

## Grade 3: Patterns & Likelihood of Events

### "Chance"

(From: Mathology)

*In this Mathology Little Book, Cam's day goes from fun to fascinating when she leaves certain decisions to chance. Follow her adventure to see what happens.*

Big Idea	Curriculum expectations
Explore the Likelihood of Different Outcomes  Investigate the Fairness of Games	<b>D2. Probability:</b> describe the likelihood that events will happen, and use that information to make predictions  • <b>Probability: D2.1</b> use mathematical language, including the terms "impossible", "unlikely", "equally likely", "likely", and "certain", to describe the likelihood of events happening, and use that likelihood to make predictions and informed decisions
Learning Goals	Success Criteria
We want students to... <ul style="list-style-type: none"><li>• Make predictions</li><li>• Predict the likelihood of an outcome</li><li>• List possible outcomes</li><li>• Collect and compare data from trials of the same experiment</li><li>• Formulate questions that can be addressed through simple experiments</li></ul>	I can... <ul style="list-style-type: none"><li>• explore the likelihood of different outcomes</li><li>• explore the fairness of games, making suggestions for making an unfair game fair</li><li>• pose questions that can be answered by an experiment</li></ul>

<ul style="list-style-type: none"> <li>• Explain why a game is fair or unfair</li> <li>• Use simple experiments to test the likelihood of an event, and assess and adjust as needed</li> </ul>	<ul style="list-style-type: none"> <li>• consider what should happen, what could happen, and what does happen in games of chance</li> </ul>
Materials	Math Language / Vocabulary
<ul style="list-style-type: none"> <li>• Little Book: Chance</li> <li>• Line Masters</li> </ul>	<ul style="list-style-type: none"> <li>• Results</li> <li>• Outcome</li> <li>• Tally</li> <li>• Count</li> <li>• Spinner</li> <li>• Predict</li> <li>• Fair / Unfair</li> <li>• Chance</li> </ul>
Prior Knowledge	
<p>Students may benefit from prior knowledge and experience with:</p> <ul style="list-style-type: none"> <li>• Making predictions based on a question, context, and data presented.</li> <li>• Listing the possible outcomes of independent events (e.g., tossing coin, rolling number cube, spinning a spinner).</li> <li>• Comparing the likelihood of two events (e.g., more likely, less likely, equally likely).</li> </ul> <p><b>Key concepts</b></p> <ul style="list-style-type: none"> <li>• The likelihood of an event occurring can be represented along a continuum from impossible to certain with benchmarks in between of unlikely, equally likely, and likely.</li> </ul>	

- "Equally likely" is sometimes thought of as an equal chance of events happening, such as rolling a 4 on a die or rolling a 6.
- Understanding likelihood can help with making predictions about future events.

### Note

- Students' ability to make predictions depends on an informal understanding of concepts related to possible outcomes, randomness, and independence of events. (These terms are for teacher reference only; students are not expected to use or define these terms.)
  - Possible outcomes: To make a prediction in a situation of chance, it is necessary to know all possible outcomes. For example, when drawing a cube from a bag containing red, blue, and yellow cubes, a possible outcome is a yellow cube, whereas an impossible outcome is a green cube.
  - Randomness: A random event is not influenced by any factors other than chance. For example, when a regular die is rolled, the result showing any number from 1 to 6 is entirely by chance and each roll has an equal chance of happening.
  - The independence of an event is connected to whether or not the outcome of that event is influenced by another event. For example, if you throw a dice two times, the outcome of the first toss does not impact the second toss.

## Minds On

### Introducing the Book:

Whether you are working with a large group, a small group, or an individual child, the first step is to simply enjoy the story.

To introduce Chance, read the title and discuss the cover. You might ask:

- *What do you think this book will be about?*
- *Think about what you have done today. What kinds of choices did you make when you were getting ready for school? What kinds of choices did you make after you got to school? Did you make a decision or leave things to chance?*

If reading with a small group, invite them to flip through their books, choose a picture, and describe the choice they think the girl is making. If reading with a large group, project a page or spread and invite children to describe the choice they think is being made.

Prompt them to talk about the how the girl will make the choice.

For example, once a page is selected, say:

- *Take a close look at this illustration. What do you see? What is this page about? What choices do you think the girl in the picture will make? How do you think she will choose?*

After some sharing, read the story aloud, encouraging children to discuss the likelihood of each choice occurring.

## Action!

Open the “Try this activity” tab.

### Take a Guess!

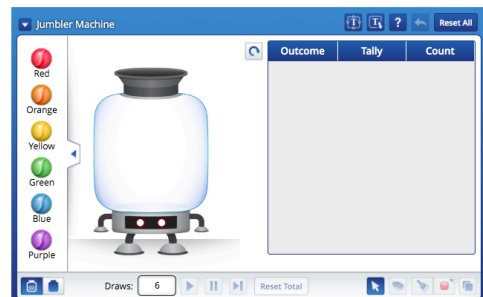
Place a marble of each colour in the machine.

Imagine you run the machine 6 times.  
How many times do you think each colour will get picked?

Click Play/Run to start the machine.  
Did your guess match the results in the table?

Click Reset All and start again!  
Was it different this time?

[Go to the next page.](#)



### Take a Guess!

How many times do you think each number will show?

Click Play/Run to roll the number cube.



(Math Focus: Explore the likelihood of different outcomes)

Page 1:

- Model how to use the math tool by dragging a marble into the Jumbler Machine.
- Tell children that to start the machine, they click Play/Run.
- Encourage children to talk about the results displayed in the Experiment Table.
- Have children click Reset All and start again.
- Ask them how the results are different.
- Prompt children to go to the next page.

Page 2:

- Ask children to guess how many times each number will show up.
- Have children compare their guesses against the results.
- Invite children to click Reset Total and click Play/Run to play again.
- Encourage children to explain how the results are different.

## Consolidation

### After reading, children can

- use the 4-part spinner on the Math Mat to play games of chance
- predict where the spinner will land most often, spin the spinner several times, record the results, and then talk about how the results align (or do not) with their predictions
- create an unfair spinner for a game, experiment with it, and explain why the game is unfair

## Supports for Student Learning

As you share this story, encourage students to...

- make predictions about what will happen to Cam as she uses her spinner, number cube, and coin to help her make choices
- play along with Cam by rolling a number cube, flipping a coin, or spinning a spinner like the one found on the Math Mat (see the inside back cover)
- compare their chance results with those of Cam

## Independent Tasks / Assessment Opportunities

All assessments, in the moment feedback/prompts, and independent tasks can be accessed by logging into your Mathology account. **SEL Self-Assessments** ([English](#)) and [Teacher Rubric](#)

## Extension Activities

*Log in to your Mathology.ca / Mathologie.ca account to access Intervention and Extension activities, Professional Learning Videos, Line Masters, and Assessment tools.*

- Line Master 1: Chance (Assessment Master)
- Line Master 2: Connecting Home and School
- Line Master 3: *Chance* Math Mat
- Line Master 4: Spinner Winner
- Line Master 5: 2-Part Spinner
- Line Master 6: Hair Care Double Dare
- Line Master 7: Odd or Even
- Line Master 8: Use It or Lose It
- Line Master 9: Graphing Grid
- Line Master 10: Chance Problems
- Line Master 11: 10-Part Spinner

## Technology



If you require support logging into your Mathology/Mathologie account, please contact Kerry Stack or Erica Doucet. <https://etr.mathology.ca/>