**Transformational Geometry: Translation Notes**

**Translation:** to slide a figure on a coordinate plane

**Graph △*ABC* with vertices at *A*(1, 2), *B*(3, 1), and *C*(3, 4). Then graph the image of the triangle after it is translated 2 units left and 1 unit up. Write the coordinates of the vertices.**

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Graph △*ABC*. Then move each vertex of the triangle 2 units left and 1 unit up.

From the graph, the coordinates of the vertices of the image are *A´*(−1, 3), *B´*(1, 2) and *C´*(1, 5).

** Quadrilateral *KLMN* has vertices *K*(−2, −2), *L*(1, 1), *M*(0, 4), and *N*(−3, 5). It is first translated by (*x* + 2, *y* − 1) and then translated by (*x* − 3, *y* + 4). When a figure is translated twice, a double prime symbol is used. Find the coordinates of quadrilateral *K´´L´´M´´N´´* after both translations.**

First translate *KLMN* by the first translation (*x* + 2, *y* – 1). Add 2 to each   
*x*-coordinate and –1 to each *y*-coordinate.

*K*(2, 2) ⭢ (2 + 2, 2 + (1)) or (0, 3)

*L*() ⭢ (1 + 2, 1 + (1)) or (3, 0)

*M*(, 4) ⭢ (0 + 2, 4 + (1)) or (2, 3)

*N*(3, ) ⭢ (3 + 2, 5 + (1)) or (1, 4)

Next translate *K*′*L*′*M*′*N*′ by the next translation (*x* – 3, *y* + 4). Add –3 to each   
*x*-coordinate and 4 to each *y*-coordinate.



The coordinates after both translations are *K*′′(–3, 1), *L*′′(0, 4), *M*′′(–1, 7), and *N*′′(–4, 8).