

## MDM 4U: Counting Stories Project

You will re-write or create a children's story, fairy tale, nursery rhyme, or song so that it includes probability and counting concepts and principles. The mathematics you introduce in the story must connect to the context of the story, and provide opportunities for decision making on the part of the characters within the story. The mathematics may be complex but try to keep the story simple. The assessment of this assignment will focus on the mathematics within the story line and the integration of narrative and mathematical forms in the story.

### The following criteria will be assessed:

1. At least 12 of the following 19 concepts/principles are used to describe the decisions that the character(s) are asked to make.

• Additive Principle	• Combinations (no order)
• Complementary Events	• Conditional Probability
• Counting Techniques	• Dependent Events
• Events	• Experimental Probability
• Independent Events	• Multiplicative Principle
• Mutually Exclusive Events	• Non-Mutually Exclusive Events
• Outcomes	• Pascal's Triangle
• Permutations (order)	• Sample Space
• Trials	• Theoretical Probability

2. Appropriate organizational tools, e.g., Venn diagram, Charts, Lists, Tree diagrams, are used and illustrated.
3. Diagrams, words, and pictures illustrate the tools and computational strategies used and the choices available to the character(s).

### Feedback on this assignment will include:

- Peer critiques of your story
- A level for each of the criteria in the Counting Stories Rubric

You will read the stories of others during a class gallery walk. Using the critiques developed by the class, each student critiques two of the stories of others, selected by random draw. These critiques provide peer feedback to the author of the story.



# Stories Project Rubric

Name: \_\_\_\_\_

Problem Solving				
Criteria	Level 1	Level 2	Level 3	Level 4
Applying mathematical processes and procedures correctly to solve the problems in the story.	- correctly applies some of the mathematical processes and procedures with major errors	- correctly applies many of the mathematical processes and procedures with some errors	- correctly applies the mathematical processes and procedures with few errors	- correctly applies the mathematical processes and procedures with precision and accuracy
Selecting Tools and Computational Strategies				
Selecting and using tools and strategies to organize the mathematics presented in the story.	- selects and applies the counting organizers (Venn diagram, charts, lists, tree diagrams) with major errors or omissions	- selects and applies the counting organizers (Venn diagram, charts, lists, tree diagrams) with minor errors or omissions	- selects and applies the counting organizers (Venn diagram, charts, lists, tree diagrams) accurately	- selects and applies the most appropriate counting organizers (Venn diagram, charts, lists, tree diagrams) accurately
Connecting				
Connecting the concepts/principles of counting and probability to the story line.	- incorporates permutations, combinations, and probability with weak connections to the story line	- incorporates permutations, combinations, and probability with simple connections to the story line	- incorporates permutations, combinations, and probability with appropriate connections to the story line	- incorporates permutations, combinations, and probability with strong connections to the story line
Representing				
Creating an appropriate variety of mathematical representations within the story.	- few representations are embedded in the story	- some representations are embedded in the story	- an adequate variety of representations are embedded in the story	- an extensive variety of representations are embedded in the story
Communicating				
Using mathematical symbols, labels, units and conventions related to counting and probability correctly across a range of media.	- sometimes uses mathematical symbols, labels, and conventions related to counting and probability correctly within the story	- usually uses mathematical symbols, labels, and conventions related to counting and probability correctly within the story	- consistently uses mathematical symbols, labels, and conventions related to counting and probability correctly within the story	- consistently and meticulously uses mathematical symbols, labels, and conventions related to counting and probability correctly and in novel ways within the story
Integrating narrative and mathematical forms of communication in the story.	- either mathematical or narrative form is present in the story but not both	- both mathematical and narrative forms are present in the story but the forms are not integrated	- both mathematical and narrative forms are present and integrated in the story	- a variety of mathematical and narrative forms are present and integrated in the story and are well chosen