

1. Lesson Plan Information	
<b>Subject/Course:</b> Mathematics	<b>Name:</b> Bridget McLeod
<b>Grade Level:</b> 5	<b>Date:</b> October 21, 2010 <b>Time:</b> 1045am-1135am
<b>Topic:</b> Patterning and Algebra Lesson 3	<b>Length of Period:</b> 50 minutes

2. Expectation(s)
<p><b>Expectation(s) (Directly from The Ontario Curriculum):</b>          *create, identify and extend numeric and geometric patterns, using a variety of tools (concrete materials, paper and pencil, calculators and spreadsheets)</p> <p><b>Learning Skills (Where applicable):</b>          *Responsibility – take responsibility for and manages own behaviour          *Independent Work – uses class time appropriately to complete tasks</p>

3. Content
<p><b>What do I want the learners to know and/or be able to do?</b>          *numeric patterns: patterns using numbers ex) start at # and add or subtract #          *geometric patterns: pattern created using shapes          *core of the pattern: the shortest part of the pattern that repeats itself          *repeating patterns: the core of the pattern repeats itself          *growing patterns: numbers increasing or size of shape is increasing          *shrinking patterns: numbers decreasing or size of shape is decreasing          *sample cards of different patterns (see attached)          *Patterns worksheet (for problem on the board)          *Grade 5 Patterns Everywhere Worksheet (see attached)</p> <p><b>Today learners will:</b>          *Today learners will practice extending and creating numeric patterns.</p>

4. Assessment (collect data) / Evaluation (interpret data) (Recording Devices (where applicable): anecdotal record, checklist, rating scale, rubric)
<p><b>Based on the application, how will I know students have learned what I intended?</b>          Formative Assessment based on math notebook – anecdotal record throughout discussion of terms</p>

5. Learning Context
<p><b>A. The Learners</b>  <b>(i) What prior experiences, knowledge and skills do the learners bring with them to this learning experience?</b>          *In grade 4 students will have looked at extending, describing and creating repeating, growing and shrinking numeric and geometric patterns          *They can make variety of predictions related to patterns          *They can work independently          *They can follow instructions          *They will have had experience working with all the different types of materials: geometric shapes, popsicle sticks, coloured cubes, 100 number chart (lesson 1)          *They will have knowledge of patterns in their environment          *They are able to complete worksheets and textbook work independently          *They are able to complete basic math operations (add, subtract, divide and multiply in single digits)</p>

**(ii) How will I differentiate the instruction (content, process and/or product) to ensure the inclusion of all learners? (Must include where applicable accommodations and/or modifications for learners identified as exceptional.)**

\*continue to circulate while the students are working on their assigned textbook pages to assist those having trouble

### **B. Learning Environment**

\* Students will be seated at their desk as we review yesterday's activities, discuss the different terms used in patterning, discuss the different sorts of patterns

\*Students will be given the opportunity to come to the board and complete patterns if they wish

\*Students will work independently in their notebooks and worksheets

### **C. Resources/Materials**

\*Students will need math notebooks, textbooks and pencils

\*Student worksheets

\*Sample patter cards (see Middle)

## **6. Teaching/Learning Strategies**

### **INTRODUCTION**

**(5 minutes)**

***How will I engage the learners? (e.g., motivational strategy, hook, activation of learners' prior knowledge, activities, procedures, compelling problem)***

\*Teacher will have a couple of patterns written on the board that the students will try and solve in their math notebooks and they return from recess

\*This is a quiet activity and students will be encouraged to complete the task on their own as the instructions will be written on the board.

*Grade 5s, all you need for math is a pencil and your math notebook. Please sit quietly at your desk and complete the following patterns in your notebook. When you have finished try and create your own numeric or geometric pattern.*

### **MIDDLE:**

**(20 minutes)**

**Teaching: How does the lesson develop?**

**How we teach new concepts, processes (e.g., gradual release of responsibility - modeled, shared, and guided instruction).**

\*Teacher will review previous day's activities and some of the terminology (growing, shrinking and repeating)

\*Sample cards will be on the board and as a class we will discuss

- 2, 4, 6, 8 – “what is happening here?” (growing) “Can you predict what the next three numbers will be?” How would I write the pattern rule for this pattern” (I started at 2 and added 2 each time)
- 1, 3, 6, 9, (using dots to make triangles) – “What is happening in this pattern?” “What kind of pattern is this?” “How can we predict what the next terms will be?” “What is the pattern rule for this pattern?”
- 50, 47, 44, 41... “What is happening here? What kind of pattern is this? Can anyone tell me the pattern rule?”
- 2, 3, 5, 8, 2, 3, 5, 8... “What kind of pattern is this?” Can you tell me which part of the pattern is repeating? Where do we see a lot of repeating patterns? When you are creating a repeating pattern the core is the part that is happening again and again”
- 2, 4, 8, 16... “What kind of patterns is this?” What is happening in the pattern” What is the pattern rule for the numeric pattern?”
- 1, 2, 4, 5, 7, 8... “What kind of pattern is this?” “If I were to write the pattern rule what would be it be?”

\*throughout this part of the lesson if students are having difficulty, more examples will be created and students will be asked to share any patterns they might have

**Consolidation and/or Recapitulation Process: How will I bring all the important ideas from the learning experiences together for/with the students? How will I check for understanding?**

**(2 minutes)**

\*What are some things to remember when extending a pattern?

\*Remember to write a pattern rule for each pattern ie) Start at \_\_\_\_\_ and then \_\_\_\_\_

\*Remember some tricks you can use to figure out the pattern (work backwards, try many different things)

\*Are there any questions?

\*If you complete worksheet early, please hand it and then work on something independently like your journal, book recommendations or read quietly

### **Application:**

**What will learners do to demonstrate their learning? (Moving from guided, scaffolded practice, and gradual release of responsibility.)**

**(20 minutes )**

\*Students will work on their worksheets and hand in

## **CONCLUSION:**

**(3 minutes)**

### ***How will I conclude the lesson?***

- \*Please hand in your math worksheets – do not worry if you are not finished
- \*Tomorrow we will be looking at the input/output machine for creating patterns
- \*Please put math away and get out French Recipe assignment

## **7. My Reflections on the Lesson**

### ***What do I need to do to become more effective as a teacher in supporting student learning?***

- *I feel this lesson went really well.*
- *The students were engaged from the get go.*
- *Accessing prior knowledge was good idea – moved right along*
- *Students enjoyed coming to the board and creating their own patterns as well as completing the patterns I had written*
- *I moved around the classroom during the application but while I was at the board, I may have had my back turned to them too often as J and A started to act up, whenever I turned my back.*
- *Voice was effective and I used the management technique of waiting quietly for the students to quiet down and did not try to talk over them*
- *Turning J's desk around was effective as he was no longer distracted with the objects in his desk*
- *Felt I had a good rapport with students*
- *Tried to give effective feedback to students during discussion, consolidation and application phase*

### Lesson Delivery Analysis

This was the third lesson in our math – patterning unit. I used a hook, it had two parts. Which engaged the students and accessed their prior knowledge. The learners were engaged immediately as I had written them a note of what they would be needing for the period as well as giving them the opportunity to create their own pattern, which they could later present to the class.

The content of the lesson was organized in a sequential manner where we would progress from accessing prior knowledge and moving to new concepts. New learning was modeled by the teacher and the students were then given the opportunity to come to the board and practice the skill. The teacher reinforced the idea that having the students show their work was both beneficial for them to practice.

Key questions were developed to remind students of main ideas and as a class the students extended the teacher's patterns and recited the pattern rules. About 5 minutes was spent on the consolidation of the lesson. During the application phase students were given a worksheet and were asked to work independently. The questions were similar to those the teacher and students had been practicing earlier thus allowing for a gradual release of responsibility. The worksheet allowed for independence and more responsibility was given to the student to increase their learning. The teacher circulated throughout class as students completed worksheet and checked in with each student. Differentiated learning came in the form of more complex questioning for two of the students who easily grasped the math concepts being learned and needed a challenge.

Time was allocated for the lesson conclusion, students were given the opportunity to write a pattern they had created on the board and choose a fellow student to extend it. The teacher then reviewed the key terms from the concept highlighting them on the board. Students were asked to complete the worksheet for homework and it would be taken up the following day. This seemed fair since all the students had a basic understanding of the concept.

Throughout this lesson, I used anecdotal records to assess the students. Students who seemed to be having difficulty were flagged and would later be invited to participate in a recess workshop on the subject. Students who were also experts in the subject were also recorded so I was aware of those students who would be quick to finish any other assignments and need to be challenged.

### Reflection

I feel the part of the lesson, which was most successful, was the motivation and modeling of new learning. The hook was not particularly fancy, it did fit with the after recess routine and I felt like I was creating a connection with the students by leaving them a note. Having a note on the board addressed to the students made them feel included in the lesson and they were also directed about what to do next and what the expectations would be during the lesson. I will continue to use this method, and hope to look for more ways to engage my class as I progress as a teacher. It also helped me to make sure I was organized and that the lesson flowed nicely. The modeling of new learning was also successful, my voice was clear, I asked appropriate questions and allowed students enough time to process the question. I felt I was fair when calling on students to answer, I used a variety of techniques, calling on students I knew understood the question and calling on students whos' answer would allow for a positive discussion.

I did not encounter any barriers during this lesson, although I did keep an eye on the time more than in previous lessons, which was both distracting but beneficial for time management. At the end of the class I asked the students to hand in their worksheet, which in hindsight was too chaotic, instead I should have delegated this task to two students.

### Use of Visual Model

After looking at the phases of instruction a huge portion was spent on New Learning and Application, barely any time was spent on the Consolidation portion. This model was an effective tool for the analysis portion, however I did not reference it prior to the lesson. I was surprised at how confident I was at being at the front of the class and hope to improve on my reflections as a teacher as I progress through the program and my career.