

<b>PLANNING MATRIX</b>	<b>TOPIC OR THEME</b>	<b>Math Transformations</b>	<b>GRADE LEVEL(S)</b>	<b>Seven</b>
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Within this unit, I want students to be able to understand and represent slides, flips, turns and symmetry. Students should be able to identify when a figure has been reflected, been moved through a transformation or a translation. They will discover how to “map” movements using the x/y axis on graph paper. The final project will be to create pieces of artwork that represents these concepts with a written component that demonstrates their understanding. They will learn through hands on activities and through conversations with their peers and teacher. They will see that this concept has applications outside of math books and is in the real world; which will help these students in particular understand the concepts deeper.

Learning Outcomes	Description of Learning Activities & Strategies	Assessment Methods/Tools	Assessment Criteria
<p><i>It is expected that students will:</i></p> <p>create, analyse, and describe designs using rotations (turns) (1), reflections (flips) (2), and translations (slides) (3)</p> <p>use informal concepts of congruence to describe images after rotations (turns) (4), reflections (flips) (5), and translations (slides) (6)</p> <p>connect reflections with lines of symmetry (7)</p>	<p><b><u>Lesson one (use MC Escher prints)</u></b></p> <p>Students will watch a demonstration of translating a shape on a overhead (simple demo and then with tessellation) with labels of new shape and then they will repeat the demonstration with different shape and tessellated design; labeling shapes noting same shape (3)</p> <p>Students will brainstorm why the movement is called translation/slide; first on own, then with partner(s), then share with class. Responses from class written on overhead for all to see and students take notes of on back of tessellation sheet</p> <p>Students will provide possible examples of where they have seen a translation or slide in life(3) Share pictures I have of slides (2-D Mario also)</p> <p><b><u>Lesson Two</u></b></p> <p>Students will watch a demonstration of mapping a translation using graph paper on the overhead and during the demo they will write down definitions of <i>mapping (the translation the figure undergoes)</i>, <i>sense (when figures are in same direction)</i>, <i>translation arrow (describes the distance and direction a figure moves on a plane under a translation)</i> and <i>ordered pair (horizontal movement, vertical movement; from each vertex count the units the ordered pair tells);</i></p>	<p>Students will hand in finished tessellation sheets</p> <p>Students will share responses in discussion Students will write responses on back of tessellation sheet</p> <p>Participation checklist/teacher observation</p> <p>Definitions collected at end of class</p>	<p>Students will show that they know where shape moved to by correctly writing down shapes sides from original place to new space (3.4) (ABCD to A'B'C'D')</p> <p>Name is on paper, responses are done, they have demonstrated understanding of what a translation is (3,4), they have written down notes from overhead and they can (5 marks)</p> <p>Students add to discussion with own examples/ideas of translations (3)</p> <p>Name is on paper, definitions of mapping, sense, translation arrow and ordered pair copied down (participation mark)</p>

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create, analyse, and describe designs using rotations (turns) (1), reflections (flips) (2), and translations (slides) (3)

use informal concepts of congruence to describe images after rotations (turns) (4), reflections (flips) (5), and translations (slides) (6)

connect reflections with lines of symmetry (7)

Go over letters of the alphabet and discuss what letters have symmetry; have students complete worksheet deciding what letters have line symmetry (7)

Go over where else we find symmetry; students supply examples(7); teacher shows pictures of symmetry

Go over lines of reflection using letters and shapes as a guide to demonstrate (A, B, X, MOM, HEED, a square, an equilateral triangle and a rectangle)

Students will fill out worksheet in class that gets them to analyze shapes and show lines of symmetry within the shapes

### **Lesson Eight**

Students will work on strip patterns. One pattern will use slides, one will use flips and one will use turns. Students will design a pattern for each and this art work will be transferred to graph paper after they have planned out their patterns; they will use different colours so that others can follow their pattern

They will have the final two-three classes to work on this art

They will include a rule on the back of their paper that tells their pattern so that another person could reproduce it

### **Lesson Nine**

Strip pattern work

### **Lesson Ten**

This lesson will be for students to finish up strip patterns if needed as well as for students to show their patterns to class and see if others can find their rule

Collect sheet at end of class

Collected next class

Collected by lesson ten  
Observations during working time

Same as lesson eight

Same as lesson eight

Students have correctly identified the letters with symmetry(7), name and date on paper (participation marks)

Students have correctly identified the lines of symmetry(7), name and date on paper (one mark per question)

Students will have used each transformation in their patterns (10 marks), they used colour to differentiate the patterns (5), they will have written their rule down on back of paper (10), effort is shown in their work (5)

The art works will be marked out of that total grade; each one marked individually to show that they understand each concept taught