

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:	6
Main Subject:	Mathematics
Big Idea:	Probability involves the use of mathematics to describe the level of certainty that an event will occur. Probabilities, both theoretical and experimental, can be determined in different ways.
Title:	PROBABILITY
Strand:	Statistics and Probability
Duration:	Approximately 2–3 weeks
Materials:	Internet Accessible Device (if available), paper, pencil or non-permanent surface (personal white board with dry erase markers), paperclip, coin, plastic/metal spoon counters (bingo chips, buttons, coins, beans), and dice. Links to resources can be found in the notes section. Instructions for the slides can be found below. The slides can also be transferred to Google Slides to offer more interaction. Hands-on manipulatives are ideal as significant learning occurs when students can build and visualize different representations of mathematics. Websites containing virtual manipulatives are suggested. If a specific platform is used for delivering online instruction (i.e., Seesaw, Google Classroom), asynchronous tasks can be uploaded there.
Short Description:	The project is meant as a complete unit covering all the outcomes for Grade 6 in the Manitoba curriculum. The goal was to develop a deeper understanding of probability. The activities are problem-based (such as the context of whether a game is fair or not) and set up as science experiments.

LEARNING OUTCOMES

Kindergarten to Grade 8 Mathematics: Manitoba Curriculum Framework of Outcomes 2013

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

6-SP.4;

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: Gay Sul, Red River Valley School Division with assistance from Miles MacFarlane, Seven Oaks School Division

LEARNING EXPERIENCES AND ASSESSMENT

These slides are meant as a complete unit covering all the outcomes for Grade 6 in the Manitoba curriculum. The goal was to develop a deeper understanding of probability. The activities are **problem-based** (such as the context of whether a game is fair or not) and set up as **science experiments**. (See note at bottom of this page about students recording their work as a science experiment.) They use simple hands-on materials and are suitable for being done at school or at home.



Source of Image: https://cdn.pixabay.com/photo/2013/07/13/13/41/dice-161377_640.png

These slides cover the outcomes in Grade 6 but can be used for introductory activities for other grade levels.

Some other things to note:

- Almost all of the activities can be done independently. (Students sometimes have to take on the role of both Player A and Player B.)
- If these activities are being done online, students can play with a partner and go into a breakout room to do so.
- Gr. 5 is the first time probability is introduced in the curriculum. The outcomes in Gr. 5 are focussed on using the language of probability and then using it when doing experiments.
- Fractions are embedded in the Gr. 5 activities as much as possible. For Gr. 6 and up, the idea of how fractions, decimals and percent are connected is reinforced.
- Consideration was also given to scaffolding concepts.
- As you will see on the chart on the next page, the last activity is meant to be used for assessment.

SUGGESTION about how students record their work:

Each activity has the same 4 parts as a science experiment:

- Problem (Students record the question.)
- Prediction (Students make their prediction.)
- Experiment (Students make the chart, list, etc., that is shown and record their results.)
- Comparing results to prediction (Students make comparisons and give possible suggestions as to why they got those certain results.)



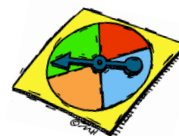
Source of Image: corregir-letra.png (442x328) (orientacionandujar.es)

Students can follow this same format in recording their work for each activity to make it easy and consistent.

Grade 6

Source of Image:
<http://clipart-library.com/clipart/589386.htm>

Here is the outline of what's in the slides:



Slide #	What It's About
2	List of What You'll Learn in this Unit
3	What Is Probability?
4	Why Is It Important?
5	How Is It Different from Other Math Topics?
6	Using A Probability Line
7	Some Vocabulary
8	But How Do You Measure Chance?
9–10	Experimental Probability
11–12	Theoretical Probability
13	How Is Doing Probability Activities Like a Science Experiment?
14	Toy Companies Testing Products
15	Fair/Unfair Games
16	Is This a Fair Game? Spinner Game 1
17	Is This a Fair Game? Spinner Game 2
18	Is This a Fair Game? Hamburgers!
19–21	Sum of 2 Dice Game
22–23	License Plates
24–25	Is This a Fair Game? Drawing Objects from a Bag (Assessment Activity)
26	Probability Bingo info

APPENDIX (PRINTABLE SUPPORT MATERIALS INCLUDING ASSESSMENT)

Grade 6: Probability.pptx
Grade 6: Probability Rubric.docx

Probability Rubric				
Student:	<i>Basic descriptors to help guide your formative assessments.</i>			
Basic descriptors to help guide your formative assessments. Full details of the student achievement profiles can be found here: Mental Math and Estimation Knowledge and Understanding 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>				
6.SP.4. Demonstrate an understanding of probability by <ul style="list-style-type: none"> identifying all possible outcomes of a probability experiment differentiating between experimental and theoretical probability determining the theoretical probability of outcomes in a probability experiment determining the experimental probability of outcomes in a probability experiment comparing experimental results with the theoretical probability for an experiment [C, ME, PS, T]				

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.