

INSTRUCTIONS FOR USING REMOTE LEARNING PROJECTS

These materials were developed with the intention of easing the transition between in-class and temporary remote learning. Learning experiences are aligned with curricular outcomes and assessment tools have been included with each project.

Note:

1. The teacher either sends a link to the appropriate project or sends the document itself.
2. The teacher ensures that parents/caregivers receive any required school supplies (bin with pencils, markers, paper, etc.).
3. The teacher reassures parents/caregivers that communication will be maintained between home and school.
4. Parents/caregivers may access additional resources at:
 - My Learning at Home (www.edu.gov.mb.ca/k12/mylearning)
 - My Child in School (www.edu.gov.mb.ca/k12/mychild/index.html)

PROJECT OVERVIEW

Grade:	8
Main Subject:	Mathematics
Big Idea:	<ul style="list-style-type: none">• Patterns can be represented in a variety of ways• Algebra, with the use of symbols or variables, expressions, and equations, is a tool for generalizing and representing mathematical situations and patterns in our world• Relationships between quantities can be described using rules involving variables
Title:	PLAYING WITH PATTERNS
Strand:	Patterns and Relations
Duration:	1–2 weeks
Materials:	Internet Accessible Device (if available), paper, pencil, non-permanent surface (personal white board), and dry erase markers
Short Description:	This collection of tasks is designed around the concept of patterns and relations as well as using patterns to solve problems. The sections (coloured blocks on Slide 6 of the PowerPoint presentation) represent independent sets of learning experiences that could function effectively as 45 minute to 1 hour sessions with a combination of synchronous and asynchronous parts, some of which are easily adaptable either way depending on your situation and access to technology and connectivity.

LEARNING OUTCOMES

Mathematics: www.edu.gov.mb.ca/k12/cur/essentials/docs/glance_kto9_math.pdf

8.PR.1, 8.PR.2

English Language Arts: www.edu.gov.mb.ca/k12/cur/ela/index.html

ASSESSMENT

LANGUAGE ARTS					MATHEMATICS			SCIENCE			SOCIAL STUDIES		
COMP. Listening & Viewing	COMP. Reading	COMM. Speaking & Represent.	COMM. Writing	Critical Thinking	Knowledge and Understanding	Mental Math & Estimation	Problem Solving	Knowledge and Understanding	Scientific Inquiry Process	Design Process & Problem Solving	Knowledge and Understanding	Research and Communication	Critical Thinking and Citizenship
					X		X						

Original concept created by: T. Scott Dempster and Heather Jones

LEARNING EXPERIENCES AND ASSESSMENT

Overall

Teacher's instructions

This collection of tasks is designed around the concept of patterns and relations as well as using patterns to solve problems. The sections (coloured blocks on Slide 6 of the PowerPoint presentation) represent independent sets of learning experiences that could function effectively as 45 minute to 1 hour sessions with a combination of synchronous and asynchronous parts, some of which are easily adaptable either way depending on your situation and access to technology and connectivity.

Each section provides a different way of engaging with the concept and is divided into three main parts:

1. **Get Ready** begins the experience with an activity meant to activate student thinking and promote rich student discourse. This activity can be delivered prior to the lesson as an asynchronous task so students have time to prepare their thinking. It can also be delivered at the beginning of the synchronous session to help the teacher pre-assess prior knowledge and prime thinking for the upcoming learning experience.
2. **Work It Out** comprises the main learning experience for the day. This is where new content is presented and individual or small-group responses are required. These activities are best completed with students working in pairs or small groups. If your platform allows for breakout rooms, this feature is a good tool that will facilitate student collaboration and discourse.
3. **Look Back** is a final culminating task that provides opportunities to check for student understanding of the concepts, consolidate different solutions, and solve problems. It allows for students to reflect on their learning and make connections.

Step-by-step instructions for students:

These will need to be provided by the teacher in terms of what parts will be student-led and those that will be teacher-led. More detailed instructions for each learning experience are included in the NOTES section under each slide.

APPENDIX (PRINTABLE SUPPORT MATERIALS INCLUDING ASSESSMENT)

Grade 8: Playing with Patterns.pptx

Grade 8: Playing with Patterns Rubric.docx

Playing with Patterns Rubric				
Student:	<i>Basic descriptors to help guide your formative assessments.</i>			
Full details of the student achievement profiles can be found here: Knowledge and Understanding Mental Math and Estimation Problem Solving	Requires considerable ongoing teacher support.	Requires occasional teacher or peer support.	Accurate, clear, and uses appropriate strategies and procedures. Requires occasional prompting for clarification.	Accurate, clear, flexible, consistent, and efficient. Justifies and explains reasoning clearly and completely, using accurate math vocabulary.
	Limited	Basic	Good	Very Good/Excellent
<i>Tracking student data throughout these learning experiences allows the teacher to make an informed assessment about a student's level of achievement of these outcomes.</i>				
Understands that patterns can be represented in a variety of ways				
Represent and describe patterns and relationships using a table of values and a linear relation				
Demonstrates understanding of the connections that exist between visual patterns, tables of values and equations				
Given any representation of a pattern, can produce the other representations (including a graph)				
Describes the relationship between the variables of a graph of a linear relation				
Gathers information from the graph of a linear relation and can represent the pattern in an alternate form				
Determine future terms of a pattern to solve problems				
Applies understanding of patterns to design an appropriate cost structure for the "Shiny New Company" mini-project				

Suggested Codes for daily record keeping purposes:

- I – Knowledge has been demonstrated individually
- H – Used when knowledge has been demonstrated individually, but with help from the teacher or a peer
- G – Used when knowledge has been demonstrated within a group
- X – Used when a question has been attempted but answered incorrectly
- N – Used when a question has not been attempted

Adapted from: Liljedahl, P. (2021). *Building thinking classrooms in mathematics, grades K-12: 14 teaching practices for enhancing learning*. Thousand Oaks, CA: Corwin Press Inc.