

INFORMATION MEMORANDUM

DATE: April 2004

TO: MEMBERS, STATE BOARD OF EDUCATION

FROM: Geno Flores, Deputy Superintendent
Assessment and Accountability Branch

SUBJECT: Standardized Testing and Reporting (STAR) Program: Information on formatting change to General Mathematics California Standards Test (CSTs) Public Blueprint to be consistent with the format of all other California Standards Tests in Mathematics Public Blueprints

The State Board of Education (SBE) adopted the Blueprint for the General Mathematics California Standards Test (GMCST) at their September 6, 2001, meeting. At the September 6, 2001, meeting, the California High School Exit Examination (CAHSEE) was used as a template for the adoption discussion because the GMCST was designed to provide diagnostic information for the CAHSEE as well as to be a test of Grade 8 and 9 students' algebra readiness. Because the CAHSEE was used as a template, and the CAHSEE provides the item numbers per standard in its Public Blueprint, the GMCST was originally posted on the Internet with item numbers per standard.

The GMCST is the only CST Public Blueprint within the STAR program that lists item numbers per standard. In order to maintain consistency with the Public Blueprints for all other CSTs in all other subject areas including mathematics, the format of the GMCST was changed to conform with that of the other Public Blueprints within the STAR program.

No costs are incurred by this formatting change to the General Mathematics California Standards Test Public Blueprint. The change is being made in order to be consistent with the other California Standards Tests in Mathematics Public Blueprints GMCST Public Blueprint format consistent with the Public Blueprints for other CSTs in Mathematics.

Attachment 1: STAR program information on formatting change to General Mathematics California Standards Test (CSTs) Public Blueprint to be consistent with the format of all other CSTs in Mathematics Public Blueprints (5 Pages)

GENERAL MATHEMATICS CALIFORNIA STANDARDS TEST

** (Blueprint adopted by SBE 9/6/01 and applies to subsequent California Standards Tests)

CALIFORNIA CONTENT STANDARDS: GRADE 7	Standards Assessed	%
Number Sense Strand	24 items in strand	37%
Standard Set 1.0 Students know the properties of, and compute with, rational numbers expressed in a variety of forms:	14 items in standard set	
1.1 Read, write, and compare rational numbers in scientific notation (positive and negative powers of 10) with approximate numbers using scientific notation.	✓	
1.2* Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.	✓	
1.3 Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.	✓	
1.5* Know that every rational number is either a terminating or repeating decimal and be able to convert terminating decimals into reduced fractions.	✓	
1.6 Calculate the percentage of increases and decreases of a quantity.	✓	
1.7* Solve problems that involve discounts, markups, commissions, and profit and compute simple and compound interest.	✓	
Standard Set 2.0 Students use exponents, powers, and roots and use exponents in working with fractions:	10 items in standard set	
2.1 Understand negative whole-number exponents. Multiply and divide expressions involving exponents with a common base.	✓	
2.2* Add and subtract fractions by using factoring to find common denominators.	✓	
2.3* Multiply, divide, and simplify rational numbers by using exponent rules.	✓	
2.4 Use the inverse relationship between raising to a power and extracting the root of a perfect square integer; for an integer that is not square, determine without a calculator the two integers between which its square root lies and explain why.	✓	
2.5* Understand the meaning of the absolute value of a number; interpret the absolute value as the distance of the number from zero on a number line; and determine the absolute value of real numbers.	✓	

- ✓ Standard assessed on the California Standards Test
- * Key standards (*Mathematics Framework for California Public Schools*) comprise a minimum of 70% of the test
- Embedded Content of standard is embedded within items in other strands
- ** Blueprint formatting revised 2/26/04

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CALIFORNIA CONTENT STANDARDS: GRADE 7	Standards Assessed	%
Algebra and Functions Strand	21 items in strand	32%
Standard Set 1.0 Students express quantitative relationships by using algebraic terminology, expressions, equations, inequalities, and graphs:	9 items in standard set	
1.1 Use variables and appropriate operations to write an expression, an equation, an inequality, or a system of equations or inequalities that represents a verbal description (e.g., three less than a number, half as large as area A).	✓	
1.2 Use the correct order of operations to evaluate algebraic expressions such as $3(2x + 5)^2$.	✓	
1.3* Simplify numerical expressions by applying properties of rational numbers (e.g., identity, inverse, distributive, associative, commutative) and justify the process used.	✓	
1.5 Represent quantitative relationships graphically and interpret the meaning of a specific part of a graph in the situation represented by the graph.	✓	
Standard Set 2.0 Students interpret and evaluate expressions involving integer powers and simple roots:	2 items in standard set	
2.1 Interpret positive whole-number powers as repeated multiplication and negative whole-number powers as repeated division or multiplication by the multiplicative inverse. Simplify and evaluate expressions that include exponents.	✓	
2.2 Multiply and divide monomials; extend the process of taking powers and extracting roots to monomials when the latter results in a monomial with an integer exponent.	✓	
Standard Set 3.0 Students graph and interpret linear and some nonlinear functions:	4 items in standard set	
3.1 Graph functions of the form $y = nx^2$ and $y = nx^3$ and use in solving problems.	✓	
3.3* Graph linear functions, noting that the vertical change (change in y-value) per unit of horizontal change (change in x-value) is always the same and know that the ratio ("rise over run") is called the slope of a graph.	✓	
3.4* Plot the values of quantities whose ratios are always the same (e.g., cost to the number of an item, feet to inches, circumference to diameter of a circle). Fit a line to the plot and understand that the slope of the line equals the quantities.	✓	
Standard Set 4.0* Students solve simple linear equations and inequalities over the rational numbers:	6 items in standard set	
4.1* Solve two-step linear equations and inequalities in one variable over the rational numbers, interpret the solution or solutions in the context from which they arose, and verify the reasonableness of the results.	✓	
4.2* Solve multistep problems involving rate, average speed, distance, and time or a direct variation.	✓	

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CALIFORNIA CONTENT STANDARDS: GRADE 7	Standards Assessed	%
Measurement and Geometry Strand	11 items in strand	17%
Standard Set 1.0 Students choose appropriate units of measure and use ratios to convert within and between measurement systems to solve problems:	4 items in standard set	
1.1 Compare weights, capacities, geometric measures, times, and temperatures within and between measurement systems (e.g., miles per hour and feet per second, cubic inches to cubic centimeters).	✓	
1.2 Construct and read drawings and models made to scale.	✓	
1.3* Use measures expressed as rates (e.g., speed, density) and measures expressed as products (e.g., person-days) to solve problems; check the units of the solutions; and use dimensional analysis to check the reasonableness of the answer.	✓	
Standard Set 2.0 Students compute the perimeter, area, and volume of common geometric objects and use the results to find measures of less common objects. They know how perimeter, area, and volume are affected by changes of scale:	3 items in standard set	
2.1 Use formulas routinely for finding the perimeter and area of basic two-dimensional figures and the surface area and volume of basic three-dimensional figures, including rectangles, parallelograms, trapezoids, squares, triangles, circles, prisms, and cylinders.	✓	
2.2 Estimate and compute the area of more complex or irregular two- and three-dimensional figures by breaking the figures down into more basic geometric objects.	✓	
2.3 Compute the length of the perimeter, the surface area of the faces, and the volume of a three-dimensional object built from rectangular solids. Understand that when the lengths of all dimensions are multiplied by a scale factor, the surface area is multiplied by the square of the scale factor and the volume is multiplied by the cube of the scale factor.	✓	
2.4 Relate the changes in measurement with a change of scale to the units used (e.g., square inches, cubic feet) and to conversions between units (1 square foot = 144 square inches or $[1 \text{ ft}^2] = [144 \text{ in}^2]$, 1 cubic inch is approximately 16.38 cubic centimeters or $[1 \text{ in}^3] = [16.38 \text{ cm}^3]$).	✓	
Standard Set 3.0 Students know the Pythagorean theorem and deepen their understanding of plane and solid geometric shapes by constructing figures that meet given conditions and by identifying attributes of figures:	4 items in standard set	
3.2 Understand and use coordinate graphs to plot simple figures, determine lengths and areas related to them, and determine their image under translations and reflections.	✓	
3.3* Know and understand the Pythagorean theorem and its converse and use it to find the length of the missing side of a right triangle and the lengths of other line segments and, in some situations, empirically verify the Pythagorean theorem by direct measurement.	✓	

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CALIFORNIA CONTENT STANDARDS: GRADE 6	Standards Assessed	%
Statistics, Data Analysis, and Probability Strand	9 items in strand	14%
Standard Set 1.0 Students compute and analyze statistical measurements for data sets:	1 item in standard set	
1.1 Compute the range, mean, median, and mode of data sets.	✓	
Standard Set 2.0 Students use data samples of a population and describe the characteristics and limitations of the samples:	1 item in standard set	
2.5* Identify claims based on statistical data and, in simple cases, evaluate the validity of the claims.	✓	
Standard Set 3.0 Students determine theoretical and experimental probabilities and use these to make predictions about events:	3 items in standard set	
3.1* Represent all possible outcomes for compound events in an organized way (e.g., tables, grids, tree diagrams) and express the theoretical probability of each outcome.	✓	
3.3* Represent probabilities as ratios, proportions, decimals between 0 and 1, and percentages between 0 and 100 and verify that the probabilities computed are reasonable; know that if P is the probability of an event, $1-P$ is the probability of an event not occurring.	✓	
3.5* Understand the difference between independent and dependent events.	✓	
CALIFORNIA CONTENT STANDARDS: GRADE 7		
Standard Set 1.0 Students collect, organize, and represent data sets that have one or more variables and identify relationships among variables within a data set by hand and through the use of an electronic spreadsheet software program:	4 items in standard set	
1.1 Know various forms of display for data sets, including a stem-and-leaf plot or box-and-whisker plot; use the forms to display a single set of data or to compare two sets of data.	✓	
1.2 Represent two numerical variables on a scatterplot and informally describe how the data points are distributed and any apparent relationship that exists between the two variables (e.g., between time spent on homework and grade level).	✓	
1.3* Understand the meaning of, and be able to compute, the minimum, the lower quartile, the median, the upper quartile, and the maximum of a data set.	✓	

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CALIFORNIA CONTENT STANDARDS: GRADE 7	Standards Assessed	%
Mathematical Reasoning Strand	Embedded within items	
Standard Set 1.0 Students make decisions about how to approach problems:		
1.1 Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns.	Embedded	
1.2 Formulate and justify mathematical conjectures based on a general description of the mathematical question or problem posed.	Embedded	
Standard Set 2.0 Students use strategies, skills, and concepts in finding solutions:		
2.1 Use estimation to verify the reasonableness of calculated results.	Embedded	
2.3 Estimate unknown quantities graphically and solve for them by using logical reasoning and arithmetic and algebraic techniques.	Embedded	
2.4 Make and test conjectures by using both inductive and deductive reasoning.	Embedded	
Standard Set 3.0 Students determine a solution is complete and move beyond a particular problem by generalizing to other situations:		
3.1 Evaluate the reasonableness of the solution in the context of the original situation.	Embedded	
3.3 Develop generalizations of the results obtained and the strategies used and apply them to new problem situations.	Embedded	
GENERAL MATHEMATICS TOTAL	65 items	100%

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