

## Co-ordinate Planes

### Great Lakes' Navigational Systems

Congratulations, you have landed a job with the Great Lakes' Navigational Systems. Your job is to develop a map of a section of a lake such as one of the Great Lakes so that a ship can navigate around the islands in the lake in the dark. (You may also use an entire lake if you wish.) Your lake is divided into the 4 quadrants using the "X" and "Y" axes. Use grid paper to design a rough copy of your section of the lake.

#### Your job is to:

- have at least 3 to 4 differently shaped islands
- your points must be labelled
- each of your islands must be duplicated at least once (ie. you will have 6 to 8 islands on your lake - each island will have at least one other island that is congruent to it on the lake)
- the islands on your lake are to use the 3 transformations: translations, rotations and reflections – each transformation is to be used at least once and make sure you label your point(s) of rotation, line(s) of reflection and translation
- you are to design a passage to navigate your ship through the islands - you must navigate using all 4 compass directions - make sure you have a compass rose on your map - make sure you fully describe your navigational path
- you must use an index and grid to help describe your transformations
- remember to label each of your vertices using ordered pairs
  
- \*Hint\* your island shapes will be easier to transform if you use perpendicular and/or diagonal lines
- you may use and glue coloured paper cut outs of your islands to help organize your map - each of your islands must be congruent to at least one other original

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	Level 1	Level 2	Level 3	Level 4
Thinking and Planning	<ul style="list-style-type: none"> <li>• uses planning skills with limited effectiveness</li> <li>• rough draft(s) are inefficient and incomplete</li> </ul>	<ul style="list-style-type: none"> <li>• uses planning skills with some effectiveness</li> <li>• rough draft(s) are inefficient but somewhat complete</li> </ul>	<ul style="list-style-type: none"> <li>• uses planning skills with considerable effectiveness</li> <li>• rough draft(s) are considerably efficient and complete</li> </ul>	<ul style="list-style-type: none"> <li>• uses planning skills with a high degree of effectiveness</li> <li>• rough draft(s) are efficient, complete and very useful in the final design</li> </ul>
Knowledge and Understanding	<ul style="list-style-type: none"> <li>• demonstrates a limited understanding of designing a map</li> <li>• demonstrates a limited understanding of the importance and accuracy of features of a map such as grid, index and key</li> </ul>	<ul style="list-style-type: none"> <li>• demonstrates some understanding of designing a map</li> <li>• demonstrates some understanding of the importance and accuracy of features of a map such as grid, index and key</li> </ul>	<ul style="list-style-type: none"> <li>• demonstrates considerable understanding of designing a map</li> <li>• demonstrates considerable understanding of the importance and accuracy of features of a map such as grid, index and key</li> </ul>	<ul style="list-style-type: none"> <li>• demonstrates a high degree of understanding of designing a map</li> <li>• demonstrates a high degree of understanding of the importance and accuracy of features of a map such as grid, index and key</li> </ul>
Knowledge and Understanding	<ul style="list-style-type: none"> <li>• demonstrates a limited understanding of Cartesian Planes</li> <li>• inaccurately plots Cartesian Coordinate points</li> <li>• inaccurately completes the 3 transformations - rotations, reflections and translations or they are incomplete</li> </ul>	<ul style="list-style-type: none"> <li>• demonstrates some understanding of Cartesian Planes</li> <li>• with some accuracy plots Cartesian Coordinate points</li> <li>• with some accuracy completes the 3 transformations - rotations, reflections and translations</li> </ul>	<ul style="list-style-type: none"> <li>• demonstrates understanding of Cartesian Planes</li> <li>• most Cartesian Coordinate points are plotted accurately</li> <li>• accurately completes the 3 transformations - rotations, reflections and translations</li> </ul>	<ul style="list-style-type: none"> <li>• demonstrates thorough understanding of Cartesian Planes</li> <li>• all Cartesian Coordinate points are plotted accurately</li> <li>• accurately completes the 3 transformations - rotations, reflections and translations</li> </ul>
Communication	<ul style="list-style-type: none"> <li>• expresses and organizes map features and information with limited effectiveness</li> </ul>	<ul style="list-style-type: none"> <li>• expresses and organizes map features and information with some effectiveness</li> </ul>	<ul style="list-style-type: none"> <li>• expresses and organizes map features and information with considerable effectiveness</li> </ul>	<ul style="list-style-type: none"> <li>• expresses and organizes map features and information with a high degree of effectiveness</li> </ul>
Application	<ul style="list-style-type: none"> <li>• applies and extends knowledge of mapping skills with limited effectiveness and creativity</li> </ul>	<ul style="list-style-type: none"> <li>• applies and extends knowledge of mapping skills with some effectiveness and creativity</li> </ul>	<ul style="list-style-type: none"> <li>• applies and extends knowledge of mapping skills with considerable effectiveness and creativity</li> </ul>	<ul style="list-style-type: none"> <li>• applies and extends knowledge of mapping skills with a high degree of effectiveness and creativity</li> </ul>