

Finite: Sets

ESTABLISHED GOALS: <u>Competencies:</u> - Students will demonstrate the ability to use mathematics to model real world problems by building and analyzing the appropriate expression, equation, or function. - Students will demonstrate the ability to analyze and summarize text and integrate knowledge to make meaning of discipline-specific materials. - Students will demonstrate the ability to produce coherent and supported writing in order to communicate effectively for a range of discipline-specific tasks, purposes, and audiences. - Students will demonstrate the ability to speak purposefully and effectively by strategically making decisions about content, language use, and discourse style. <u>Content Standards:</u> - MP1 Make sense of problems and persevere in solving the - MP2 Reason abstractly and quantitatively. - MP4 Model with mathematics. - MP5 Use appropriate tools strategically. - MP7 Look for and make use of structure. - MP8 Look for and express regularity in repeated reasoning.	Transfer	
	<i>Students will be able to independently use their learning to make informed decisions by categorizing and connecting information.</i>	
	Meaning	
	ENDURING UNDERSTANDINGS <i>Students will understand that...</i> - set theory provides the necessary tools for determining the set of outcomes for any experiment. - set theory provides the tools for counting the number of elements in a set, which is often more important than knowing what those outcomes are.	ESSENTIAL QUESTIONS Is it possible to study mathematics without considering sets?
	Acquisition	
	<i>Students will know...</i> - the theory of sets is the foundation for most of mathematics. - that it is customary to use the same diagram for both subsets and proper subsets. - that databases use sets. - that spreadsheets can be used to represent Cartesian products. - that once a decision algorithm is established, the additional and multiplication principles can be used to count the number of possible outcomes, <u>vocabulary:</u> set, elements, subset, proper subset, empty set, Venn diagram, union, intersection, logical equivalences, complement, universal set, Cartesian products, cardinality, algorithm, permutation, combination, Boolean searches	<i>Students will be skilled at...</i> - using set symbols. - using roster and set-builder notations. - describing sets of outcomes. - using Venn diagrams to represent set relations. - performing set operations. - finding Cartesian products. - calculating the cardinality of a union of sets. - calculating the cardinality of the intersection of sets. - calculating the cardinality of a complement - calculating the cardinality of a Cartesian product. - using the addition and multiplication principles - performing permutations and combinations.

Content Area Literacy Standards	21st Century Skills
● RST.9-10.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text. ● RST.9-10.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 9-10 texts and topics</i>. ● RST.9-10.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.	● <i>reason effectively</i> ● <i>use systems thinking</i> ● <i>solve problems</i> ● <i>access and evaluate information</i> ● <i>use and manage information</i> ● <i>be self-directed learners</i>

Evaluative Criteria	Assessment Evidence
	PERFORMANCE TASK(S):
	OTHER EVIDENCE:

<i>Summary of Key Learning Events and Instruction</i>		
Science Integration	College, Career, and Civic Life Integration	Technology Integration
District Materials	Distance Learning/Field Trips	Technology Resources