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 (<u>www.edu.gov.mb.ca/k12/mylearning</u>)
 - My Child in School (<u>www.edu.gov.mb.ca/k12/mychild/index.html</u>)

PROJECT OVERVIEW						
Grade:	Grade 7, Grade 8					
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					
	Internet Accessible Device (if available), paper, pencil or non-permanent surface (personal white board with dry erase markers), paperclip, coins, plastic/metal spoon and dice. The slides can also be transferred to Google Slides to offer more interaction.					
Materials:	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 Grades 7 and 8 in the Manitoba curriculum. The goal is 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.
	Grade 8 students.
	For Grade 8 learning outcomes, have students identify the various strategies that students use to solve problems. Additional math problems can be found in the <i>Grade 8 Mathematics Support Document for Teachers</i> (<u>BLM 8.SP.2.4</u> and <u>BLM 8.SP.2.5</u> : <u>Probability Problem</u> <u>Practice</u>)

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

7.SP.4, 7.SP.5, 7.SP.6, 8.SP.2

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

LEARNING EXPERIENCES AND ASSESSMENT

Gr. 7/8 (Level 3) Notes About Probability Google Slides

These slides are meant as a complete unit covering all the outcomes for Grades 7 and 8 in the Manitoba curriculum. The goal is 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.



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.
- Consideration was also given to scaffolding concepts.

SUGGESTION about how students record their work:

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

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

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

Grades 7/8 (Level 2)

Here is the outline of what's in the slides for Grades 7 and 8:

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	Probability Can Play a Big Role in Decisions Made in Real Life (audio clip)
7	Probability and Games of Chance in Real Life (video clip)
8	Another Example of Probability: Toy Companies Testing Products (video clip)
9	Using a Probability Line (video clip)
10	How Is Doing Probability Activities Like a Science Experiment?
11	Some Vocabulary
13-15	Experimental Probability (includes video clip)
16-17	Theoretical Probability (includes video clip)
18	More Vocabulary Words
19	Two Things to Help Us (tree diagram and table)
20	Using a Tree Diagram to Find Theoretical Probability (with 2 independent events)
21	Using a Table to Find Theoretical Probability
22	Three Coin Toss
23	Using a Tree Diagram (with 3 independent events) - animated
24-26	Now You Try It Out: Using a Tree Diagram
27-28	Now You Try It Out: Using a Table
29	Is This a Fair Game? Spinner Game 1



Slide #	What It's About
30	A Surprising Thing About Theoretical Probability (video clip)
31	Probability of Something Happening and Not Happening
32	Is This a Fair Game? Spinner Game 2
33	More Probability of Something Happening and Not Happening
34-35	Is This a Fair Game? Two-Dice Game with Sums
36-37	Is This a Fair Game? Two-Dice Game with Products
38-39	Dicey Differences
40	Stick Dice – An Indigenous Game
41	Go TEAM!
42	Spinner Sums A
43	What Happens if All the Spaces on the Spinner Are Not the Same Size?
44	Spinner Sums B
45-46	Spinner Sums Summary and What the Tables Should Look Like
47	Coin and Die Toss (assessment activity)
48	Making a Spinner (assessment activity)
49	Answer to Slide 39 (Dicey Differences)

APPENDIX (PRINTABLE SUPPORT MATERIALS INCLUDING ASSESSMENT)

Grades 7/8: Probability.pptx Grade 7: Probability Rubric.docx Grade 8: Probability Rubric.docx

Probability Rubric—Grade 7						
Student:	Basic descriptors to help guide your formative assessments.					
Basic descriptors to help guide your formative assessments. Full details of the student achievement profiles can be found here: <u>Mental Math and Estimation</u> <u>Knowledge and Understanding</u> <u>Problem Solving</u>	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		
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.						
7.SP.4. Express probabilities as ratios, fractions, and percents. [C, CN, R, T, V]						
7.SP.5. Identify the sample space (where the combined sample space has 36 or fewer elements) for a probability experiment involving two independent events. [C, ME, PS]						
 7.SP.6. Conduct a probability experiment to compare the theoretical probability (determined using a tree diagram, table, or another graphic organizer) and experimental probability of two independent events. [C, PS, R, 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.

Probability Rubric—Grade 8							
Student:	Basic descriptors to help guide your formative assessments.						
Basic descriptors to help guide your formative assessments. Full details of the student achievement profiles can be found here: <u>Mental Math and Estimation</u> <u>Knowledge and Understanding</u> <u>Problem Solving</u>	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			
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.							
8.SP.2. Solve problems involving the probability of independent events. [C, CN, PS, T]							

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