Teacher(s)	Hawkins, Gravely, Campbell	Subject group and discipline	7th Grade Math		
Unit title	Statistics and Probability	MYP year	2	Unit duration (hrs)	30

Inquiry: Establishing the purpose of the unit

Key concept	Related concept(s)	Global context
Logic	Measurements and Representation	Fairness and Development

Statement of inquiry

Comparing data to create an accurate and logical representation is key to being fair.

Inquiry questions

Factual— What is the probability that a 4 will be rolled on a 6 sided die?

Conceptual— Are the theoretical and experimental probability have to be the same? Why or why not?

Debatable— Given the theoretical probability of 80% of an event occurring guarantee the wanted result?

Objectives	Summative assessment	
Criterion A A.Knowing and Understanding i. select appropriate mathematics when solving problems in both familiar and unfamiliar situations	Outline of summative assessment task(s) including assessment criteria: Criterion A- Statistics Unit Test Covering Random Samples, Statistical Inferences, Measures of Center(Mean, Median,	Relationship between summative assessment task(s) and statement of inquiry: The statistics assessment requires students to complete various calculations to arrive at the correct answer. The students will compare

ii. apply the selected mathematics successfully when solving problems iii. solve problems correctly in a variety of contexts Criterion D D. Applying Math in Real Life Contexts I. identify relevant elements of authentic real-life situations ii. select appropriate mathematical strategies when solving authentic real-life situations iii. apply the selected mathematical strategies successfully to reach a solution iv. explain the degree of accuracy of a solution v. explain whether a solution makes sense in the context of the authentic real-life situation.	IQR and MAD) and Variability to compare data Criterion D- Performance Task (page 361) Each week, Mr. Alvarez picks one student to lead the warm-up session in his gym class. There are 14 girls and 12 boys in the class. Mr. Alvarez writes each student's name on an index card and places the cards in a box. Then he picks a card from the box. Mr. Alvarez wants to find the probability of selection a boy and the probability of selecting a girl on the first week of class. Here is what he wants you to do. ● Describe the sample space ● Find the theoretical probabilities of selecting a girl and of selecting a boy in the first week of class ● Explain how you found these probabilities Mr. Alvarez also wants you to conduct an experiment. ● Use slips of paper and a paper bag. ● Write "G" on 14 slips and "B" on 12 slips to represent the boys and girls in the class	their calculations to the data and draw conclusions and make inference concerning the data. The Performance Task requires students to calculate the experimental and theoretical probabilities and create accurate and logical explanations of their results and expectations.

	● Pick a slip of paper in the bag and record the results. ● Put the slip of paper in the bag, mix up the slips, and pick another. ● Continue until you have recorded 50 selections. ● Calculate the experimental probability of picking a girl's name and of picking a boy's name. Finally, compare the theoretical probabilities with the experimental probabilities. Tell how similar or how different the probabilities are and whether you got the results you expected. What model did you use to record the data for the experiment? Why did you use this model? How might you change the simulation to try to get less difference between the experimental and theoretical probabilities. Explain why.	
Approaches to learning (ATL)		
Thinking skills - Draw reasonable conclusions and generalizations. **Communication skills** - Exchange thoughts, messages, and information effectively through interaction.		

Action: Teaching and learning through inquiry

Content	Learning process
(S) 7.SP.01 Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences. (S) 7.SP.02 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.* (A) 7.SP.03 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the	**Learning experiences and teaching strategies** Review 6th Grade Statistic Vocab and Strategies (1 day) Random Samples (3 days) Statistical Inferences (3 days) Mean and MAD (3 days) Measures of Center and Variability (3 days) Review (2 days) Statistics Assessment (1 day) Probability Concepts (2 days) Experimental Probability (3 days) Probably Models (3 days) Compound Events (3 days) Probability Task (1 day) **Formative assessment** Q & A during whole class sessions Pairing activities Independent work checks. Round Table (3 or 4 students per group) Daily openers

centers by expressing it as a multiple of a measure of variability. *For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.* (A) 7.SP.04 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.* (S) 7.SP.05 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	Tasks **Differentiation** Smaller groups Verbal response pictorial representations Calculators for mean calculations. Quizzes- Students with accommodations will be given multiple choice questions with one answer eliminated and for short answer problem be given a sentence starter. When appropriate, students will be given the equations to use to solve the problem. Summative Assessment - Lower level students will be provided with the formulas. Higher level students will not be given the formula and will have to convert numbers accordingly.

(S) 7.SP.06 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. *For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.* (S) 7.SP.07a Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be* selected. (S) 7.SP.07b Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?*	

(S) 7.SP.08a Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. (S) 7.SP.08b Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event. (S) 7.SP.08c Design and use a simulation to generate frequencies for compound events. *For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?*	
Resources	
Web links, TNReady workbooks, Teacher created worksheets	

Reflection: Considering the planning, process and impact of the inquiry

Prior to teaching the unit	During teaching	After teaching the unit
Before teaching the unit, we reviewed the prerequisite lessons from the 6th grade statistics and probability unit focusing on primarily on vocabulary (mean, median, mode, skewed, population, etc).	Working on mean and median the students would mistakenly interchange the two terms, especially with IQR and MAD. I noticed that the basic adding and division required to complete the MAD was a struggle for many students.	I noticed that the basic adding and division required to complete the MAD was a struggle for many students. Next year I may allow calculators after students have shown mastery of the steps required to complete the skill.