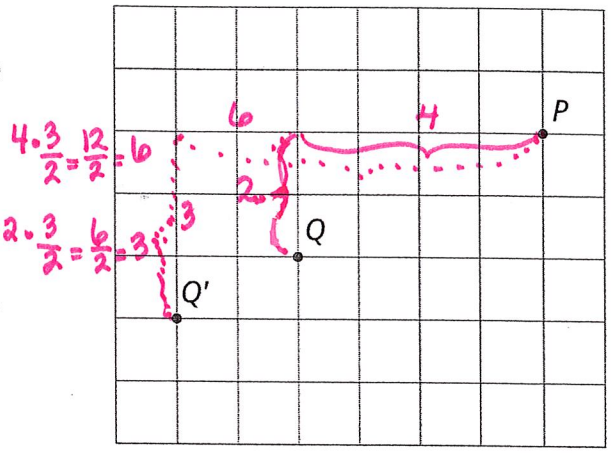
Lesson 4 Summary

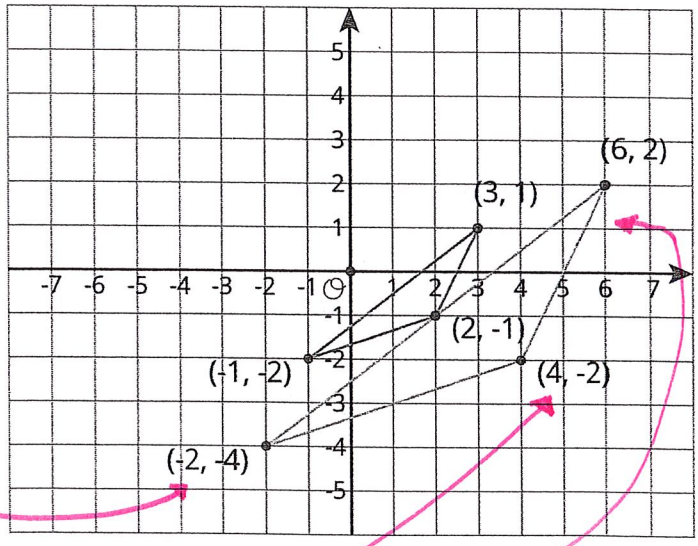
Square grids can be useful for showing dilations. The grid is helpful especially when the center of dilation and the point(s) being dilated lie at grid points. Rather than using a ruler to measure the distance between the points, we can count grid units.

For example, suppose we want to dilate point Q with center of dilation P and scale factor $\frac{3}{2}$. Since Q is 4 grid squares to the left and 2 grid squares down from P, the dilation will be 6 grid squares to the left and 3 grid squares down from P (can you see why?). The dilated image is marked as Q' in the picture.



Sometimes the square grid comes with coordinates. The coordinate grid gives us a convenient way to *name* points, and sometimes the coordinates of the image can be found with just arithmetic.

For example, to make a dilation with center $(0, 0)$ and scale factor 2 of the triangle with coordinates $(-1, -2)$, $(3, 1)$, and $(2, -1)$, we can just double the coordinates to get $(-2, -4)$, $(6, 2)$, and $(4, -2)$.



$(-1, -2) \cdot 2 = (-2, -4)$

$(3, 1) \cdot 2 = (6, 2)$

$(2, -1) \cdot 2 = (4, -2)$

* A dilation maps a circle to a circle, quadrilateral to a quadrilateral, & a $\triangle$ to a $\triangle$.
* If the center of dilation of a polygon is one of the vertices, then that vertex is on the dilated image.