

# IBMYP A2T Unit 8: Probability & Statistics

SOL 5-in-10s will be given daily! BE READY!

DATE	OBJECTIVES	HOMEWORK	GRADE
Thu, Mon, Mar. 28/Apr. 1 DAY 00	Test on Unit 7	Day 00 Preview Homework @.5 Post a Padlet MEME @1 15 Question Quizziz on FCP, P, & C @1.5	— 3
Tue/Wed, April 2/3 DAY 01	Fundamental Counting Principle Permutations & Combinations Modeling Data & Correlation	Day 01 Permutations & Combinations @3 Day 01 Modeling Real Life Data @3	— 6
Thu/Fri, April 4/5 DAY 02	The Normal Distribution	Day 02 Properties of a Normal Distribution @1.5 Day 02 p. 775-76 #2-13 all @1.5	— 3
Mon/Tue, April 8/9 DAY 03	Finding Probabilities using a Normal Distribution & Z-Scores	Day 03 Finding Probabilities <b>Not due until April 22/23</b>	— 3
<b>Due next block: a 40 Question J-Lab to prepare for the Post Assessment</b> <i>This will count as a 40 point minor assessment grade!</i>			
Wed/Thu, April 10/11	<b>Algebra 2 Post Assessment: THIS GRADE WILL COUNT! Look at it as a Practice SOL Test!</b> <i>Make sure you come to class with your <u>charged</u> Chromebook!</i>		
	<b>Friday, April 12 to Sunday April 21 = SPRING BREAK!</b>  <i>Remember: Your final DESMOS Project is due on Tuesday, April 23!</i>		
			
Mon/Tue, April 22/23 DAY 04	Review Unit 8	Day 04 Unit 8 Test Review Worksheet	— 3
Wed/Thu, April 24/25 DAY 05	Test on Unit 8	<b>TOTAL POINTS:</b>	— 18

Learning Targets	Optional Algebra 2 IXLs = 9 point quiz grades	Score
<b>Target 1:</b> I can distinguish between a permutation and a combination and use the Fundamental Counting Principle, permutations, and combinations to find probabilities and solve real life problems	CC.3 Counting Principle	
	CC.4 Combinations and Permutations	
	CC.5 Finding probabilities using combinations and permutations	
<b>Target 2:</b> I can identify properties of a normal distribution, determine probabilities associated with areas under the standard normal curve, calculate standard deviation values and z-scores using a graphing calculator and interpret their meaning, and use a graphing calculator or a standard normal probabilities table to determine probabilities or percentiles in real life contexts.	DD. 11 Find probabilities using the normal distribution I	
	DD.12 Find probabilities using the normal distribution II	
	DD. 13 Find z-values	
<b>Target 3:</b> I can use a graphing calculator to create a scatter plot using real-life data, find its “best fit” regression model (linear, quadratic, exponential), and use the model to make predictions.	EE.8 Analyze a regression line of a data set	

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**UNIT 8 OVERVIEW:**

Students will identify the properties of a normal probability distribution, describe how standard deviation affects the mean, and compare two sets of normally distributed data using standard normal distributions and z-scores. Students will represent probability as area under the curve of a standard normal distribution. Students will use the Fundamental Counting Principle, permutations and combinations to determine the number of possible arrangements or selections of items.

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**BIG IDEAS of this Unit:**

- (The probability an event occurs) + (the probability the event does not occur) = 1
  - Normal Distribution measures the spread of data about the mean. It's mean, median, and mode are all equal. The total area under the curve is equal to 1.
  - Real-life data can be modeled by mathematical patterns/functions: linear, quadratic, rational, logarithmic & exponential.
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**UNIT 8 ENDURING UNDERSTANDINGS:**

1. Mathematical models are generated from investigating real life patterns.
  2. Patterns occur naturally and can be recognized, extended, and generalized with words and symbols.
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**UNIT 8 ESSENTIAL QUESTIONS:**

1. How can data be collected and interpreted so that it is useful to a specific audience?
  2. Why is the collection of data beneficial and where in the real world is it used?
  3. Where and how is probability used in everyday life?
  4. How are statistics used to make predictions?
  5. When is data an example of normal distribution?
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**SOL Objectives (2009):**

- All/T.11** The student will identify properties of a normal distribution and apply those properties to determine probabilities associated with areas under the standard normal curve.
- All/T.12** The student will compute and distinguish between permutations and combinations and use technology for applications.
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**NEW CONCEPTS & SKILLS FOR THIS UNIT****Know & Apply...**

- Mean, median, mode, frequency, normal distribution, standard deviation, z-score, probability, quartile, normal curve - bell curve, percentile, area under a curve, probability density function, discrete vs. continuous data, empirical rule, permutation, combination, and factorial.
- Know how to use the formulas for mean, standard deviation, z-score, Fundamental Counting Principle, permutation, and combination.

**Be able to...**

- Given the mean, standard deviation, and/pr elements of samples or populations of normal distributions... **calculate probabilities** associated with the given elements of the data set with the assist of the graphing calculator.
- Identify the properties of normal distribution and describe how the SD and the mean affect the graph of the ND.
- Compare two sets of normally distributed data using a standard normal distribution and z-scores.
- Represent probability as the area under the curve of a standard normal probability distribution and use the graphing calculator or a standard normal probabilities table to determine probabilities or percentiles based on z-scores.
- Use the Fundamental Counting Principle, permutations and combinations to determine the number of possible arrangements or selections of items.

**PRESKILLS FOR THIS UNIT****Know & Apply...**

- Mean, median, mode, frequency, quartile, percentile, "sigma means to sum the list"

**Be able to...**

- Simplify ANY expression following order of operations!
- Given a set of data, find its measures of central tendency: mean, median and mode... and z-score (Algebra 1)
- Create a scatter plot of a set of data using the graphing calculator
- Calculate the "best fit" line from a set of data using the graphing calculator.