Acquisition Lesson Planning Form
Plan for the Concept, Topic, or Skill – Probability Histograms
Key Standards addressed in this Lesson: MM3D1
Time allotted for this Lesson:

Standard: MM3D1. Students will create probability histograms of discrete random variables, using both experimental and theoretical probabilities.
Essential Question: How do you create and interpret a probability histogram?
Activating Strategies: Activating Activity
Acceleration/Previewing: (Key Vocabulary) Discrete variables Histograms Probability Experimental probabilities Theoretical Probabilities
Task: And You Believed That?! Please be Discrete One Way or the Other
Distributed Guided Practice: Worksheet
Extending/Refining Strategies: Please Be Discrete Learning Task
Summarizing Strategies: Journal: How do you create a probability histogram?

Activating Strategy

Probability Histogram – Spinner Example

Let X be a random variable that represent the possible outcomes of a spinner. Make a table and a histogram showing the probability distribution for X.

A Spinner has 10 possible outcomes. It includes one zero, two ones, four twos, two threes, and one four.

- The possible values of X should correspond to the various numbers on the spinner itself (0, 1, 2, 3, and 4).
- The outcomes should correspond to how many time that number appears on the spinner.
- Divide the number of outcomes for X by the total number of outcomes (1+2+4+2+1) to determine the P(X).

X (Spinner Values)					
Outcomes (# of times the value appears on the spinner)					
P(X)					

Next, create a probability histogram using this table. The probability, P(X), should be your dependent variable on the histogram and the Outcomes should be the independent variable on your histogram.

Probability Histogram Worksheet

1) Let X be a random variable that represents the sum when two four – sided dice are rolled. Make a table and a histogram showing the probability distribution for X.

X (sum)							
Outcomes							
P(X)							

2) Use the probability distribution from 1 to answer each question. (a) What is the most likely outcome of rolling two dice? (b) What is the probability that the sum of the two dice is at most 4?

3) Let X be the letter on a letter block randomly chosen from a bag containing 7 blocks labeled "A," 3 blocks labeled "B," 6 blocks labeled "C," and 5 blocks labeled "D." Make a table and a histogram showing the probability distribution X.

4) A couple plan to have three children. There are 8 possible arrangements of girls and boys. For example, GGB means the first two children are girls and the third child is a boy. All 8 arrangements are (approximately) equally likely.
   (a) Write down the 8 arrangements of the sex of the sexes of three children. What is the probability of any one of these arrangements?
   (b) Let X be the number of girls the couple has. What is the probability that X = 2?
   (c) Find the distribution of X. That is, what values can X take, and what are the probabilities for each value?

5) Spell – checking software catches "nonword errors," which results in a string of letters that is not a word, as when "the" typed as "the." When undergraduates are asked to write a 250 – word essay (without spell – checking), the number X of nonword errors has the following distribution

Value of X:	0	1	2	3	4
Probability:	0.1	0.2	0.3	0.3	0.1

   (a) Write the event "at least one nonword error" in terms of X. What is the probability of this event?
   (b) Describe the event $X \leq 2$ in words. What is its probability? What is the probability that $X < 2$?