

# Grade 1 - Probability & Data Relationships

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## [Developmental Tracking Sheet](#)

<b>What to look for from the end of <a href="#">Kindergarten</a>:</b>	<b>Diagnostic Thinking Tasks:</b> (sample tasks to uncover students' current understandings)
<ul style="list-style-type: none"><li>• interpret data presented in graphs and draw conclusions</li><li>• respond to and pose questions about data collection and graphs</li></ul>	<ol style="list-style-type: none"><li>1. Draw It - Provide students with a piece of paper divided into 4 boxes (see below list of titles for each box). Read the titles with your students and discuss what they think each might mean. Ask students to draw a picture in each of the 4 boxes. Feel free to differentiate based on your students' needs (e.g., reduce to 2 boxes instead of 4, extend by sitting down with each student to discuss their drawings, etc.).<ul style="list-style-type: none"><li>• Never Happen (impossible)</li><li>• Has to Happen (certain)</li><li>• Might Happen (likely)</li><li>• Might Not Happen (unlikely)</li></ul></li><li>2. MathUP Task - Using the Grade 1 <a href="#">MathUP Probability Diagnostic Assessment Task</a>, ask the 3 questions;<ul style="list-style-type: none"><li>• Tell one thing that you think can <b>never happen</b>.</li><li>• Tell one thing that you think <b>has to happen</b>.</li><li>• Tell one thing that you think <b>might happen but might not happen</b>.</li></ul></li></ol> <p><b>Why these tasks?</b></p> <ul style="list-style-type: none"><li>• tasks can be differentiated by;<ul style="list-style-type: none"><li>○ choosing how many situations you want students to draw (task 1 above)</li><li>○ choosing how much detail you want to orally explore with your students (task 2 above)</li></ul></li><li>• creates an opportunity for the educator to observe:<ul style="list-style-type: none"><li>○ how comfortable students are with probability vocabulary</li><li>○ how accurately students describe events that are impossible, certain, likely, and unlikely</li><li>○ how students compare situations (e.g., impossible vs. certain, likely vs. unlikely)</li><li>○ probability misconceptions</li></ul></li></ul>
<b>Next Steps for Learning:</b> <ul style="list-style-type: none"><li>• Based on what you saw and heard, what is next for you and your students?</li><li>• Does a starting point now stand out more clearly in the grade-level sample problems or MathUP Connections?</li></ul>	

## Resources to Address Grade-Level Expectations

### MathUP Connections

**Note:** To ensure the links below work, first sign into MathUP in a separate tab

- [Probability. Lessons 1-2](#)
- Revisit:
  - [Collecting and Organizing Data. Lessons 1-3](#)
  - [Displaying and Interpreting Data. Lessons 1-3](#)

### Building Fluency Lessons

- **Estimation Connection:** Make connections between probability and estimation by inviting students to offer an estimation that is too high, too low, probable.
- **Events:** Share events (e.g. on cards, one at a time) as a group, sort the event cards into categories (impossible, possible, certain), and have students explain their reasoning.
- Continue to build on previous math talks focused on Number.

### Sample Problems and Explorations

#### [Tier 1 Grade 1 - Probability - Week-at-a-Glance](#)

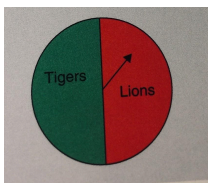
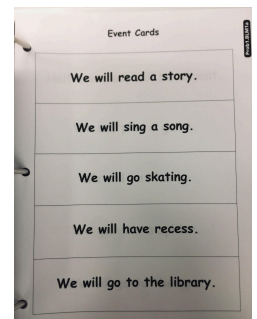
**Calendar Problem** Look at the April calendar. How many sunny days? How many rainy days? Make predictions about another month in this year with the same number of days (i.e., same population). Will there be more, less or the same amount of sunny/rainy days? What's certain, possible, likely, impossible? What makes you say that? Where could we find some information that will help us make an informed prediction?

Display a chart with four columns: certain, likely, unlikely and impossible. Read the headings together and ask the students to explain what they mean. Show the event cards made from Prob1.BLM1a-c. Students will need to predict whether the event written on each card will occur in the classroom during the upcoming week. Read each card aloud, and ask questions, such as

- Do you think this event will occur this week? Why or why not?
- Do you think this event is certain this week, likely, unlikely, or impossible? Why?
- In which column of the chart should we post this card?

Have students glue each card in its appropriate column. Allow students to discuss their differences of opinion. After all events have been glued, discuss the activity using the questions included in the lesson.

(see Guide to Effective Instruction, pg. 85 "[Predictions for the Week](#)")



#### **Science project decisions** (Problem-solving)

Mike cannot decide whether to build his science project around the topic of lions or tigers. How could he use this spinner to help him decide?

(Making Math Meaningful, Marian Small, pg. 548)

#### **Literature Events: Possible or Not Possible?** (Minds On)

Create a table, labelling one column "Impossible" and the other "Possible." Use literature or poems that include either possible or impossible occurrences. Nursery rhymes, such as "Hey, Diddle, Diddle" can be fun for children of all ages as they debate whether something is possible. Record statements of impossible or possible in the appropriate column.

(Elementary and Middle School Mathematics, Van de Walle, Karp, Bay-Williams, McGarvey, pg. 422)

(Minds On)

Ask students to judge various events as certain, impossible, or possible (“might happen”). Consider these examples:

- It will rain tomorrow.
- Drop a rock in water and it will sink.
- Trees will talk to us in the afternoon.
- The sun will rise tomorrow morning.
- Three students will be absent tomorrow.
- George will go to bed before 8:30 tonight.
- You will have two birthdays this year.

(Problem-solving)

Have children describe or make up events that are certain, impossible, or possible. For each event, they should justify their estimate of likelihood. (John A. Van de Walle & LouAnn H. Lovin, *Teaching Student-Centered Mathematics Grades K-3*, pg. 332)

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### Activity 19.1 Concrete Probability Graph (Minds On)

Students sort themselves using probability concepts. All students who are “likely to watch TV after school” stand in one row on a concrete graph, and those who are “unlikely to watch TV after school” stand in another row.

(Making Math Meaningful to Canadian Students)

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[The Snap Cube Problem](#) - Divide 40 snap cubes in 4 colours into 4 bags. Each bag contains a random assortment of colours, but each bag has a population of 10 cubes. Students make predictions about what is certain, likely, impossible, etc. to be in each bag. How do their predictions change as the contents of each bag are revealed?

## Models and Tools

Concrete Learning Resources Tools:

- snap cubes
- counters
- small containers to hold manipulatives (e.g., paper bags)
- coins
- dice
- spinners

Virtual Learning Resources and Tools:

- [colour tiles](#)
- [coin flip](#)
- [dice](#)
- [simple spinner](#)
- [adjustable spinner](#)
- Google calendar

## Expectation Cluster

### D2 describe the likelihood that events will happen, and use that information to make predictions

- D2.1 use mathematical language, including the terms “impossible”, “possible”, and “certain”, to describe the likelihood of events happening, and use that likelihood to make predictions and informed decisions
- D2.2 make and test predictions about the likelihood that the categories in a data set from one population will have the same frequencies in data collected from a different population of the same size

### ★ Connections to Essential Key Concepts ★

**B1 demonstrate an understanding of numbers and make connections to the way numbers are used in everyday life**

- B1.1 read and represent whole numbers up to and including 50, and describe various ways they are used in everyday life
- B1.3 compare and order whole numbers up to and including 50, in various contexts

### ⚙️ Related Mathematical Processes

Problem Solving, Reflecting, Communicating

[Resource List](#) of texts referenced in the preparation of these plans, and available in all WRDSB schools.