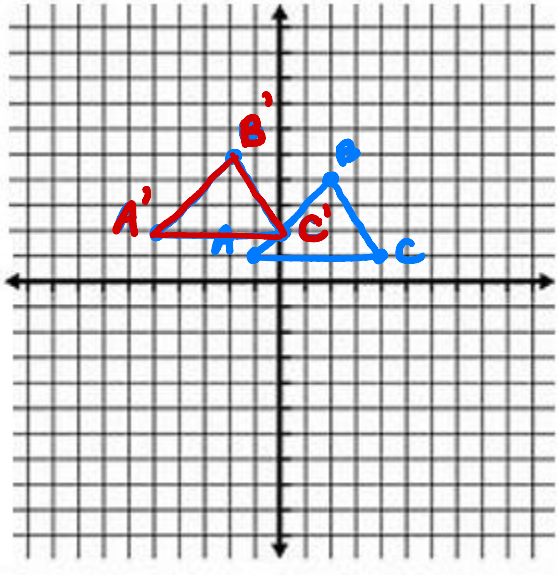
Given ΔABC with $A(-1,1)$, $B(2,4)$, and $C(4,1)$. **Translate** ΔABC left 4 units and up 1 unit.

Algebraic Rule: $(x,y) \rightarrow (x-4, y+1)$

Table:

	Pre-Image		Image		
	x	y	x	y	
A	-1	1	-5	2	A'
B	2	4	-2	5	B'
C	4	1	0	2	C'
	7	6	3	7	

Graph:



2) Verbal

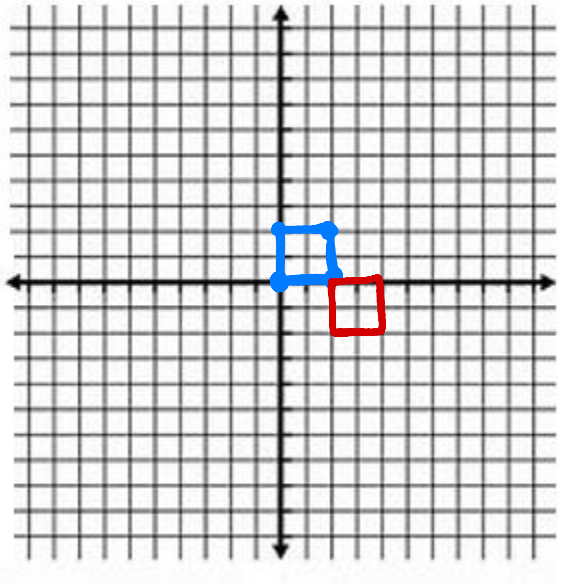
Translate right 2 and down 2.

Algebraic Rule: $(x,y) \rightarrow (x+2, y-2)$

Table:

Pre-Image		Image	
x	y	x	y
0	0	2	-2
2	0	4	−2
0	2	2	0
2	2	4	0

Graph:



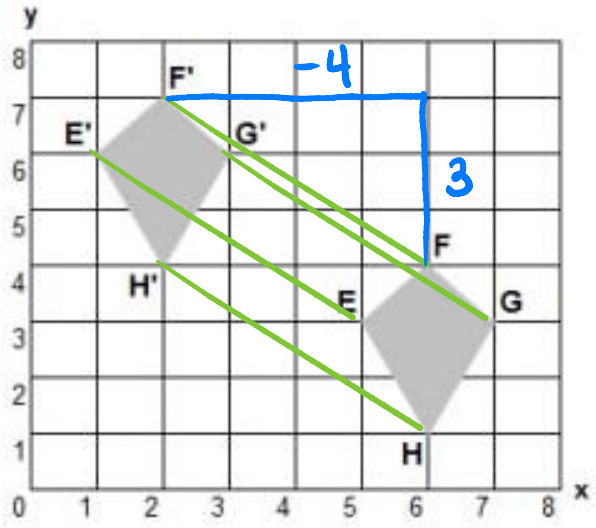
3) Verbal EFGH is translated left 4 and up 3.

Algebraic Rule: $(x, y) \rightarrow (x-4, y+3)$

Table:

	Pre-Image		Image		
	x	y	x	y	
E	5	3	1	6	E'
F	6	4	2	7	F'
G	7	3	3	6	G'
H	6	1	2	4	H'

Graph:



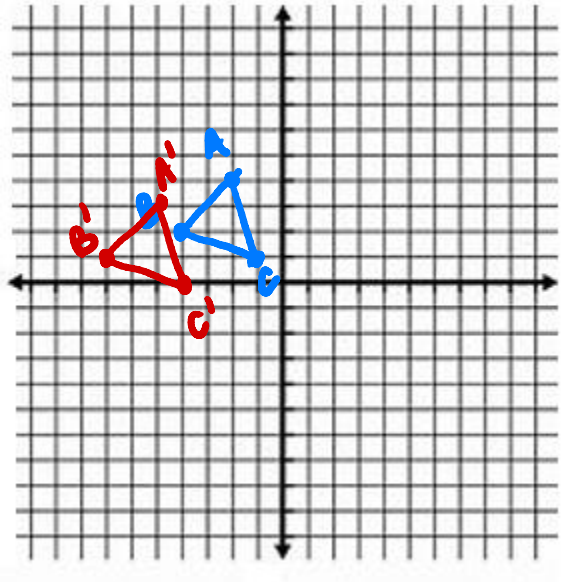
4) Verbal Δ is translated left 3 and down 1.

Algebraic Rule: $(x, y) \rightarrow (x-3, y-1)$

Table:

	Pre-Image		Image	
	x	y	x	y
A	−2	4	−5	3
B	−4	2	−7	1
C	−1	1	−4	0

Graph:



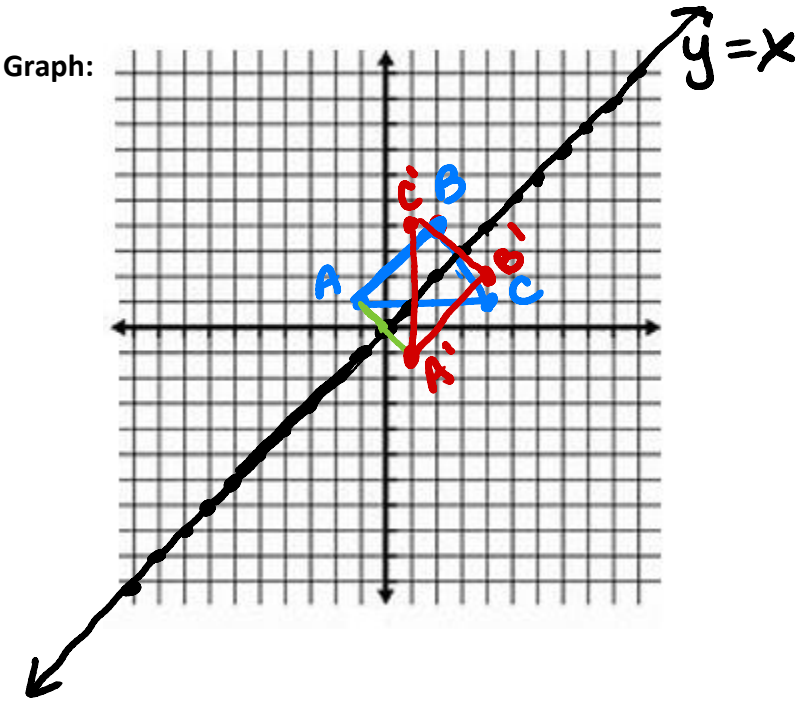
5) Verbal Given ΔABC with $A(-1,1)$, $B(2,4)$, and $C(4,1)$. **Reflect** ΔABC over the line $y = x$

Algebraic Rule: $(x,y) \rightarrow (y,x)$

Table:

	Pre-Image		Image	
	x	y	x	y
A	-1	1	1	-1
B	2	4	4	2
C	4	1	1	4

Graph:



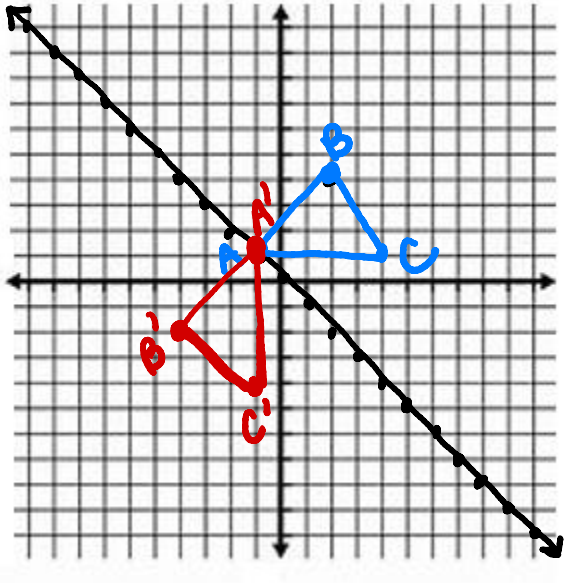
6) Verbal Given ΔABC with $A(-1,1)$, $B(2,4)$, and $C(4,1)$. **Reflect** ΔABC over the line $y = -x$

Algebraic Rule $(x,y) \rightarrow (-y,-x)$

Table:

	Pre-Image		Image	
	x	y	x	y
A	-1	1	-1	1
B	2	4	-4	-2
C	4	1	-1	-4

Graph:



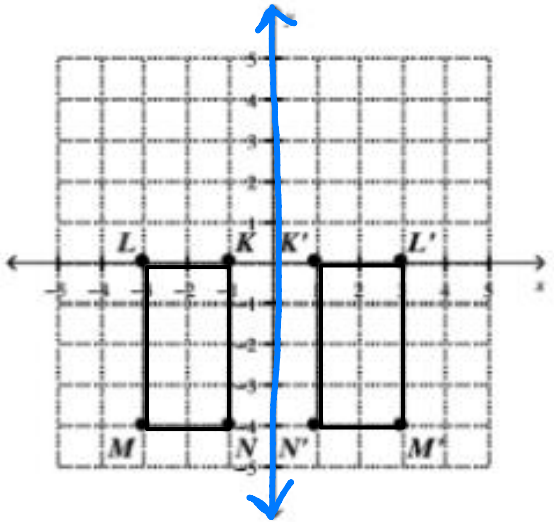
7) Verbal KLMN is reflected over the y-axis.

Algebraic Rule: $(x, y) \rightarrow (-x, y)$

Table:

Pre-Image		Image	
x	y	x	y
-1	0	1	0
-3	0	3	0
-3	-4	3	-4
-1	-4	1	-4

Graph:



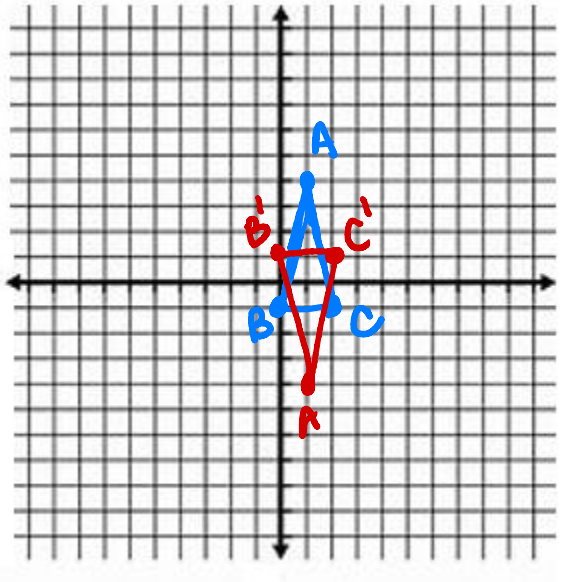
8) Verbal ΔABC is reflected over the x-axis

Algebraic Rule: $(x, y) \rightarrow (x, -y)$

Table:

	Pre-Image		Image	
	x	y	x	y
A	1	4	1	-4
B	0	-1	0	1
C	2	-1	2	1

Graph:



9) Verbal

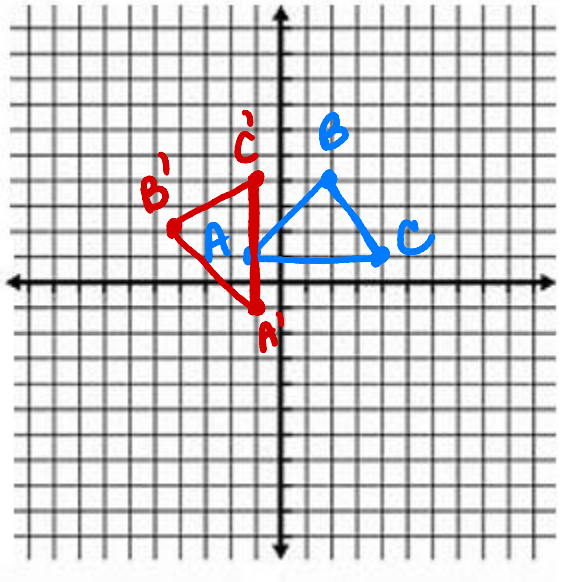
Given ΔABC with $A(-1,1)$, $B(2,4)$, and $C(4,1)$. **Rotate** ΔABC 90° counterclockwise about the origin.

Algebraic Rule: $(x,y) \rightarrow (-y,x)$

Table:

	Pre-Image		Image	
	x	y	x	y
A	-1	1	-1	-1
B	2	4	-4	2
C	4	1	-1	4

Graph:



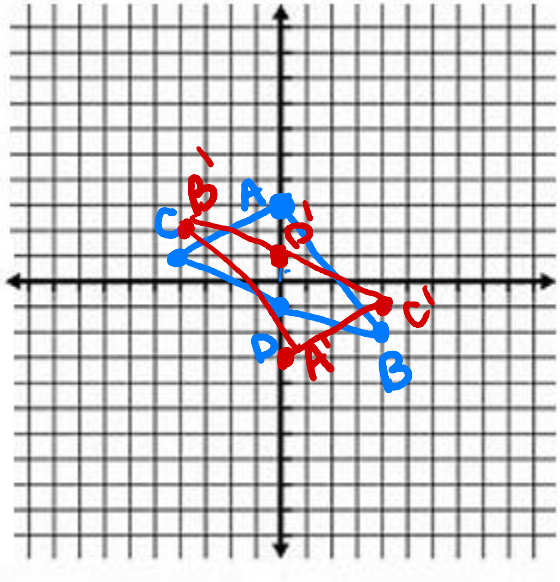
10) ABCD is rotated 180°

Algebraic Rule: $(x,y) \rightarrow (-x,-y)$

Table:

	Pre-Image		Image	
	x	y	x	y
A	0	3	0	-3
B	4	-2	-4	2
D	-4	1	4	-1
C	0	-1	0	1

Graph:



11) **Verbal**

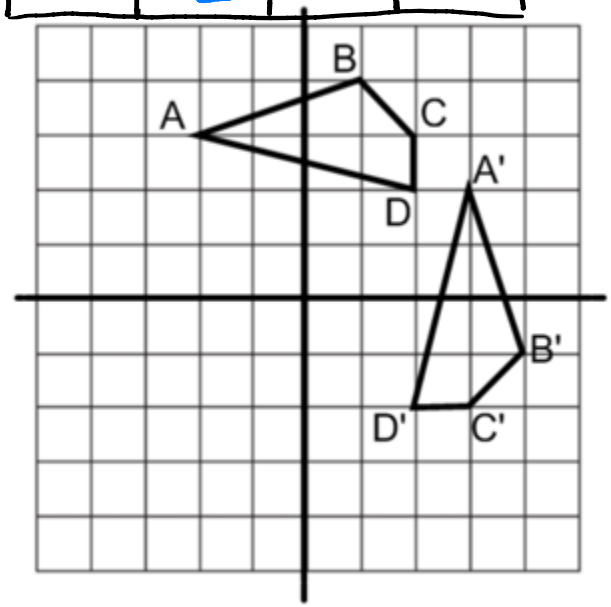
ABCD is rotated clockwise 90°.

Algebraic Rule: $(x, y) \rightarrow (y, -x)$

Table:

	Pre-Image		Image	
	x	y	x	y
A	−2	3	3	2
B	1	4	4	−1
C	2	3	3	−3
D	2	2	2	−2

Graph:



12)

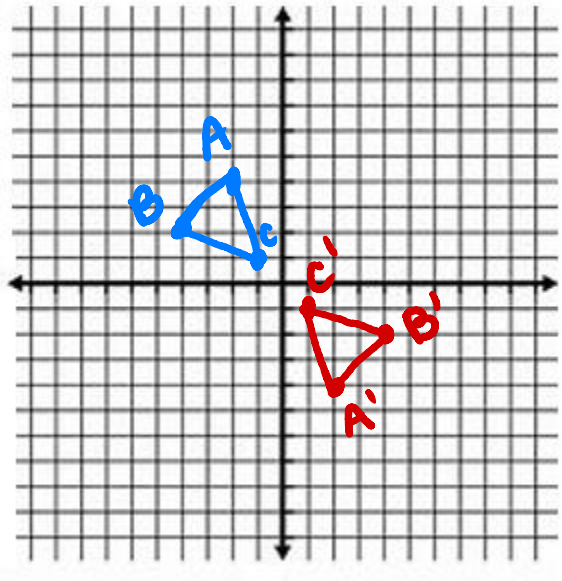
ABC is rotated 180°.

Algebraic Rule: $(x, y) \rightarrow (-x, -y)$

Table:

	Pre-Image		Image		
	x	y	x	y	
A	−2	4	2	−4	A'
B	−4	2	4	−2	B'
C	−1	1	1	−1	C'

Graph:



13) Verbal

Given with $A(0,0)$, $B(8,1)$, $C(5,5)$. Rotate 90° CCW , then reflect the figure over the x-axis, then translate right 6 and down 1.

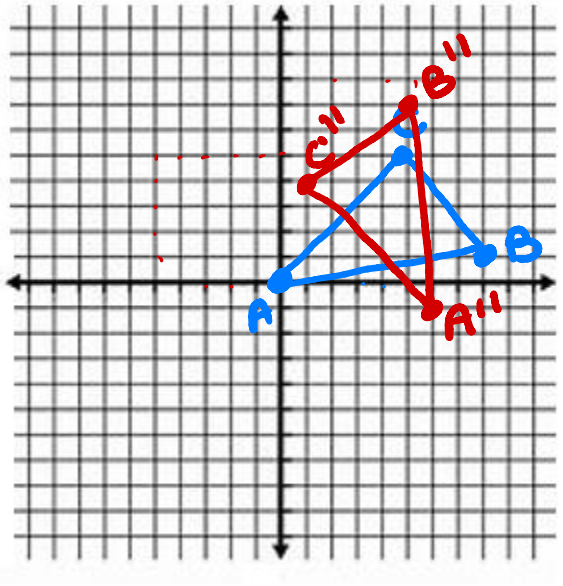
Algebraic Rule:

$(x,y) \rightarrow (-y,x) \rightarrow (x+6, y-1) = (-y+6, x-1)$

Table:

	Pre-Image		Image	
	x	y	x	y
A	0	0	6	−1
B	8	1	5	7
C	5	5	1	4

Graph:



14) Verbal

ABCD is rotated clockwise 90° then translated right 5 and up 5.

Algebraic Rule:

$(x,y) \rightarrow (y,-x) \rightarrow (x+5, y+5) = (y+5, -x+5)$

Table:

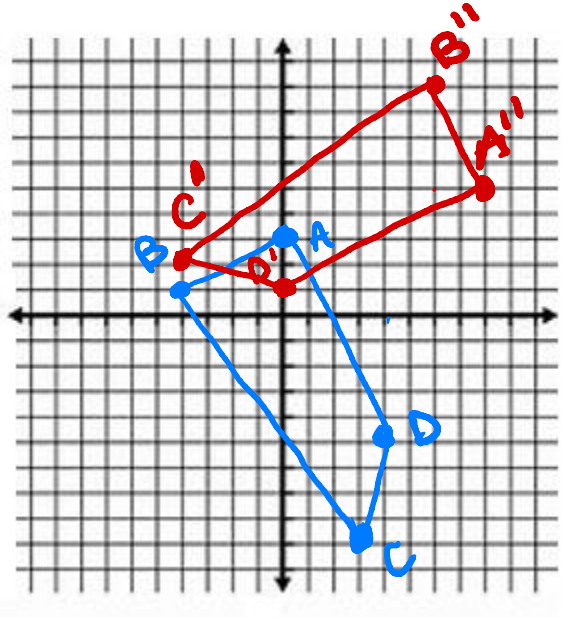
	Pre-Image		Image	
	x	y	x	y
A	0	3	8	5
C	3	−9	−4	2
B	−4	1	6	9
D	4	−5	0	1

$y+5=-4$
$y=-9$

$-x+5=2$
$-x=-3$
$x=3$

$-x+5=1$
$-x=-4$
$x=4$

Graph:



15) **Verbal** ΔABC is rotated CCW 90° then translated left 3 and down 1

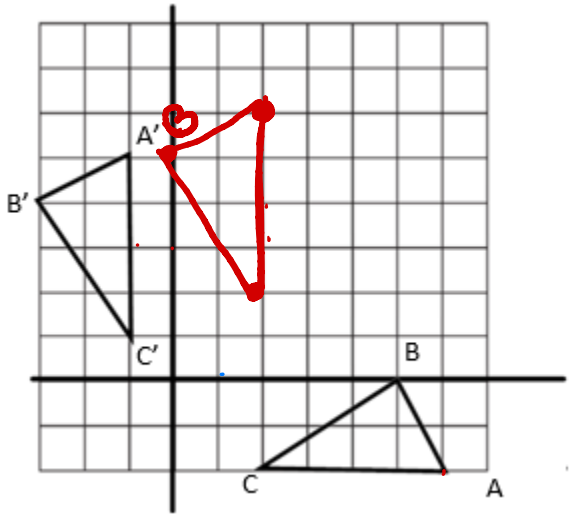
Algebraic Rule:

$(x, y) \rightarrow (-y, x) \rightarrow (x-3, y-1) = (-y-3, x-1)$

Table:

	Pre-Image		Image	
	x	y	x	y
A	6	−2	−1	5
B	5	0	−3	4
C	2	−2	−1	1

Graph:



16) **Verbal** ΔABC is reflected over the line y=x, shift right 2 and up 2.

Algebraic Rule:

$(x, y) \rightarrow (y, x) \rightarrow (x+2, y+2) = (y+2, x+2)$

Table:

	Pre-Image		Image		
	x	y	x	y	
A	4	0	2	6	A''
B	0	−4	−2	2	B''
C	6	−4	−2	8	C''

Graph: