

Matrix: The Valentine Candy Challenge

Student's Name:		Grade Level:		School:	
Analytical Score:				Holistic Score: N A P E	
<input type="checkbox"/> Understanding:		N A P E		Comments or Observations:	
<input type="checkbox"/> Reasoning, Strategies, & Mathematical Procedures:		N A P E			
<input type="checkbox"/> Communication:		N A P E			
APS MATHEMATICS STRAND: Data Analysis, Statistics, and Probability					
GRADE: SIXTH					
Collects data using a variety of appropriate instruments (e.g., surveys, observations, & interviews).		Conducts a more complex data analysis project: <input checked="" type="checkbox"/> identifies a question, <input checked="" type="checkbox"/> develops a hypothesis, <input checked="" type="checkbox"/> collects and records data, <input checked="" type="checkbox"/> represents data using appropriate grade level statistical tools, and <input checked="" type="checkbox"/> describes and interprets data.		Selects and develops appropriate display(s) (e.g., T-charts, graphs) of data.	
Organizes data using appropriate graphical representations (e.g., frequency tables, stem-and-leaf plots).		Draws conclusions from data using measures of central tendency (e.g., mode, median, mean).		Develops and evaluates inferences, predictions, and arguments that are based on data.	
GRADE: SEVENTH					
Applies counting principles to determine sample space (e.g., tree diagrams, fundamental counting principle, combinations, and permutations).		Determines probability of dependent and independent events in experimental and theoretical situations.			
Determines simple probability in experimental and theoretical situations.		Explains and uses appropriate terminology to describe complementary and mutually exclusive events.			

Mathematics Standards Matrix: The Valentine Candy Challenge 6 - 8

APS/RDA/CHF/Third Quarter Supplement/Mathematics Task Bank/February 2002

*Performance Standards are based on the *APS K – 12 Mathematics Content and Performance Standards – Final 2001*

GRADE: EIGHTH				
Interprets relationships between two variables using scatter plots and/or multiple line representations.		Analyzes graphical displays of data for misuse, distortions, or misleading representations.		Conducts a more complex data analysis project: <ul style="list-style-type: none"> ✓ identifies a question, ✓ develops a hypothesis, ✓ collects and records data, ✓ represents data using appropriate grade level statistical tools, ✓ describes and analyzes data, and ✓ analyzes data using measures of central tendency (e.g. mean, median, mode).
Represents data using a variety of statistical tools (e.g., circle graphs, box-and-whisker plots, and Venn diagrams).		Uses data samples to make predictions about larger populations.		Interprets data and makes conclusions from data.
APS MATHEMATICS STRAND: Number Sense and Operations				
GRADE: SIXTH				
Selects an appropriate operation (i.e., +, -, x, ÷) to solve situational story problems.		Orders a mix of fractions, decimals, and percents.		Determines when an exact answer is necessary or when an estimate is appropriate (e.g., medicine dosage vs. number of people at a concert).
Selects and uses the appropriate number form (e.g., fraction, decimal, or percent) in a variety of situations, including measurement in U.S and metric systems.		Describes patterns within and among sets of fractions, decimals, and percents (e.g., if $1/8 = .125$, $2/8 = .250$, what does $7/8=?$).		
Explains the part-whole relationships in division situations (e.g., $1/2 = 1 \div 2$).		Uses the appropriate estimation strategy for a variety of situations.		

GRADE: SEVENTH					
Explains the relationship that can be expressed as ratios of part-to-whole (e.g., 5 red apples out of a total of 8 apples, expressed as 5/8).		Explains relationships that can be expressed as proportions or percents (e.g., $\frac{1}{2} = 50\%$).		Estimates and solves problems involving proportions and justifies the reasonableness of the solution.	
Explains the relationship that can be expressed as part-to-part (e.g., 5 red apples, 3 green apples, expressed as 5/3).		Develops more than one strategy to solve real-life problem situations involving ratios, proportions, and percents.		Creates and writes story problems involving proportions.	
GRADE: EIGHTH					
Categorizes numbers and sets within structures of the real number system (e.g., Natural numbers < rational numbers < real numbers).		Selects appropriate mathematical representations to describe thought-provoking real-life situations.		Develops and evaluates arguments involving real numbers, their patterns and operations.	
Shows flexibility using multiple number representations; identifies relationships involving the subsets of the real number system (e.g., order, least to greatest: $\sqrt{1}$, $\sqrt{2}$, 3, 2).		Manipulates all real numbers, their properties, and operations.		Develops and uses strategies to estimate the results of rational-number computations and judges the reasonableness of the results.	
APS MATHEMATICS STRAND: Patterns, Functions, and Algebraic Concepts					
GRADE: SIXTH					
Predicts sequences and patterns involving varying rates of change (e.g., growth over time).		Analyzes the use of variables to represent quantities (e.g., area of a rectangle: $A = lw$).		Explains that equations are symbolic representations of relationships, patterns, and functions.	
Compares and contrasts models of continuous functions (e.g., plant growth over time) in real-life applications.		Explains how expressions are used to model functions and patterns [e.g., 2, 4, 6, 8 represents $f(x) = 2n$].		Solves one-step equations using the concept of balance when quantities are added, subtracted, or divided to both sides of an equation.	

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GRADE: SEVENTH					
Identifies and uses variable expressions and formulas to solve a variety of real-life situations (e.g., Simple Interest: $I = prt$).		Develops and tests strategies for solving two-step equations.		Recognizes and applies the properties of equality.	
Represents, describes, and analyzes numerical patterns and linear relationships using tables, graphs, words, and standard algebraic notation.		Translates hypotheses into formal methods of solving algebraic equations.			
GRADE: EIGHTH					
Uses graphs to analyze the nature of change in linear relationships.		Identifies and models real-life situations using multiple representations.		Develops and tests strategies for solving multi-step equations.	
Compares and contrasts properties of linear and nonlinear functions.		Simplifies algebraic expressions including rational expressions.		Solves equations for specified variables (e.g., solve for h if $A = bh/2$).	
Represents, describes, and analyzes numerical patterns and relationships using tables, graphs, words, and standard algebraic notation.		Investigates and applies the basic mathematical properties (e.g., commutative, associative, distributive, identity, and zero) in a variety of situations.			
APS MATHEMATICS STRAND: GLOBAL MATHEMATICAL PROCESSES					
GRADE: KINDERGARTEN THROUGH TWELTH					
Develops resourcefulness and perseverance in problem solving in mathematics and other disciplines.		Works in teams to share ideas, to develop and coordinate group approaches to problems, and to communicate findings.		Recognizes and applies mathematics in contexts outside the mathematics course.	
Recognizes when to use previously learned strategies to solve new problems.		Communicates mathematical thinking coherently and clearly to others.		Develops a repertoire of mathematical representation (e.g. pictures, written symbols, oral language, real-world situations, and manipulative models) that can be used purposefully and appropriately interchangeably.	

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Develops and uses strategies (e.g., breaking complex problems into simpler parts) for solving given problems.		Analyzes and evaluates mathematical thinking and strategies of others.		Selects, applies, and translates among mathematical representations to solve problems.	
Monitors, discusses, and reflects on the process of mathematical problem solving.		Relates applications to mathematical language in various modalities.		Uses representations to model and interpret physical, social, and mathematical phenomena.	
Makes and investigates mathematical conjectures and uses them successfully in developing and evaluating mathematical arguments and proofs.		Identifies and connects functions with real-world applications.		Uses manipulatives, calculators, computers, and other tools as appropriate in order to strengthen mathematical thinking, understanding, and power to build upon foundational concepts.	