**ML #1: Simple Events (Probability Unit – Math 7 and Math 7 PLUS)**

Vocabulary: Probability Outcome Experimental Probability

 Likelihood Simple Event Theoretical Probability



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| **Part 1: Experimental Probability** | **Part II: Theoretical Probability** |
| **P(event)** =$\frac{\begin{array}{c}\# times an event occurs\\ \end{array}}{total \# of trials}$ | **P(event) =** $\frac{\# of favorable outcomes}{\# of possible outcomes}$ |
| 1E) Sam rolled a number cube 50 times. The number three appeared 10 times. What is the experimental probability? | 1T) A coin is tossed 60 times. 27 times head appeared. Find the experimental probability of getting heads. |
| Comparison statement for 1: |
| 2E) A coin is tossed 60 times. 27 times head appeared. Find the experimental probability of getting heads. | 2T) A coin is tossed into the air. What is the theoretical probability that the coin will land on heads? |
| Comparison statement for 2: |

**Part III: Likelihood**

Probabilities can also be described using the categories below.

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**Part IV: The sum of all possible outcomes is 1.**

 The probability of tossing a coin and getting heads is ½ the probability of tails is ½. SO… ½ + ½ = $\frac{2}{2}$ = 1

Example 1: There are 3 choices of jellybeans – grape, cherry and orange. If the probability of getting a grape jellybean is $\frac{3}{10}$ and the probability of getting cherry is $\frac{1}{5}$, what is the probability of getting orange?

**Part V: Predicting Probabilities**

You can use theoretical probability or experimental probability to determine the chance of an event occurring in multiple trials by using a PROPORTION.

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| **Theoretical Probability Prediction** | **Experimental Probability Prediction** |
| Proportion set-up:$$\frac{\# of favorable outcomes}{\# of possible outcomes}= \frac{}{predictied trials}$$ | Proportion set-up:$\frac{times and event occurs}{total \# of trials}$ **=** $\frac{}{precicted trials}$ |
| Example: How many times should you expect a 4 to occur on a dice if you rolled it 90 times? | Example: Based on the results below, how many times should you expect a 4 to occur on a dice if you rolled it 90 times?

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| Event | 1 | 2 | 3 | 4 | 5 | 6 |
| Frequency | 3 | 6 | 4 | 2 | 2 | 3 |

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**Part VI: Number of Trials of an Experiment**

After completing an experiment with multiple trials set of trials (for example, 10 trials, then 25, then 100), what did you notice?

Practice Page for Probability Unit ML #1 (Math 7 and Math 7+)

**Probability and Likelihood**

* If possible, write a probability to represent each event below.
* Determine the likelihood of each event if possible. You might not be able to have a ratio represent each scenario, but you CAN determine the likelihood of the event using the categories shown on the number line.

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| 1. If you roll a die you will get a number less than 7.
 | 1. If you roll a die you will get an odd number.
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| 1. Jodi has dance class on Tuesday afternoons from 4:00-5:30. How likely is it Jodi will be at the mall on a Tuesday afternoon from 4:00-5:30?
 | 1. A bag has 12 dimes and 12 pennies. How likely is it you will pull a dime from the bag?
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| 1. You must be 15 to obtain a learner’s permit to drive. Emily is 13 years old. How likely is it Emily has a learner’s permit?
 | 1. The club volleyball team is made up of 7 boys and 4 girls. How likely is it that the first player chosen at random will be a girl?
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| 1. Cards numbered 1-8 are in a box. How likely is it that the card you will pull out will be a number greater than 2?
 | 1. Cards numbered 1-8 are in a box. How likely is it that the card you will pull out will be a number less than 4?
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**Finding a Probability Using SUM of 1**

1. You have 3 marbles – green, yellow, and blue. $\frac{2}{3}$ of the marbles are blue, $\frac{1}{6}$ of the marbles are green, what probability of the marbles are yellow?
2. There are 4 color Skittles - yellow, purple, red and orange. If the probability of getting an orange is $\frac{3}{5}$, yellow is $\frac{1}{15}$, and red is $\frac{1}{5}$, what is the probability of getting purple?
3. A spinner has four unequal parts. Lori spun the spinner 20 times. The spinner landed on red 3 times, blue 4 times, yellow 7 times and green 6 times. Using this data, what is the most likely outcome on the next spin?
4. How many times should you draw a heart card from a deck of cards if you draw 100 times?
5. Two hundred twenty-five 7th graders were asked to name their favorite cafeteria lunch. One hundred thirty-five students named pizza as their favorite. If an additional 80 7th graders were asked, how many would be expected to choose pizza?
6. In her last 30 serves, Megan served the ball over the net 18 times. Based on this, how many of the next 50 serves should she expect to go over the net?