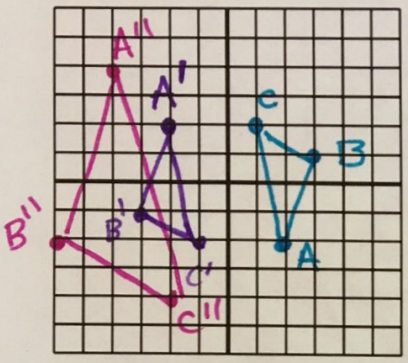
Math 2 – Compositions of Motion Name: _____

Given the description, write an algebraic rule to represent the transformation. Then graph the pre-image and image on the graph below. Use ΔABC with A(2,-2), B(3,1), and C(1,2).

1) ΔABC is rotated 180° then dilated by a factor of two about the origin.



A(2, -2) B(3, 1) C(1, 2)

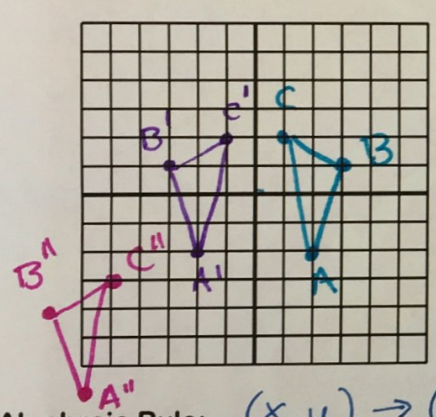
A'(-2, +2) B'(-3, -1) C'(-1, -2)

A''(2·(-2), 2·2) B''(2·(-3), 2·(-1)) C''(2·(-1), 2·(-2))

(-4, 4) (-6, -2) (-2, -4)

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

2) ΔABC is reflected over the y-axis and translated by the vector $\langle -4, -5 \rangle$.



A(2, -2) B(3, 1) C(1, 2)

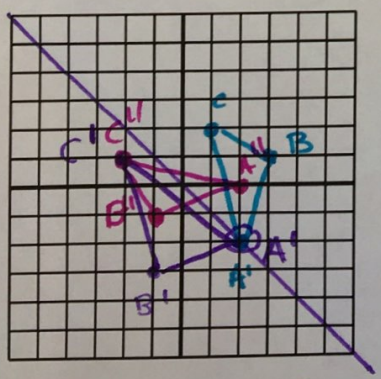
A'(-2, -2) B'(-3, 1) C'(-1, 2)

A''(-2 -4, -2 -5) B''(-3 -4, 1 -5) C''(-1 -4, 2 -5)

(-6, -7) (-7, -4) (-5, -3)

Algebraic Rule: $(x, y) \rightarrow (-x, y) \rightarrow (-x-4, y-5)$

3) ΔABC is reflected over y = -x and translated up 2 units.



A(2, -2) B(3, 1) C(1, 2)

A'(+2, -2) B'(-1, -3) C'(-2, -1)

A''(2, -2+2) B''(-1, -3+2) C''(-2, -1+2)

(2, 0) (-1, -1) (-2, 1)

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