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| About this Lesson |
| This lesson introduces students to the concept of retail sales tax through a race called HST Derby.  To complete the race, students work in co-operative teams to accurately calculate HST on a variety of purchases. |

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| **Grade Level** | **Course(s)/subject(s)** | **Learning Goal(s)** | **Suggested**  **Timing** |
| **4** | Mathematics, grades 1–8 (2005) | At the end of this lesson, students will:   * demonstrate an understanding of simple multiplicative relationships involving unit rates, through investigation using concrete materials and drawings | 80 minutes |

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| Curriculum Links |
| Mathematics, grades 1–8 (2005)  **Data Management and Probability**   * Predict the frequency of an outcome in a simple probability experiment, explaining their reasoning; conduct the experiment; and compare the result with the prediction * Describe the shape of a set of data across its range of values, using charts, tables and graphs |

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| Inquiry Question |
| What is the likelihood of a particular event, negative or positive, happening to you in life? How could you financially prepare for it? |

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| Materials List |
| * Create Wheel using either technology (e.g., SMART notebook software, Microsoft Excel) or paper – large construction paper sheet/cardstock, smaller sheet, chart paper * Markers * Prior Learning * Prepare Prompts * Basic Knowledge of Probability (e.g., likelihood of an event occurring) * Knowledge of Fractions |

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| Materials List (cont’d.): |
| * Sample Emergency Plan Worksheets (<http://files.consumerfinance.gov/f/201508_cfpb_savings-plan-tool.pdf>) * Math Journals (Site to learn more about math journals: (<http://www.k-5mathteachingresources.com/math-journals.html>) * Wheel of Fate (Example) (Appendix A) * Reflection: The Wheel of Fate (Appendix B) * Wheel of Fate Rough Draft (Appendix C) * Positive and Negative Events Chart (Appendix D) |

| **Timing**  (Mins.) | **Lesson Sequence** | **Assessment for and as Learning Opportunities** (self/peer/teacher) |
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| MINDS ON | | |
| 5–10 minutes | WHOLE CLASS:  Begin with a discussion of how likely certain events are to happen in their life, or in their parents’ lives. Start by discussing a few different events that could happen (e.g., having a flat tire). Each of these events could be associated with a cost that is unexpected, whether positive or negative, such as winning the lottery or having a sudden car repair.  **PAIRS/ SMALL GROUP:**  In small groups of three to four, fill out the Positive and Negative Events Chart (Appendix D) with columns labelled “Positive Events” and “Negative Events.” In each of the columns, students will list events that could affect them. Beside each event, write whether that event is likely or unlikely to occur.  (Examples of possible events: doctor’s bill, car breaking down, tax raise)  **INDIVIDUALLY:** In their math journals, write an individual reflection regarding events that could affect them suddenly, both positively and negatively.  Provide students with prompts such as:   1. Has your family ever experienced a surprise expense? 2. How might a surprise expense affect your family’s day-to-day life? 3. What might be an example of a positive surprise event? |  |
| ACTION | | |
| 50-60 minutes | **WHOLE CLASS:**  Look at the lists that students came up with. Discuss the different events that could have occurred, and whether those events are likely or unlikely, and whether the students from other groups agree with the categorization.  Bring up the concept of creating a probability wheel (see prior knowledge; teach in prior lesson) to represent the likelihood of a certain event happening, such as, “How likely would it be that someone would win the lottery? Would that be a larger or smaller portion of the circle?” “How likely would it be that nothing happens?” | Observations/Anecdotal Notes |
|  | **PAIRS/SMALL GROUP:**  **Creating the Wheel of Fate:**  Place students in groups of five, and create a Wheel of Fate. Use the directions (Appendix A) to introduce the topic. The students must:   1. **Decide on at least eight different events that can unexpectedly affect us in life.** These can be events that negatively affect our finances, how much money we have (e.g., getting a flat tire), or positively affect them (e.g., winning the lottery). 2. **Decide on how big a slice of the wheel the event deserves.** Think of the probability (i.e., how likely) an event is to occur. 3. **Assign a cost to the event.** Using the Internet,  a book, a knowledgeable person or your own judgment, assign a price that someone would pay if the event occurred to them. 4. **Finish the wheel**. Colour the slices and write the names ON the slices. 5. **Finish the reflection.** Each person in your group should finish their own reflection and submit it to the teacher. | Hand in the Reflection: The Wheel of Fate (Appendix B) |
| ACTION (cont’d): | | |
|  | Let the students discuss and investigate together how they want to set up the wheel. Even if they do something that may seem unrealistic (e.g., making half the wheel a lottery win), it can still lead to interesting discussions and reflections of why they think their wheel is or is not representative of the probability of real-life situations. |  |
|  | **INDIVIDUALLY:**  **Reflection Questions:**  In their math journals, as a handout or on an online platform (e.g., blog, class website, Google Classroom), answer the reflection questions (Appendix B).  Review the questions prior to assigning. The questions match the instructions from the assignment. Each student should complete their own copy to be submitted to the teacher before leaving the room.  **Questions:**   1. Were the events you chose for your wheel primarily positive or negative financial events? Why did you decide to choose those events for your wheel? 2. How did you decide how big to make the different slices of the wheel? What effect will that have on someone who spins the wheel? 3. Does the probability or likelihood of someone landing on a particular event match the probability of someone encountering the event in real life? Why or why not? Use a specific event slice to support your answer.   How did you decide on a price for the event? Do you think the price would be equivalent to what people would pay if the event occurred to them in the real world? Why or why not? |  |
| CONSOLIDATION/DEBRIEF | | |
| 5-10 minutes | WHOLE CLASS:  Display the wheels of fate at the front of the room/project wheel of fate of board.  **Discussion Questions:**   1. What are the differences/similarities between the wheels? 2. Why do you think the group chose to make the events and the sizes of the events as they are represented on the wheel? 3. How might you prepare financially for each event? (For example, how much money would you put aside in order to prepare for the possibility of an event happening?) 4. Should you prepare financially for every possible event in life? Why or why not? Use terms like “probability” and “likelihood” to explain.   **PAIRS/SMALL GROUP:**  Go around in groups to each poster with a pen and a sticky note. Put up comments on their wheels, both a positive confirmation and a constructive tip, which you decide with your group members. | Wheel of Fate |
|  | **(Optional Follow-up Activity)**  Create a savings plan dictating approximately what percent of your money should be put aside to prepare for one emergency on the Wheel of Fate. Explain why you chose to prepare for that particular emergency.  (Sample Savings Plan Worksheet)  <http://files.consumerfinance.gov/f/201508_cfpb_savings-plan-tool.pdf> |  |

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| Wheel of Fate (Example) |
| **Wheel of Fate (Sample: Sizes of slices can be changed)**  **Instructions:**   1. **Decide on at least eight different events that can unexpectedly affect us in life.** These can be events that negatively affect our finances, how much money we have (e.g., getting a flat tire), or positively affect them (e.g., winning the lottery). 2. **Decide on how big a slice of the wheel the event deserves.** Think of the probability (i.e., how likely) an event is to occur. 3. **Assign a cost to the event.** Using the Internet, a book, a knowledgeable person or your own judgment, assign a price that someone would pay if the event occurred to them. 4. **Finish the wheel**. Colour the slices and write the names ON the slices. 5. **Finish the reflection.** Each person in your group should finish their own reflection and submit it to the teacher. |

Wheel of Fate

**APPENDIX A**

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| Reflection: The Wheel of Fate |
| **Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Group #: \_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Reflection Questions:**   1. Were the events you chose for your wheel primarily positive or negative financial events? Why did you decide to choose those events for your wheel?   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. How did you decide how big to make the different slices of the wheel? What effect will that have on someone who spins the wheel?   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. Does the probability (i.e., likelihood) of someone landing on a particular event match the probability of someone encountering the event in real life? Why or why not? Use a specific event slice to support your answer.   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. How did you decide on a price for the event? Do you think the price would be equivalent to what people would pay if the event occurred to them in the real world? Why or why not?   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

Wheel of Fate

**APPENDIX B**

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| Wheel of Fate Rough Draft |
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**APPENDIX C**

Wheel of Fate

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| Positive and Negative Events Chart |
| **In pairs or small groups, fill out the chart below in the following two ways:**   * 1. List the names of the events with positive and negative consequences   2. With your partner, determine whether the events are likely, unlikely or somewhat unlikely to occur. Using a 10-point scale (10 being a certainty and 1 being an impossibility), give a number describing the particular event.  |  |  |  |  | | --- | --- | --- | --- | | **Positive Events** | **Probability (Likelihood)** | **Negative Events** | **Probability (Likelihood)** | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |

Wheel of Fate

**APPENDIX D**