

21st Century Item Writing for WESTEST 2 - Mathematics

Check Here	Area	Use on Test
		The focusing lens of the items should be based upon the interpretation of the skill sets of the CSOs. (It is easy to miss the intended skill set of the CSO. An example: The CSO skill set is to interpret relationships, but the item provided was actually measuring the student's ability to compare graphs.)
	Test Format	Set the stage with high interest engaging topics; use graphic organizers, Venn diagrams, graphs, etc. that can be completed in the test booklet. High interest engaging topics may include "Boxapede" type problems. Graphic organizers in math will be suggested so students may use them to solve the problem. For example: complete the Venn diagram to solve probability problems, graph transformational geometry to determine the coordinates of a figure, "matrix" to do vocabulary type problems, like the geometry attributes for various shapes.
	Rigor	Items skill sets MUST match the rigor of the CSO skill sets. Compare and contrast location of figures when transformational geometry is used in the problem. Determine the "best" graph that represents a change over time. Quantifier type problems may be used in all grades.
	Language of 21st Century Skills	Use the types of skill sets found in the CSOs that students are expected to be able to use and apply (Use PISA items as a guide for items to address extrapolation and application). Student is given a graph that represents speed on a race track and must determine the shape of the track that would have produced the graph. Select the appropriate tools to find lengths, weights, capacity, etc. to have appropriate units.
	21st Century Tools	Use Information, Media and ICT (Information, Communication & Technology) Literacy Skills to develop item stems, answers, and scenarios. For example, you can build your items using: <ul style="list-style-type: none"> ▪ appropriate technology tools/scenarios (Calculators) ▪ Information and communication technologies (Spreadsheets embedded in the problems) ▪ Examples of ways to access, manage, integrate and evaluate information. (Data from websites to make graphs, analyze data, newspaper ads, income tax forms) ▪ Scenarios that might include audio, video, and other media and multimedia and digital tools. (Camera shots to use in scale drawing problems, shadows for proportionality problems) ▪ Item stems, answers, and scenarios that might include electronic probes, iPods, electronic white boards, etc. (Scenario of a student doing a particular presentation using white boards for example, a scale drawing to show understanding of proportion.) ▪ Snap shots, graphics, and resources with access to online learning communities and resources. Use examples from various websites incorporated into the problems, example

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		New York Times
	Real World Application	Frame language in item to real life experiences and applications in the 21 st Century. Use examples, applications and settings from students' lives, communities and modern workplaces to frame items. (Make the problems relevant to the students by including things important to them, such as, sports, music, puzzles, racing, vacations, clothes, volunteer work and community service that involve the students.)
	Critical Thinking	The clear, precise and purposeful use of higher order thinking skills and strategies to include extrapolation and application. (Include problems which involve the students to demonstrate more than just selecting an answer, such as, completing a graphic organizer, diagram, construction, transformation.)
	Problem Solving	Identify a problem, evaluate options, propose solutions and evaluate results. Problem solving items built upon the context of the grade level CSOs that align to thinking skills in the objectives. (Student is presented a scenario that requires them to choose the correct operation to solve the problem, solve the problem and then use estimation to determine the reasonableness of the answer.)
	When writing items the areas below are to be used to provide context, formats and scenarios, when appropriate, to the specific content of the CSOs. Please note, Policy 2520.14 will not be part of an alignment study, but certainly these are rich tools and skills to utilize in the manner defined above.	
	Information and Media Literacy	How modern media combines sound, image and text to communicate meaning. (Graphics and text are both essential parts of the problem.)
	Visual Literacy	Use images to communicate a message. (Use newspaper and magazine ads to solve problems, such as, discounts.)
	Communication Skills	Convey messages across cultures and media. (Use different currencies in business problems, planning budgets, architectural designs in scale drawings and puzzles from different cultures.)
	Systems Thinking	Recognize patterns. Understand how parts interact and how they form a whole system. (Input-output tables, different designs when tessellating, linear and quadratic equations result from patterns.)
	Adaptability	Ability to adapt to changing situations and environments while keeping in mind time constraints, budgets etc. (Using different scenarios budget type problems, spending, tax problems with different incomes and situations.)
	Ethical Behavior	Act with integrity. (Tax returns with scenario that does not claim acceptable deductions.)

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	Social/Personal Accountability	Accepting responsibility for one's own behavior. Understanding common good. (Budgets: personal, community, state, national and businesses.)
	Project planning and development	Organize work (projects) and achieve goals. (Using CSOs that have project-based expectations embed the problem with development issues from the projects and expected goals for these projects.)
	Global Awareness	Learning from and working with people from diverse cultures, religions and lifestyles. To include "green" environmental issues. (Embed diverse cultures and lifestyles into problems, such as, architectural design to complete scale drawings, budget plans for students in other countries, landscape designs using area requirements: urban vs. rural.)
	Financial, Economic and Business Literacy	Understanding business, economics and finance (personal too). (Choose items to purchase when given a set amount of money to spend. Use graphs from business data to analyze and solve problem situations or make the graph from the data and then answer a set of questions.)
	Civic Literacy	Understanding one's role in government and how government affects our lives. (Economic issues, budgets, taxes.)
	Health and Wellness Literacy	Understanding healthy lifestyles and their benefits. (Use data from medical reports to answer questions. May analyze data from physical activities, such as, sports, exercise, etc. to solve problems. When doing problems that have food mentioned, use healthy type foods or compare and contrast healthy and non-healthy foods.)