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| **Parallelograms Across Axes- 6.NS.6** | |
| **Domain** | **The Number System** |
| **Cluster** | **Apply and extend previous understandings of numbers to the system of rational numbers.** |
| **Standard(s)** | **6.NS. 6** Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.  **6.NS.6b** Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.  **6.NS.5** Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. |
| **Materials** | Activity sheet |
| **Task** | **Parallelograms Across Axes**  A parallelogram has vertices at (-3,2), (-7,2), (-9,6), (-5,6).  Part 1:  Plot and label the vertices of the parallelogram on the coordinate plane.  Part 2:  Reflect the parallelogram across the y-axis. Plot the points and draw the parallelogram. Write the ordered pairs for the vertices of the parallelogram.  Part 3:  Reflect the original parallelogram across the x-axis. Plot the points and draw the parallelogram. Write the ordered pairs for the vertices of the parallelogram.  Part 4:  Write an explanation about how you solved Parts 2 and 3. |

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| **Rubric** | | |
| **Level I** | 1. **Level II** | **Level III** |
| Developing Proficiency   * Student uses inappropriate solution strategy and does not get the correct answer. | Not Yet Proficient   * There are one or two errors. | Proficient in Performance   * Accurately solves problem * Part 1: The vertices of the parallelogram are plotted and labeled correctly. * Part 2: The new parallelogram has points at (3,2), (7,2), (9,6), and (5,6). * Part 3: The new parallelogram has points at (-3,-2), (-7,-2), (-9,-6), and (-5,-6). * Part 4: The explanation is clear and accurate. |

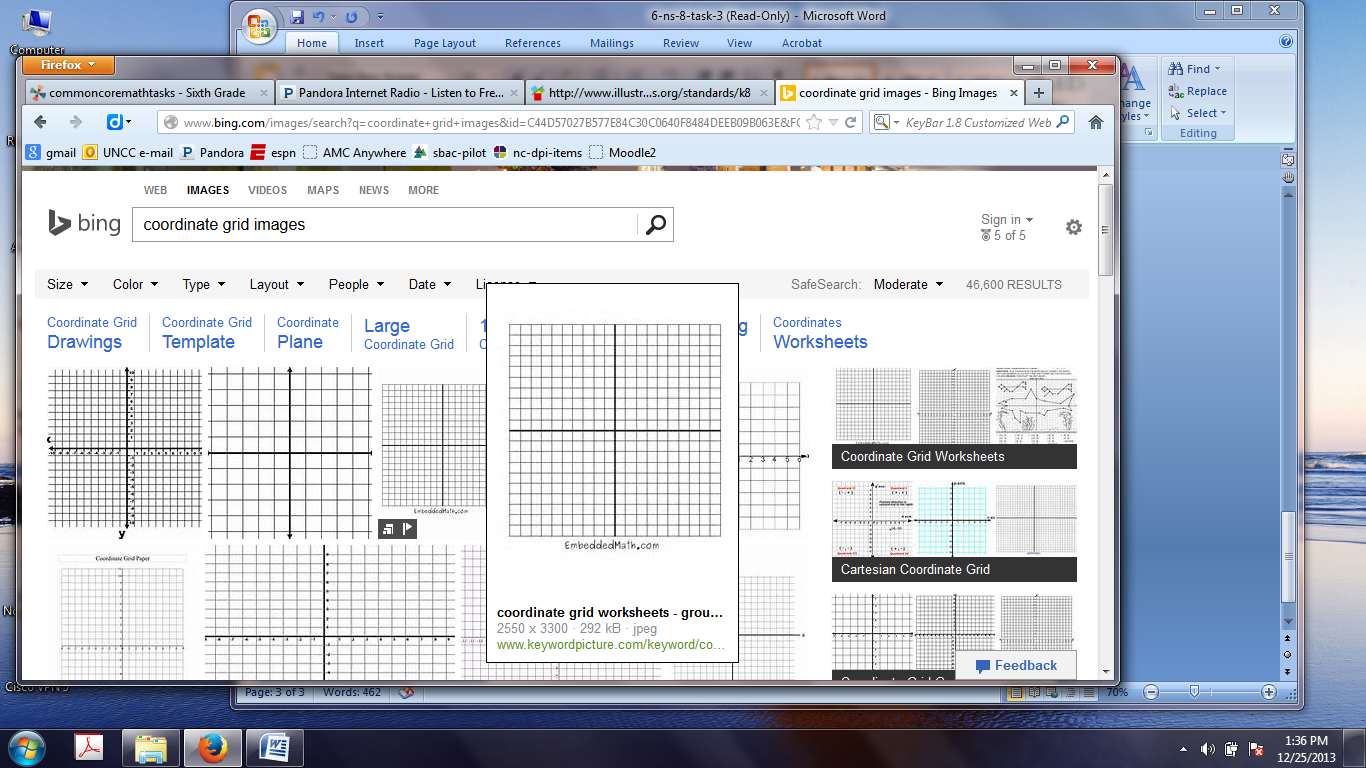
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| **Standards for Mathematical Practice** |
| **1. Makes sense and perseveres in solving problems.** |
| **2. Reasons abstractly and quantitatively.** |
| **3. Constructs viable arguments and critiques the reasoning of others.** |
| 4. Models with mathematics. |
| 5. Uses appropriate tools strategically. |
| **6. Attends to precision.** |
| 7. Looks for and makes use of structure. |
| 8. Looks for and expresses regularity in repeated reasoning. |

**Parallelograms Across Axes**

A parallelogram has vertices at (-3,2), (-7,2), (-9,6), (-5,6).

Part 1:

Plot and label the vertices of the parallelogram on the coordinate plane.



Part 2:

Reflect the parallelogram across the y-axis. Plot the points and draw the parallelogram. Write the ordered pairs for the vertices of the parallelogram.

Part 3:

Reflect the original parallelogram across the x-axis. Plot the points and draw the parallelogram. Write the ordered pairs for the vertices of the parallelogram.

Part 4:

Write an explanation about how you solved Parts 2 and 3.