

Spring 2015 CWRA+ Results

Institutional Report

Sample High School



cwra +

## EXECUTIVE SUMMARY

CWRA+ has two primary uses. The first use—helping institutions estimate their contributions to the development of students' higher-order thinking skills—is achieved through growth estimates, as well as overall evidence of students' competency in critical-thinking and written communication. The second use highlights these skills for individual students; CWRA+ results provide a valuable tool for potential colleges and employers to ascertain the depth of a student's critical-thinking and written-communication skills, should a student choose to share his or her results during the college or job application process.

CWRA+ results are a powerful tool for assessing students' critical-thinking and written communication skills, measuring growth on these skills, and determining how your institution compares to other high schools using CWRA+.

Sample High School has a freshman Total CWRA+ score of **972**; this score is greater than or equal to the average freshman score at **41%** of CWRA+ schools. A score of 972 demonstrates Basic mastery of the critical-thinking and written-communication skills measured by CWRA+.

Sample High School's senior Total CWRA+ score is **1110**, which is better than or equal to the average senior score at **63%** of CWRA+ schools. A score of 1110 signifies **Accomplished mastery** of the skills measured by CWRA+.

Given the mean CWRA+ performance of Sample High School's freshmen and the mean performance of its seniors, Sample High School's students exhibit growth **near** the amount of growth seen at the median CWRA+ high school.

In addition to the information provided here, key metrics contained in this report include Mastery Levels, subscores, growth estimates, and percentile rankings:

### Mastery Levels

CWRA+ Mastery Levels allow distinctions in student performance relative to students' proficiency in critical thinking and written communication. These levels contextualize CWRA+ scores by interpreting test results in relation to the qualities exhibited by examinees. Each Mastery Level—Below Basic, Basic, Proficient, Accomplished, and Advanced—corresponds to specific evidence of critical-thinking and written-communication skills.

### CWRA+ Subscores

In addition to total scores, there are six subscores reported across CWRA+. The Performance Task—an essay-based section of the exam—is scored in three skill areas: Analysis and Problem Solving, Writing Effectiveness, and Writing Mechanics. Students receive criterion-referenced subscores for each skill category based on key characteristics of their written responses. Selected-Response Questions are also scored in three areas: Scientific and Quantitative Reasoning, Critical Reading and Evaluation, and Critique an Argument. These subscores are scored based on the number of correct responses that students provide.

### Growth Estimates

The institutional report contains growth estimates, which are presented in the form of effect sizes. Effect sizes characterize the amount of growth shown across classes, and are reported in standard deviation units. (Standard deviation is a measure of the distance between the mean, or average, and all other values in a score set.) Effect sizes are calculated by subtracting the mean scores of the freshmen from the mean scores of each subsequent class and dividing these amounts by the standard deviation of the freshman scores.

### Percentile Rankings

Percentile rankings allow for normative interpretations of your students' performance. These rankings are provided for your students' CWRA+ scores and indicate how well your institution performed relative to other CWRA+ schools. Percentile rankings indicate the percentage of CWRA+ institutions whose scores are equal to or less than your own.

Please see Sections 1–5 for a full set of institutional results.

In addition to your institutional results, your CWRA+ institutional report includes a wide variety of information related to the measurement of higher-order thinking skills. Each section and appendix builds on the next to provide you with a full appreciation of how CWRA+ can support the educational mission at your school. The CWRA+ institutional report's appendices include information to help you learn about CWRA+ measurement, understand relevant statistical concepts, interpret your school's data, examine your performance in relation to performance at other CWRA+ schools, and use CWRA+ data to enhance student learning at your school.

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## SECTION 1: SUMMARY RESULTS, BY CLASS

## Number of Students Tested, by Class

Freshmen:	102	Sophomores:	101	Juniors:	103	Seniors:	101
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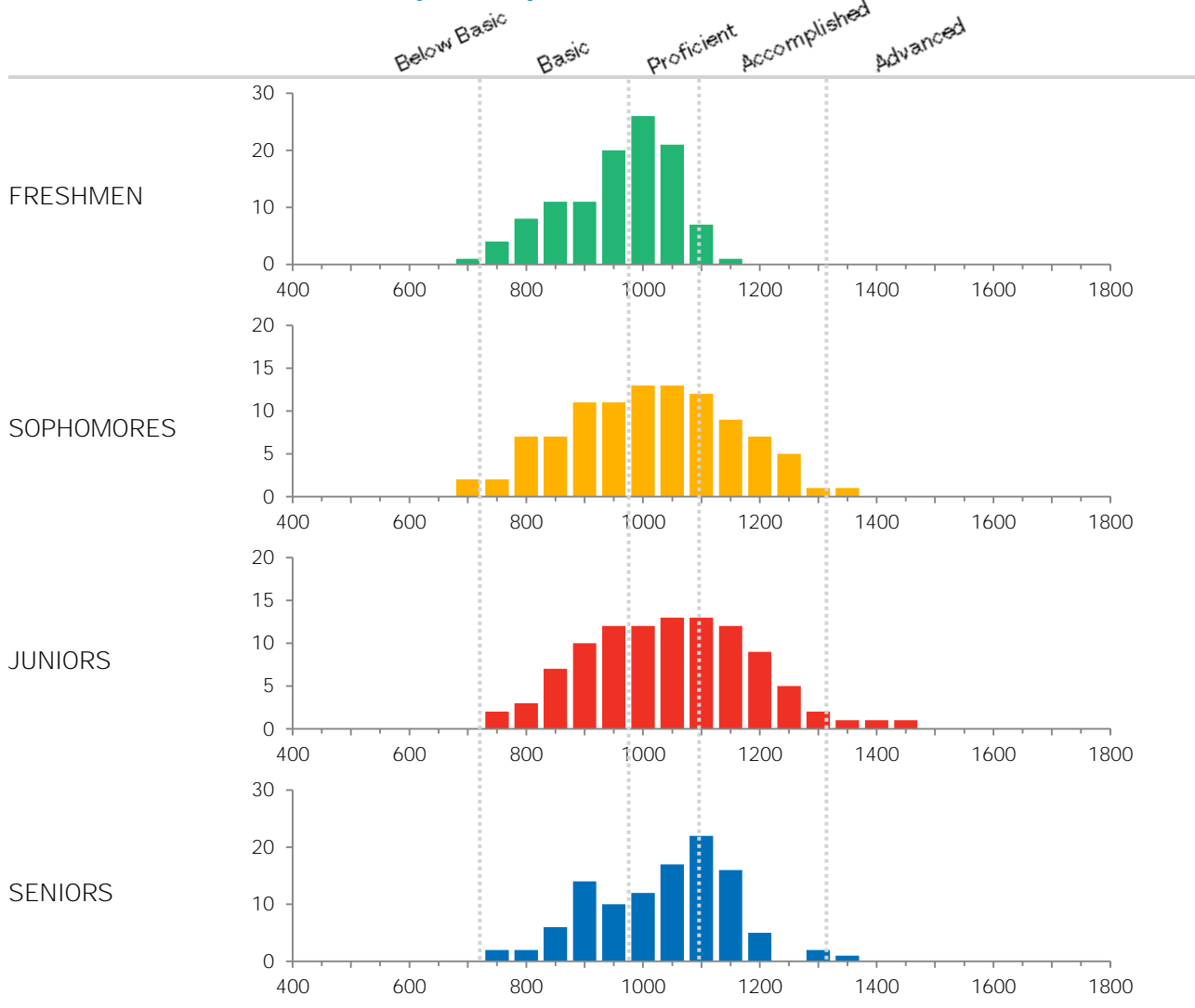
## Summary CWRA+ Results, by Class

		MEAN SCORE	STANDARD DEVIATION	25 <sup>TH</sup> PERCENTILE SCORE	75 <sup>TH</sup> PERCENTILE SCORE	MEAN SCORE PERCENTILE RANK	EFFECT SIZE V. FRESHMEN
TOTAL CWRA+ SCORE	Freshmen	972	164	841	1103	41	--
	Sophomores	1038	142	935	1133	N/A	0.40
	Juniors	1072	141	965	1165	N/A	0.61
	Seniors	1110	143	999	1194	63	0.84
PERFORMANCE TASK	Freshmen	964	196	833	1123	37	--
	Sophomores	1046	166	924	1178	N/A	0.42
	Juniors	1066	169	968	1198	N/A	0.52
	Seniors	1102	181	979	1198	55	0.70
SELECTED- RESPONSE QUESTIONS	Freshmen	980	187	828	1114	43	--
	Sophomores	1030	173	906	1150	N/A	0.27
	Juniors	1077	177	944	1183	N/A	0.52
	Seniors	1117	176	993	1271	70	0.73

Sample High School has a senior Total CWRA+ score of **1110** and percentile rank of **63**. The corresponding Mastery Level for this score is **Accomplished**.

SECTION 2: DISTRIBUTION OF MASTERY LEVELS

Distribution of CWRA+ Scores, by Mastery Level

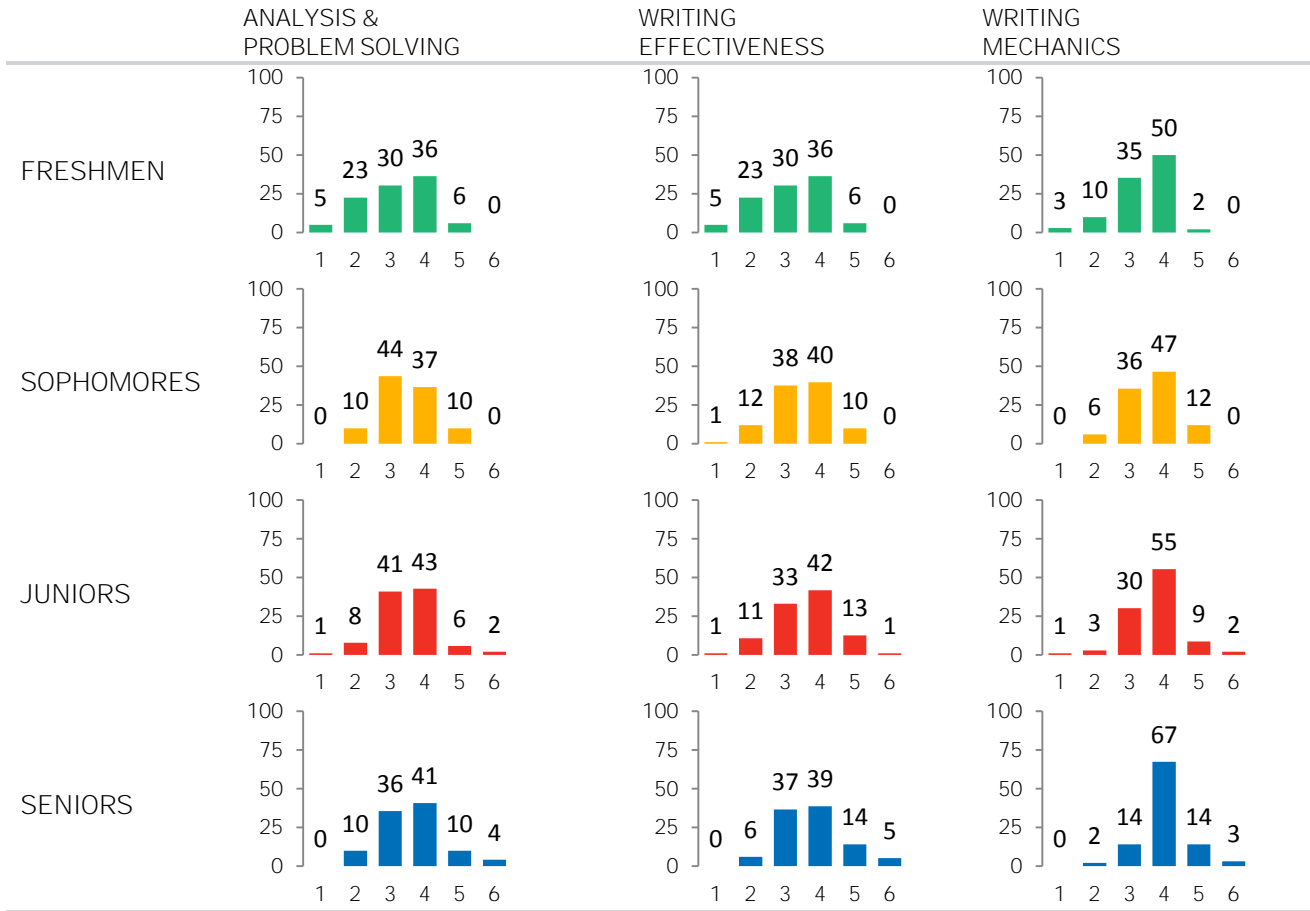


Mastery Levels, by Class

	MEAN TOTAL CWRA+ SCORE	MEAN MASTERY LEVEL	PERCENT BELOW BASIC	PERCENT BASIC	PERCENT PROFICIENT	PERCENT ACCOMPLISHED	PERCENT ADVANCED
Freshmen	972	Basic	5	45	24	26	0
Sophomores	1038	Proficient	1	34	31	34	1
Juniors	1072	Proficient	0	25	32	38	5
Seniors	1110	Accomplished	0	21	26	46	8

SECTION 3: CWRA+ SUBSCORES

Performance Task: Distribution of Subscores (in percentages)



NOTE: The Performance Task subscore categories are scored on a scale of 1 through 6.

Selected-Response Questions: Mean Subscores

	SCIENTIFIC & QUANTITATIVE REASONING			CRITICAL READING & EVALUATION			CRITIQUE AN ARGUMENT		
	Mean Score	25 <sup>th</sup> Percentile Score	75 <sup>th</sup> Percentile Score	Mean Score	25 <sup>th</sup> Percentile Score	75 <sup>th</sup> Percentile Score	Mean Score	25 <sup>th</sup> Percentile Score	75 <sup>th</sup> Percentile Score
FRESHMEN	475	420	535	469	369	558	485	388	528
SOPHOMORES	497	420	593	496	422	583	492	388	559
JUNIORS	508	420	593	531	458	608	498	388	589
SENIORS	542	477	601	527	465	608	524	456	598

NOTE: The selected-response section subscores are reported on a scale ranging approximately from 200 to 800.

## SECTION 4: STUDENT EFFORT AND ENGAGEMENT

## Student Effort and Engagement Survey Responses

*How much effort did you put into the written-response task/ selected-response questions?*

		NO EFFORT AT ALL	A LITTLE EFFORT	A MODERATE AMOUNT OF EFFORT	A LOT OF EFFORT	MY BEST EFFORT
PERFORMANCE TASK	Freshmen	0%	2%	22%	40%	36%
	Sophomores	0%	6%	23%	46%	26%
	Juniors	0%	3%	27%	33%	37%
	Seniors	0%	6%	43%	37%	19%
SELECTED-RESPONSE QUESTIONS	Freshmen	0%	9%	39%	34%	18%
	Sophomores	1%	9%	41%	34%	16%
	Juniors	1%	10%	44%	29%	17%
	Seniors	3%	14%	44%	32%	8%

*How engaging did you find the written-response task/ selected-response questions?*

		NOT AT ALL ENGAGING	SLIGHTLY ENGAGING	MODERATELY ENGAGING	VERY ENGAGING	EXTREMELY ENGAGING
PERFORMANCE TASK	Freshmen	4%	11%	42%	34%	9%
	Sophomores	6%	18%	42%	29%	6%
	Juniors	6%	21%	38%	29%	6%
	Seniors	8%	25%	37%	25%	6%
SELECTED-RESPONSE QUESTIONS	Freshmen	7%	26%	33%	26%	9%
	Sophomores	8%	26%	35%	23%	9%
	Juniors	11%	23%	32%	22%	12%
	Seniors	12%	23%	35%	24%	7%



## SECTION 5: STUDENT SAMPLE SUMMARY

## Student Sample Summary

DEMOGRAPHIC CHARACTERISTIC		FRESHMEN		SOPHOMORES		JUNIORS		SENIORS	
		N	%	N	%	N	%	N	%
TRANSFER	Transfer Students	--	--	9	9%	8	8%	7	7%
	Non-Transfer Students	--	--	92	91%	95	92%	94	93%
GENDER	Male	54	53%	56	55%	53	52%	53	53%
	Female	48	47%	41	41%	50	49%	47	47%
	Decline to State	0	0%	4	4%	0	0%	1	1%
PRIMARY LANGUAGE	English	91	89%	92	91%	95	92%	89	88%
	Other	11	11%	9	9%	8	8%	12	11%
RACE/ ETHNICITY	American Indian / Alaska Native / Indigenous	3	3%	0	0%	1	1%	0	0%
	Asian (including Indian subcontinent and Philippines)	14	14%	10	10%	11	11%	14	14%
	Native Hawaiian or other Pacific Islander	1	1%	0	0%	1	1%	1	1%
	African-American / Black (including African and Caribbean), non-Hispanic	10	10%	14	14%	15	15%	12	12%
	Hispanic or Latino	8	8%	8	8%	4	4%	9	9%
	White (including Middle Eastern), non-Hispanic	58	57%	64	63%	55	53%	55	55%
	Other	4	4%	2	2%	10	10%	4	4%
	Decline to State	4	4%	3	3%	6	6%	5	5%
PARENT EDUCATION	Less than High School	2	2%	2	2%	2	2%	3	3%
	High School	12	12%	10	10%	11	11%	10	10%
	Some College	15	15%	17	17%	17	17%	12	12%
	<b>Bachelor's Degree</b>	28	28%	25	25%	31	30%	29	29%
	Graduate or Post-Graduate Degree	43	42%	46	46%	41	40%	47	47%
	Don't Know / N/A	2	2%	1	1%	1	1%	0	0%

## APPENDIX A: INTRODUCTION TO CWRA+

### INTRODUCTION TO CWRA+

The College and Work Readiness Assessment (CWRA) was launched in 2006 as an offshoot of the Collegiate Learning Assessment (CLA), a major initiative of the Council for Aid to Education (CAE). Since then, the CLA and the CWRA have offered institutions a value-added approach to the measurement of higher-order thinking skills. The carefully designed questions in these examinations require students to analyze, evaluate, and synthesize information as they demonstrate their ability to think critically and solve problems. Hundreds of institutions and hundreds of thousands of students have participated in both testing programs to date.

Initially, CAE's assessments focused on helping institutions estimate their contributions to the development of students' higher-order thinking skills. As such, the institution rather than the student was the primary unit of analysis. In 2013, CAE expanded this scope with the introduction of CLA+ and CWRA+. The enhanced versions of these examinations provide useful and reliable information about educational growth at the student level as well as the institutional level. Other features new to both examinations include subscores for scientific and quantitative reasoning, critical reading and evaluation, and critiquing an argument. The addition of mastery levels also supports the reporting of criterion-referenced results in relation to skill proficiency.

CWRA+ includes two major components: a Performance Task (PT) and a series of Selected-Response Questions (SRQs).

The Performance Task presents students with a real-world situation that requires a purposeful written response. Students are asked to address an issue, propose the solution to a problem, or recommend a course of action to resolve a conflict. They are instructed to support their responses by utilizing information provided in a Document Library. This repository contains a variety of reference materials, such as technical reports, data tables, newspaper articles, office memoranda, and emails. A full PT includes four to nine documents in the library. Students have 60 minutes to complete this constructed-response task.

In the second part of the examination, students are asked to answer 25 Selected-Response Questions. Ten questions measure scientific and quantitative reasoning, and ten measure critical reading and evaluation. Another five questions call for students to critique arguments by identifying logical flaws and questionable assumptions. Like the PT, the 25 SRQs are document-based and require students to draw information from provided materials. Students have 30 minutes to complete this section of the assessment.

CWRA+ is a powerful assessment tool created to help teachers and students meet their educational objectives. The examination supports programmatic change, particularly in regard to higher-order thinking skills. It shows faculty members, school administrators, and other interested individuals the skill areas requiring attention on an institutional level to strengthen instruction and maximize learning. CWRA+ also provides students with direct, formative feedback they can use to evaluate and reflect on their development on a personal level.

Educators may decide to consult their students' CWRA+ results when making individualized decisions related to admission, placement, scholarships, or grading. Institutions may also wish to use CWRA+ results to provide independent corroboration of competency-based learning, or to recognize students who have exhibited the higher-order thinking skills required for success in twenty-first century careers. Students may choose to share their results with potential colleges as well to provide evidence of the skills they have acquired at their high school. A single test cannot serve as the benchmark for all student learning, but there are certain skill areas deemed important by most educators across virtually all institutions. The higher-order thinking skills that CWRA+ measures fall into this crucial category.

CWRA+ allows institutions to benefit from a model of continuous improvement that positions educators as central actors in the relationship between assessment, instruction, and the learning process. Significantly, it provides educators with a frame of reference for determining the status of skill achievement within their institutions as well as the progress their students have made relative to the development of students at other high schools. That

said, CWRA+ does not rank institutions; rather, it highlights differences between them that can identify opportunities for educational improvements. Similarly, CWRA+ does not rank students but instead highlights areas where individuals excel or may need

to focus more effort. CWRA+ is an instrument designed to make a meaningful contribution to the improvement of teaching and learning. In this respect, it is in a league of its own.

## APPENDIX B: METHODS

### CWRA+ METHODOLOGY

CWRA+ uses innovative questions and tasks to evaluate students' higher-order thinking skills. Each test form includes one Performance Task (PT) and 25 Selected-Response Questions (SRQs). The PT section measures three domains: analysis and problem solving, writing effectiveness, and writing mechanics. The SRQ section measures three domains as well: scientific and quantitative reasoning, critical reading and evaluation, and critique an argument, which involves the identification of logical flaws and questionable assumptions. Students have 90 minutes to complete the two sections of the assessment—60 minutes for the PT and 30 minutes for the SRQs.

CWRA+ test results are delivered to institutions after administration windows have closed. Your institutional report presents scoring information for each section of the examination as well as total CWRA+ performance for freshmen testing in the fall window and sophomores, juniors, and seniors testing in the spring window. The report includes analyses of the PT score, the SRQ score, and the Total CWRA+ score.

PT and SRQ scores indicate the mean, or average, performance of all students who completed each section. PT mean scores are calculated by adding three raw subscores—for analysis and problem solving, writing effectiveness, and writing mechanics—and converting the sum using a common scale. SRQ mean scores are also calculated by adding three raw subscores—for scientific and quantitative reasoning, critical reading and evaluation, and critique an argument—and converting this sum to a common scale. Total CWRA+ scores are then calculated by averaging the PT and SRQ mean scores. For more information about the scaling process, please see Appendix K, *Scaling Procedures*.

In addition to mean scores, your report includes 25<sup>th</sup> and 75<sup>th</sup> percentile scores, which characterize the score values earned by 25% and 75% of your students, respectively. For example, a 25<sup>th</sup> percentile

score of 974 for the total CWRA+ would inform you that 25% of your students earned 974 or less. Similarly, a 75<sup>th</sup> percentile score of 1096 would let you know that 75% of your students earned 1096 or less. The values that fall between the 25<sup>th</sup> and 75<sup>th</sup> percentile scores thus tell you the score values earned by 50% of your students. To extend the previous example, the 25<sup>th</sup> and 75<sup>th</sup> percentile scores reported would let you know that 50% of your students earned Total CWRA+ scores between 974 and 1096.

Your report may also include percentile rankings of your mean scores. These values let you know the percentage of institutions whose mean scores were lower than yours. Comparative in nature, these statistics are calculated based on the institutions testing within your administration window. Percentile rankings may thus not always be available, as they depend on the characteristics of the institutional sample.

Finally, the institutional report contains growth estimates for the students in your school who took CWRA+. Effect sizes characterize the amount of growth evident across classes. They do so by relating the performance of the freshman class to that of the sophomore, junior, and senior classes. Please note that these statistics are available based on your students' participation in CWRA+ testing by class. They do not take into account the performance of students at other institutions.

Effect sizes are calculated by subtracting the mean scores of the freshmen from the mean scores of each subsequent class and dividing these amounts by the standard deviation of the freshmen scores. (Standard deviation is a measure of the distance between the mean, or average, and all other values in a score set.) Effect sizes are reported in standard deviation units. By comparing effect sizes, you can gauge student growth over time and begin to analyze patterns of teaching and learning at your institution.

## APPENDIX C: EXPLANATION OF YOUR RESULTS

This appendix provides guidance on interpreting the institutional results presented in sections 1–5 of your report. The sample of students analyzed in each table include freshmen who tested in the fall window and sophomores, juniors, and seniors who tested in the spring window. To ensure that the results in your report are based on a consistent sample, your students must act as follows:

1. Take CWRA+ within the administration window specified for their class level.
2. Complete all sections of the assessment, including the Performance Task (PT), Selected-Response Questions (SRQs), and the accompanying survey.

Please note that students designated for exclusion from analyses by your institution during registrar data submission will not be included in the sample.

The results discussed in this appendix include percentile rankings, which relate performance in your school to performance at other CWRA+ high

schools. To see cross-institutional summary data, please refer to Appendix D, *Results Across CWRA+ Institutions*. For a complete list of all CWRA+ institutions, consult Appendix F, *Institutional Sample*.

Appendix E, *Results Across CLA+ Institutions Testing Freshmen*, presents statistics similar to the ones in Appendix D, but for colleges and universities testing freshmen in fall 2013. The data in Appendix E can help you make comparisons between the performance of your graduating seniors and that of freshmen entering college. When reviewed in tandem with Mastery Levels (discussed in Appendix I), this information can provide high schools with insight into the extent of their students' college readiness. Please note that, while CWRA+ contains unique PTs and SRQs written to the high school level, some PTs and SRQs appear on both CWRA+ and CLA+. Shared items allow both assessments to use a common scale and facilitate these types of comparisons.

### SUMMARY RESULTS, BY CLASS (Section 1, page 2)

The first table in Section 1 of this report is titled [Number of Students Tested, by Class](#). This table specifies the number of freshmen who tested in the fall window and the number of sophomores, juniors, and seniors who tested in the spring window of the academic year. Your sample size is based on these numbers and used when calculating results in all subsequent tables and figures of the report. Please note that very small samples (e.g., fewer than 100 students for any given class) should be interpreted with caution, as smaller sample sizes are less likely to provide reliable or representative results.

The next table, [Summary CWRA+ Results, by Class](#), presents a statistical overview of the students in your sample. It provides mean scores, quartiles, percentile ranks, and effect sizes for each class level tested. These results pertain to the test as a whole as well as to each section. Please note that any class level not tested, or for which results are not applicable, is designated as “N/A” in this table and others throughout your report.

The Mean Score column lists the average scores for students in your sample. These scores are also considered your institutional CWRA+ scores.

The 25<sup>th</sup> Percentile Score column indicates maximum score values earned by 25% of your students. Said another way, 25% of your students earned these score values or less. Similarly, the 75<sup>th</sup> Percentile Score column indicates maximum score values earned by 75% of your students. By comparing results in the 25<sup>th</sup> and 75<sup>th</sup> columns, you can determine the range in which 50% of your students scored.

Mean Score Percentile Ranks indicate how well your institution performed relative to other CWRA+ high schools. The values in this column represent the percentage of institutions whose mean scores were lower than yours. If the sample of schools testing at a corresponding class level is insufficient, “N/A” will appear in the relevant cell of the table.

For a summary of institutional performance at CWRA+ high schools, please refer to Appendix D, *Results Across CWRA+ Institutions*.

The final column in this table—Effect Size v. Freshmen—presents growth estimates across class levels at your school. Effect sizes relate the performance of freshmen to that of sophomores, juniors, and seniors, allowing you to evaluate student learning outcomes over time. Effect sizes

are reported in units of standard deviation established by the performance of freshmen within your school. An effect size of 0 indicates no difference in the performance of entering and exiting students, while positive effect sizes show improved

performance, with larger numbers representing increasingly stronger performance.

## DISTRIBUTION OF MASTERY LEVELS (Section 2, page 3)

Section 2 of your institutional report focuses on Mastery Levels, which are criterion-referenced indicators of performance new to CWRA+. On individual reports, Mastery Levels are determined by students' Total CWRA+ scores. On institutional reports, they are determined by each class level's mean Total CWRA+ score.

There are five Mastery Levels: Below Basic, Basic, Proficient, Accomplished, and Advanced. Please see Appendix I, *Mastery Levels*, for a detailed description of these categories and the process through which they were derived.

Section 2 includes two tables related to Mastery Levels. The first, [Distribution of CWRA+ Scores, by](#)

[Mastery Level](#), contains a histogram of Total CWRA+ scores for each class level that you tested, overlaid with Mastery Level cut score points. This chart shows how the distribution of CWRA+ scores within your sample corresponds to student mastery of the skills measured by CWRA+.

The second table provides a summary of [Mastery Levels, by Class](#). The first column of data lists the Mean Total CWRA+ score for each class tested, followed by the corresponding Mastery Level—the level at which the average student within your sample performed. The next four columns present the percentage of students that performed at each Mastery Level, by class.

## CWRA+ SUBSCORES (Section 3, page 4)

Your report includes Total CWRA+ scores as well as scores for the Performance Task (PT) and Selected-Response Questions (SRQs). These section scores based on item type are further divided into subscores based on skill categories. The three subscores for the PT indicate performance in Analysis and Problem Solving, Writing Effectiveness, and Writing Mechanics. The three subscores for the SRQs indicate performance in Scientific and Quantitative Reasoning, Critical Reading and Evaluation, and Critique an Argument, which involves the identification of logical flaws and questionable assumptions.

The first table in Section 3 is [Performance Task: Distribution of Subscores \(in percentages\)](#). The charts in this table indicate the distribution of subscores for each of the three skill categories by class level. The charts present the percentage of your students at each score value. Ranging from 1 to 6, each value is associated with a specific set of

response characteristics. For more information about the scoring rubric, please see Appendix H, *Scoring CWRA+*.

The second table, [Selected-Response Questions: Mean Subscores](#), provides summary statistics for the three skill categories measured in the SRQ section. The scores in this CWRA+ section are determined by the number of correct responses and adjusted based on item difficulty. Each subscore is reported on a scale of approximately 200 to 800.

Mean Scores in this table reflect the average score received by each class for each of the three skill categories. The 25th Percentile Scores indicate the score values at or below which 25% of your students scored (again, by class level). The 75th Percentile Scores indicate the score values at or below which 75% of your students scored. By comparing results in the 25<sup>th</sup> and 75<sup>th</sup> columns, you can determine the range in which 50% of your students scored.

## STUDENT EFFORT AND ENGAGEMENT (Section 4, page 5)

CWRA+ ends with a set of survey questions, two of which are related to the assessment. One question asks students how much effort they put into completing the Performance Task (PT) and 25 Selected-Response Questions (SRQs). The other question asks students how engaging they found each section of the assessment to be. Students indicate their answers on a likert scale, ranging from “No effort at all” to “My best effort” and “Not at all engaging” to “Extremely engaging.” The table in Section 4, [Student Effort and Engagement Survey Responses](#), provides the percentage of students who selected each answer option by class level.

The survey questions are designed to help institutions consider the role that effort and engagement may play in students’ CWRA+ performance. Survey results may also be consulted when evaluating the impact that recruitment efforts have on student motivation.

For a distribution of survey responses across all high schools, please see Appendix D, *Results Across CWRA+ Institutions*. By comparing your institution’s survey results with those of all schools, you can examine the motivation and engagement of your students relative to that of students at other high schools.

## STUDENT SAMPLE SUMMARY (Section 5, page 6)

The final section of your institutional report includes a [Student Sample Summary](#), which provides the number and percentage of students within your sample who meet various characteristics. These characteristics include: transfer status, gender, primary language, race or ethnicity, and parent

education level. Transfer status is reported by participating institutions during the registrar data collection process. All other demographic characteristics are provided by students as part of the post-assessment survey.

APPENDIX D: RESULTS ACROSS CWRA+ INSTITUTIONS

SECTION D1: SUMMARY RESULTS, BY CLASS

Number of Participating Institutions, by Class

Freshmen: 110 Seniors: 109

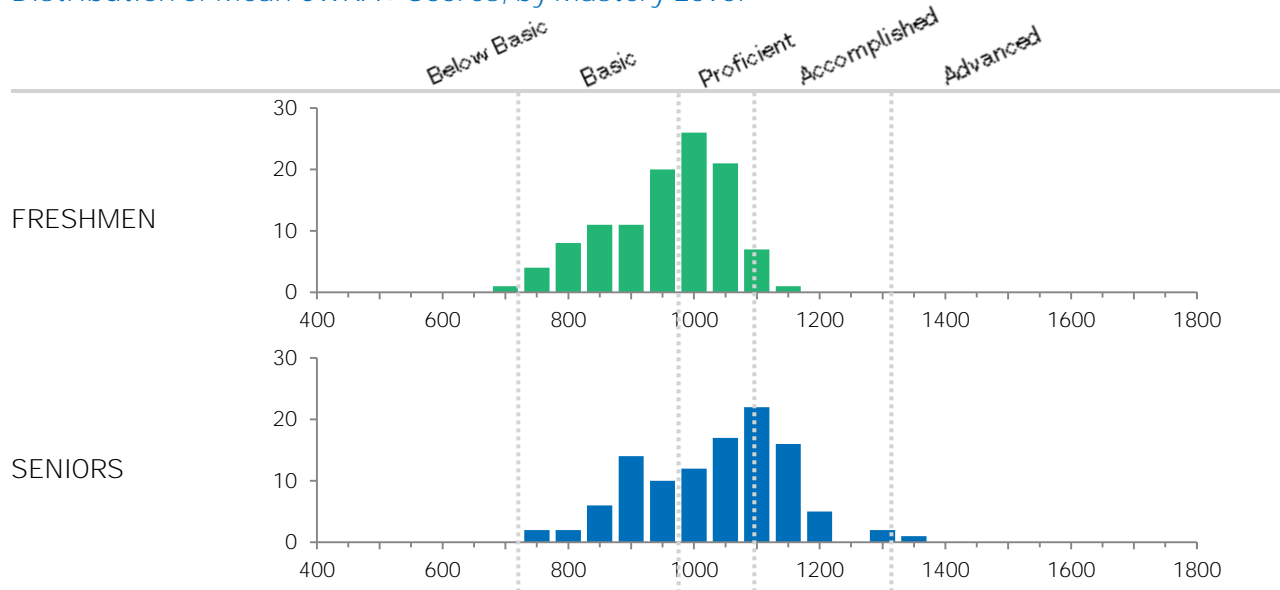
Summary CWRA+ Results Across Institutions, by Class

		MEAN SCORE	STANDARD DEVIATION	25 <sup>TH</sup> PERCENTILE SCORE	75 <sup>TH</sup> PERCENTILE SCORE	MEDIAN EFFECT SIZE V. FRESHMEN*
TOTAL CWRA+ SCORE	Freshmen	981	96	905	1053	--
	Seniors	1058	117	970	1145	0.76
PERFORMANCE TASK	Freshmen	976	109	899	1063	--
	Seniors	1058	128	966	1147	0.76
SELECTED-RESPONSE QUESTIONS	Freshmen	985	87	922	1050	--
	Seniors	1058	112	987	1136	0.54

\* 80 institutions tested both freshmen and seniors.

SECTION D2: DISTRIBUTION OF MASTERY LEVELS ACROSS INSTITUTIONS

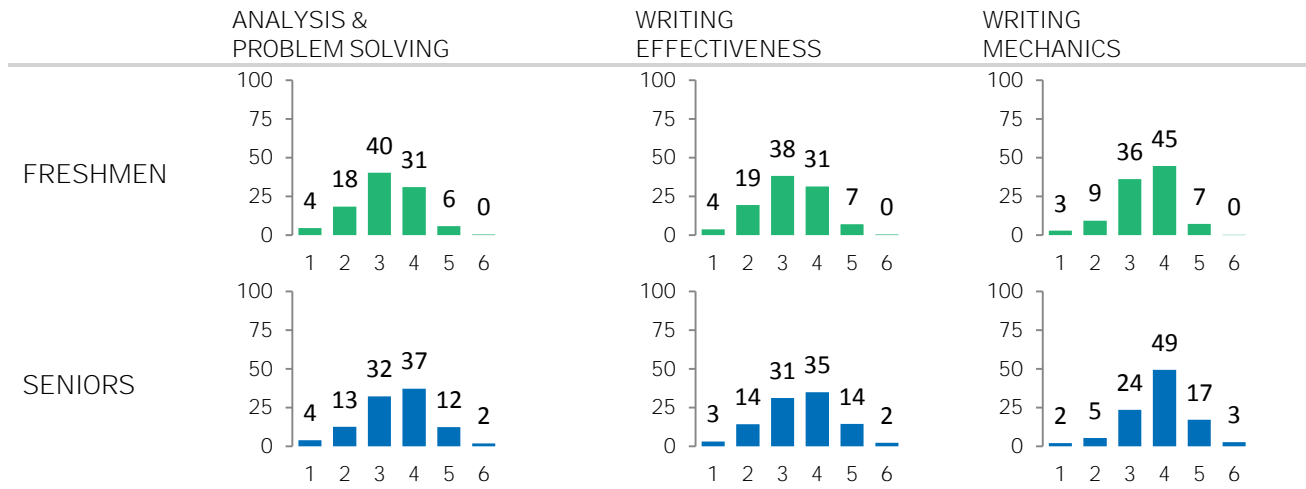
Distribution of Mean CWRA+ Scores, by Mastery Level





SECTION D3: CWRA+ SUBSCORES ACROSS INSTITUTIONS

Performance Task: Mean Distribution of Subscores (in percentages)



NOTE: The Performance Task subscore categories are scored on a scale of 1 through 6.

Selected-Response Questions: Mean Subscores Across Institutions

	SCIENTIFIC & QUANTITATIVE REASONING			CRITICAL READING & EVALUATION			CRITIQUE AN ARGUMENT		
	Mean Score	25 <sup>th</sup> Percentile Score	75 <sup>th</sup> Percentile Score	Mean Score	25 <sup>th</sup> Percentile Score	75 <sup>th</sup> Percentile Score	Mean Score	25 <sup>th</sup> Percentile Score	75 <sup>th</sup> Percentile Score
FRESHMEN	475	448	501	479	451	509	476	450	497
SENIORS	507	476	541	508	473	541	508	475	541

NOTE: The selected-response section subscores are reported on a scale ranging approximately from 200 to 800.

## SECTION D4: STUDENT EFFORT AND ENGAGEMENT ACROSS CWRA+ INSTITUTIONS

## Mean Student Effort and Engagement Survey Responses

*How much effort did you put into the written-response task/ selected-response questions?*

		NO EFFORT AT ALL	A LITTLE EFFORT	A MODERATE AMOUNT OF EFFORT	A LOT OF EFFORT	MY BEST EFFORT
PERFORMANCE TASK	Freshmen	0%	2%	21%	41%	37%
	Seniors	1%	8%	35%	34%	21%
SELECTED-RESPONSE QUESTIONS	Freshmen	1%	8%	39%	36%	16%
	Seniors	5%	18%	46%	23%	9%

*How engaging did you find the written-response task/ selected-response questions?*

		NOT AT ALL ENGAGING	SLIGHTLY ENGAGING	MODERATELY ENGAGING	VERY ENGAGING	EXTREMELY ENGAGING
PERFORMANCE TASK	Freshmen	5%	14%	40%	34%	7%
	Seniors	12%	21%	39%	23%	5%
SELECTED-RESPONSE QUESTIONS	Freshmen	15%	28%	37%	16%	4%
	Seniors	24%	31%	32%	11%	3%

## SECTION D5: STUDENT SAMPLE SUMMARY ACROSS CWRA+

## Student Sample Summary Across CWRA+ Institutions

DEMOGRAPHIC CHARACTERISTIC		FRESHMEN Mean %	SENIORS Mean %
TRANSFER	Transfer Students	--	14%
	Non-Transfer Students	--	86%
GENDER	Male	49%	50%
	Female	50%	47%
	Decline to State	2%	3%
PRIMARY LANGUAGE	English	89%	88%
	Other	11%	12%
RACE/ ETHNICITY	American Indian / Alaska Native / Indigenous	3%	1%
	Asian (including Indian subcontinent and Philippines)	9%	10%
	Native Hawaiian or other Pacific Islander	1%	2%
	African-American / Black (including African and Caribbean), non-Hispanic	11%	10%
	Hispanic or Latino	7%	8%
	White (including Middle Eastern), non-Hispanic	61%	59%
	Other	5%	3%
	Decline to State	3%	6%
PARENT EDUCATION	Less than High School	3%	4%
	High School	11%	16%
	Some College	15%	13%
	<b>Bachelor's Degree</b>	26%	28%
	Graduate or Post-Graduate Degree	45%	37%

## APPENDIX E: RESULTS ACROSS CLA+ INSTITUTIONS TESTING FRESHMEN

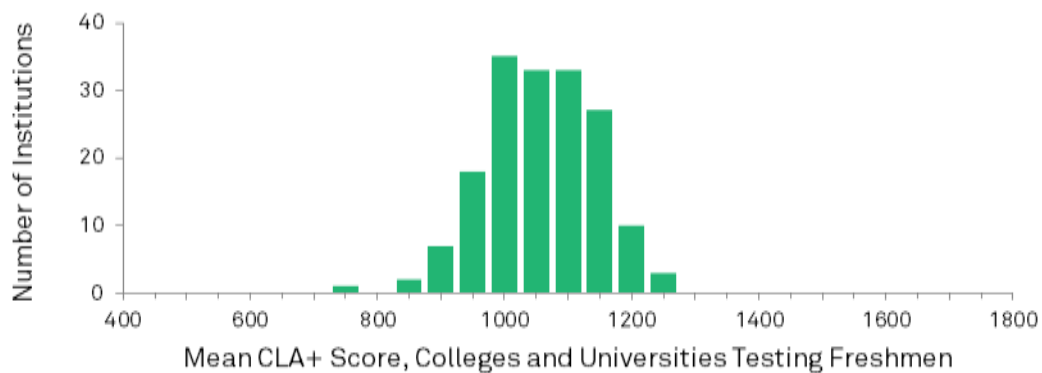
### SECTION E1: SUMMARY RESULTS

Number of Participating Institutions Testing Freshmen: 169

#### Summary of CLA+ Results Across Institutions Testing Freshmen

	MEAN SCORE	25 <sup>TH</sup> PERCENTILE SCORE	75 <sup>TH</sup> PERCENTILE SCORE
TOTAL CLA+ SCORE	1032	974	1096
PERFORMANCE TASK	1028	967	1089
SELECTED-RESPONSE QUESTIONS	1036	974	1089
EAA <sup>1</sup>	1022	948	1106

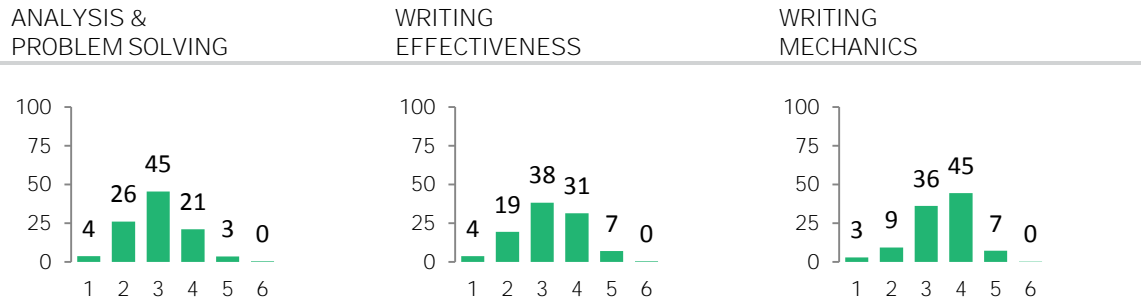
#### Distribution of Mean CLA+ Freshman Scores



<sup>1</sup> EAA (Entering Academic Ability) is determined based on one of three sets of scores: (1) combined SAT Math and Critical Reading, (2) ACT Composite, or (3) Scholastic Level Examination (SLE) scores reported on the SAT Math and Critical Reading scale.

SECTION E2: CLA+ SUBSCORES ACROSS INSTITUTIONS TESTING FRESHMEN

Performance Task: Mean Freshman Distribution of Subscores (in percentages)



NOTE: The Performance Task subscore categories are scored on a scale of 1 through 6.

Selected-Response Questions: Mean Freshman Subscores Across Institutions

	MEAN SCORE	25 <sup>TH</sup> PERCENTILE SCORE	75 <sup>TH</sup> PERCENTILE SCORE
SCIENTIFIC & QUANTITATIVE REASONING	499	473	519
CRITICAL READING & EVALUATION	498	476	520
CRITIQUE AN ARGUMENT	498	471	524

NOTE: The selected-response section subscores are reported on a scale ranging approximately from 200 to 800.

SECTION E3: STUDENT EFFORT AND ENGAGEMENT ACROSS CLA+ INSTITUTIONS  
TESTING FRESHMEN

**Mean Student Effort and Engagement Survey Responses**

*How much effort did you put into the written-response task/ selected-response questions?*

	NO EFFORT AT ALL	A LITTLE EFFORT	A MODERATE AMOUNT OF EFFORT	A LOT OF EFFORT	MY BEST EFFORT
PERFORMANCE TASK	1%	5%	35%	35%	24%
SELECTED-RESPONSE QUESTIONS	2%	14%	42%	28%	14%

*How engaging did you find the written-response task/ selected-response questions?*

	NOT AT ALL ENGAGING	SLIGHTLY ENGAGING	MODERATELY ENGAGING	VERY ENGAGING	EXTREMELY ENGAGING
PERFORMANCE TASK	7%	17%	42%	28%	6%
SELECTED-RESPONSE QUESTIONS	15%	27%	38%	17%	3%

## SECTION E4: STUDENT SAMPLE SUMMARY ACROSS CLA+

## Student Sample Summary Across CLA+ Institutions

DEMOGRAPHIC CHARACTERISTIC		MEAN %
TRANSFER	Transfer Students	--
	Non-Transfer Students	--
GENDER	Male	39%
	Female	60%
	Decline to State	2%
PRIMARY LANGUAGE	English	80%
	Other	20%
RACE/ ETHNICITY	American Indian / Alaska Native / Indigenous	1%
	Asian (including Indian subcontinent and Philippines)	8%
	Native Hawaiian or other Pacific Islander	1%
	African-American / Black (including African and Caribbean), non-Hispanic	14%
	Hispanic or Latino	19%
	White (including Middle Eastern), non-Hispanic	50%
	Other	4%
	Decline to State	4%
PARENT EDUCATION	Less than High School	8%
	High School	24%
	Some College	24%
	<b>Bachelor's Degree</b>	27%
	Graduate or Post-Graduate Degree	18%

## APPENDIX F: INSTITUTIONAL SAMPLE

The institutional sample for CWRA+ is comprised of schools that tested freshmen in fall 2013 and schools that tested seniors in spring 2014. Upon attainment of a sizable sample of schools testing sophomores and juniors, those classes will be included in institutional reports, as well.

While the sample changed annually for the CWRA, it will remain fixed for CWRA+. The stable sample will allow institutions to track their progress more easily.

As institutions make national comparisons from year to year, they will no longer face the question of whether changes in percentile rankings reflect changes in institutional performance or differences in the comparative sample.

To ensure national representativeness, CAE will continue to assess the institutional sample. If significant changes arise, CAE will take steps to update the sample as necessary.

### SAMPLE REPRESENTATIVENESS

Most CWRA+ high schools engage in census sampling (testing of an entire cohort, rather than a selection of students). This practice suggests that the students tested are representative of their CWRA+ school as a whole.

On a national level, CWRA+ institutions are more likely to be private and high-performing than other high schools. The student sample is similarly not representative of the U.S. high school population as a whole, with nearly half (43%) of participating freshmen and seniors indicating that a parent has attained at least a graduate-level degree. (Please see section D5 on page 16 for average demographic information related to CWRA+ students.)

Given the characteristics of the typical CWRA+ institution and its students, participating high schools should take caution when interpreting their results relative to other high schools.

For schools interested in comparing their seniors' CWRA+ performance to the CLA+ performance of college freshmen, CLA+ sampling is also a relevant topic.

Students within the CLA+ institutional sample appear to be generally representative of students across CLA+ institutions with respect to Entering Academic Ability (EAA) scores. Specifically, across institutions, the average EAA score of freshmen in the CLA+ sample was only seven points higher than that of the average freshmen at CLA+ institutions (1038 versus 1031, over  $n=123$  institutions), and the average EAA score of seniors in the CLA+ sample was only 16 points higher than that of the average seniors at CLA+ institutions (1065 versus 1049, over  $n=119$  institutions). The correlation between the average EAA score of freshmen in the CLA+ sample and their classmates was high ( $r=0.93$ ), as was the correlation between the average EAA score of seniors in the CLA+ sample and their classmates ( $r=0.90$ ).

These data suggest that, as a group, students tested as part of the CLA+ institutional sample perform similarly to all students at CLA+ institutions. This correspondence increases confidence in the inferences made about students at CLA+ institutions based on testing data collected from the institutional sample.

### SCHOOL CHARACTERISTICS

The following tables provide statistics comparing CWRA+ institutions with high schools nationwide and CLA+ institutions with colleges and universities nationwide.

As mentioned above, CWRA+ schools differ in several ways from other high schools across the nation. The CWRA+ sample consists of a larger proportion of

private schools, and the median CWRA+ school has a larger student body than the median high school nationally.

In contrast, CLA+ schools are fairly representative of four-year, not-for-profit institutions across the nation. Public school percentage and undergraduate student body size are notable exceptions.



### School Characteristics of the CWRA+ Institutional Sample

SCHOOL CHARACTERISTIC		NATION	CWRA+
SECTOR	Public	76%	41%
	Charter	6%	4%
	Magnet	2%	3%
	Title I Eligible	38%	14%
	Private	24%	59%
	Non-Sectarian	7%	37%
	Catholic	4%	4%
	Other Religious	14%	18%
SCHOOL TYPE	Regular	76%	93%
	Career/Technical/Vocational	4%	0%
	Montessori	0%	1%
	Special Education	6%	0%
	Special Program Emphasis	1%	1%
	Alternative/Other	14%	4%
MEDIAN ENROLLMENT (GRADES 9–12)		184	362
MEAN PUPIL-TO-TEACHER RATIO		14:1	12:1
MEAN PERCENTAGE NON-WHITE STUDENTS		38%	31%

*Sources: The Elementary/Secondary Information System (ELSI), an NCES application that provides data from the Common Core of Data (CCD) and Private School Survey (PSS). Data in this table only include schools serving at least grades 9-12. Because all schools did not report on every measure in the table, the averages and percentages may be based on slightly different denominators. Accessed January 3, 2014.*

### School Characteristics of the CLA+ Institutional Sample

SCHOOL CHARACTERISTIC	NATION	CLA+
PERCENTAGE PUBLIC	30	60
PERCENTAGE HISTORICALLY BLACK COLLEGE OR UNIVERSITY (HBCU)	4	3
MEAN PERCENTAGE OF UNDERGRADUATES RECEIVING PELL GRANTS	31	32
MEAN SIX-YEAR GRADUATION RATE	51	49
MEAN BARRON'S SELECTIVITY RATING	3.6	3.1
MEAN ESTIMATED MEDIAN SAT SCORE	1058	1030
MEAN NUMBER OF FTE UNDERGRADUATE STUDENTS (ROUNDED)	3,869	7,130
MEAN STUDENT-RELATED EXPENDITURES PER FTE STUDENT (ROUNDED)	\$12,330	\$10,469

*Sources: College Results Online dataset, managed by and obtained with permission from the Education Trust, covers most 4-year Title IV-eligible higher-education institutions in the United States. Data were constructed from IPEDS and other sources. Because all schools did not report on every measure in the table, the averages and percentages may be based on slightly different denominators. Data also come from the Carnegie Foundation for the Advancement of Teaching, Carnegie Classifications Data File, January 16, 2014.*

## CWRA+ AND CLA+ INSTITUTIONS

The schools listed below in alphabetical order constitute the sample of institutions testing CWRA+ students and CLA+ freshmen that have agreed to be listed. To view a list of currently participating schools, please visit [www.cae.org/cwrparticipants](http://www.cae.org/cwrparticipants).

### CWRA+ Schools

Abington Friends School  
 Academy of Global Studies at Winton Woods High School  
 Alexander Dawson School  
 All Saints' Academy  
 American Canyon High School  
 Anson New Technology High School  
 Areté Preparatory Academy  
 Asheville School  
 Barrie School  
 Bayside High School  
 Bishop Brady High School  
 Bosque School  
 Brimmer and May School  
 Brooks School  
 Catalina Foothills High School  
 City of Medicine Academy  
 Collegiate School  
 Colorado Academy  
 Colorado Rocky Mountain School  
 Cross County High School  
 Crystal Springs Uplands School  
 Culver Academies  
 Currey Ingram Academy  
 Da Vinci Charter Academy  
 Drew Charter School  
 Drew School  
 Eagle Rock School  
 Eagle Tech Academy  
 Emma Willard  
 Emmetsburg High School  
 First Colonial High School  
 Floyd Kellam High School  
 Fort Dodge Senior High School  
 Fountain Valley School of Colorado  
 Frank W. Cox High School  
 Friends School of Baltimore  
 Gilmour Academy  
 GRAD Academy Memphis  
 Green Run High School  
 Greensboro Day School  
 Hebron Academy  
 Heritage Hall  
 Hillside New Tech High School  
 Holland Hall  
 Illinois Mathematics and Science Academy

Jefferson Forest High School  
 Kempsville High School  
 Kimball Union Academy  
 Kirtland High School  
 Lakeview Academy  
 Landstown High School  
 Le Jardin Academy  
 Liberty High School  
 Logan View Public Schools  
 Los Angeles School of Global Studies  
 Maryknoll School  
 Math, Engineering, Technology, and Science Academy  
 McKinley Academy  
 Mead High School  
 Menlo School  
 Meridian Early College High School  
 Metairie Park Country Day School  
 Mid-Pacific Institute  
 Millennium Brooklyn High School  
 Moorestown Friends School  
 Moses Brown School  
 Mount Vernon Presbyterian School  
 Mt. Spokane High School  
 Napa High School  
 New Tech at Ruston  
 New Technology High School  
 North Shore Country Day School  
 Ocean Lakes High School  
 Palisades High School  
 Parish Episcopal School  
 Princess Anne High School  
 Ramsey High School  
 Reading Memorial High School  
 Renaissance Academy  
 Rising Tide Charter Public School  
 Riverdale Country School  
 Riverpoint Academy  
 Roland Park Country School  
 Sacramento New Technology High School  
 Sacred Hearts Academy  
 Saint Peter High School  
 Salem Academy  
 Sandia Preparatory School  
 Seacrest Country Day School  
 Severn School  
 Shady Side Academy  
 Sioux Falls New Technology High School  
 Sonoma Academy  
 South Hamilton High School  
 St. Andrew's School  
 St. Anne's Belfield School  
 St. Christopher's School  
 St. George's Independent School



Hardin-Simmons University	St. John Fisher College
Hastings College	Stetson University
Hong Kong Polytechnic University	Stonehill College
Howard Community College	SUNY Cortland
Humboldt State University	Texas A&M International University
Illinois College	Texas A&M University-Texarkana
Indiana University of Pennsylvania	Texas State University-San Marcos
Jacksonville State University	Texas Tech University
Keene State College	The Citadel
Kent State University	The College of Idaho
Kepler Kigali	The Ohio State University
Kepler Kigali, Control	The Richard Stockton College of New Jersey
Keuka College	The Sage Colleges
LaGrange College	Truckee Meadows Community College
Lake Forest College	Truman State University
Lee University	University of Bridgeport
Lewis University	University of Colorado, Boulder
Lynchburg College	University of Evansville
Marshall University	University of Great Falls
Miami University - Oxford	University of Guam
Miles College	University of Hawaii at Hilo, College of Business and Economics
Minneapolis College of Art and Design	University of Houston
Minnesota State Community & Technical College	University of Jamestown
Mississippi University for Women	University of Louisiana at Lafayette
Monmouth University	University of Missouri - St. Louis
Montclair State University	University of New Mexico
Morgan State University	University of North Carolina Pembroke
Morningside College	University of North Dakota
National Louis University	University of Saint Mary
Nevada State College	University of Texas - Pan American
New York University - Abu Dhabi	University of Texas at Arlington
Newberry College	University of Texas at Austin
Nicholls State University	University of Texas at El Paso
North Dakota State University	University of Texas of the Permian Basin
Nyack College	University of Texas, Dallas
Ohio Wesleyan University	University of Texas, San Antonio
Our Lady of the Lake University	University of Texas, Tyler
Pittsburg State University	Ursuline College
Plymouth State University	Walsh College of Accountancy and Business Administration
Presbyterian College	Warner University
Purchase College - SUNY	Weber State University
Quest University	West Chester University of Pennsylvania
Ramapo College of New Jersey	Western Carolina University
Robert Morris University	Western Governors University
Roger Williams University	Western Michigan University
Saginaw Valley State University	Western Nevada College
San Diego State University	Westminster College (MO)
San Francisco State University	Westminster College (UT)
San Jose State University	Wichita State University
Schreiner University	Wichita State University, School of Engineering
Shepherd University	Wiley College
Shippensburg University	William Peace University
Sonoma State University	William Woods University
Southern Connecticut State University	Wisconsin Lutheran College
Southern New Hampshire University	Yakima Valley Community College
Southern Virginia University	
Southwestern University	
St. Ambrose University	

## APPENDIX G: CWRA+ TASKS

### INTRODUCTION TO CWRA+ PERFORMANCE TASKS AND SELECTED-RESPONSE QUESTIONS

CWRA+ includes one Performance Task (PT) and 25 Selected-Response Questions (SRQs). All items are administered online. Each PT consists of an open-ended prompt that asks students to provide a constructed response. Every SRQ presents students with four options and asks them to choose a single answer. The SRQs are further organized into three sets, each focusing on a different skill area.

Questions that appear on CWRA+ call on students to use critical-thinking and written-communication skills as they perform cognitively demanding tasks. The integration of these skills mirrors the requirements of serious thinking and writing faced outside of the classroom.

### OVERVIEW OF THE CWRA+ PERFORMANCE TASK (PT)

Each PT asks students to answer an open-ended question about a hypothetical yet realistic situation. The prompt requires students to integrate analytical reasoning, problem solving, and written-communication skills as they consult materials in a Document Library and use them to formulate a response. The library includes a range of informational sources, such as letters, memos, summaries of research reports, newspaper articles, maps, photographs, diagrams, tables, charts, and interview notes or transcripts. Each PT is typically accompanied by four to nine documents, and students have 60 minutes to prepare their responses.

The first screen of each PT contains general instructions and an introduction to the scenario. The second screen is split. On the right side, students have a list of the informational sources in the Document Library. By using the pull-down menu, they can select and view each document. On the left side of the screen, students can read the question and enter their responses in a field that has no word limit. An example of the split screen is shown on the following page.

Each PT assesses a unique combination of skills—no two are exactly the same. Some PTs ask students to identify, compare, and contrast the strengths and limitations of alternate hypotheses, points of view, courses of action, etc. Other PTs ask students to review a collection of materials and choose amongst a set of options to solve a problem or propose a new solution to the problem. Still other PTs ask students to suggest or select a course of action that resolves conflicting or competing strategies and to provide a

rationale for their decision, explaining why one approach is better than another. For example, students may be asked to anticipate potential difficulties or hazards associated with different ways of addressing a problem, propose likely short- and long-term consequences of these strategies, and defend one or more of these approaches.

PTs require students to utilize higher order thinking skills, more specifically, to

- recognize information that is relevant and not relevant to the task at hand;
- analyze and understand data in tables and figures;
- evaluate the credibility of various documents;
- distinguish rational arguments from emotional ones;
- determine the difference between fact and opinion;
- identify questionable or critical assumptions;
- deal with inadequate, ambiguous, or conflicting information;
- spot deception, possible bias, and logical flaws in arguments;
- identify additional information that would help resolve issues;
- weigh different types of evidence;
- organize and synthesize information from several sources; and
- marshal evidence from different sources in a written response.

To view a sample PT, please visit the Sample Tasks section of CAE's website at [www.cae.org/cwra](http://www.cae.org/cwra).

**CWRA+ (Task 1)**  
1 of 1 59 min 55 sec

**Concluding Essay**

**Your task is to write a report evaluating Dr. Greer's claim that "reducing cell phone usage while driving motorized vehicles would lower the city's vehicle-related accident rate." Dr. Greer uses the chart in Document B to support his statement. Make sure to address the strengths and/or limitations of Dr. Greer's position and support your statement with information found in the documents.**

There is no "correct" answer. Your report should clearly describe all the details necessary to support your position. Your answers will be judged not only on the accuracy of the information you provide, but also on how clearly the ideas are presented, how thoroughly the information is covered, how effectively the ideas are organized, and how well your writing reflects the conventions of standard written English.

While your personal values and experiences are important, please write your response solely on the basis of the information provided above and in the Document Library. Type your response in the space provided. Write as much as you need to fulfill the requirements on the task; you are not limited by the size of the response area on the screen.

Copy Paste

**Select document:** Document Library Contents  
Document 1: Stoneville Police Department Data  
Document 2: Dr. Greer's Chart

**Document Library Contents**

Document 1 Stoneville Police Department Data  
Document 2 Dr. Greer's Chart

HELP BACK NEXT

Preview of the Performance Task Document Library

## OVERVIEW OF CWRA+ SELECTED-RESPONSE QUESTIONS (SRQs)

Like the PT, the 25 SRQs measure an integrated set of critical-thinking skills. Students utilize these skills to answer three sets of questions. The first measures scientific and quantitative reasoning, the second measures critical reading and evaluation, and the third (critique an argument) measures students' ability to detect logical flaws and questionable assumptions. Also like the PT, each question set is document-based and includes one to three informational sources of varying natures. Students are instructed to use these materials when preparing their answers within the 30 minutes provided.

The first two question sets require students to draw on the information and arguments provided in accompanying materials. Each set contains 10 questions, for a total of 20 questions.

Supporting documents for the Scientific and Quantitative Reasoning set discuss real-life research results. To answer questions in this section, students must apply critical-thinking skills that include

- making inferences and hypotheses based on given results,

- evaluating the reliability of information (such as experimental design or data collection methodology),
- identifying information or quantitative data that is connected and conflicting,
- detecting questionable assumptions (such as implications of causation based on correlation),
- supporting or refuting a position,
- drawing a conclusion or deciding on a course of action to solve a problem,
- evaluating alternate conclusions, and
- recognizing when a text has open issues that require additional research.

Supporting documents for the Critical Reading and Evaluation set present debates, conversations, and literary or historical texts with opposing views on authentic issues. To answer questions in this section, students apply critical-thinking skills that include

- supporting or refuting a position,
- analyzing logic,
- identifying assumptions in arguments,
- evaluating the reliability of information,

- identifying connected and conflicting information, and
- making justifiable inferences.

In the Critique an Argument set, students are presented with a brief argument about an authentic issue and asked to analyze the argument. To answer the five questions in this section, students must apply critical-thinking skills that include

- evaluating the reliability of information, including potential biases or conflicts of interest;

- detecting logical flaws and questionable assumptions;
- addressing additional information that could strengthen or weaken the argument; and
- evaluating alternate conclusions.

To view sample SRQs, please visit the Sample Tasks section of CAE's website at [www.cae.org/cwra](http://www.cae.org/cwra).

## ASSESSMENT DEVELOPMENT

CAE has a team of experienced writers who work with educational researchers and editorial reviewers to generate ideas and design carefully constructed performance tasks (PTs), selected-response questions (SRQs), and supporting documents. Each group contributes to the development and revision of these materials.

### PT Development

Throughout development, writers, researchers, and reviewers refine materials to ensure that each PT can support a variety of different approaches. The prompt must be sufficiently focused to guide students purposefully while providing them with the flexibility to demonstrate independent thinking. Questions must further be structured so students need to analyze and evaluate multiple sources of information from the Document Library to draw conclusions and justify their arguments.

Accompanying documents must present information in various formats and text types (e.g., tables, figures, news articles, editorials, emails, etc.). They must also provide enough information for students to formulate a number of reasonable arguments in response to the prompt. To achieve these goals, the development team drafts and revises a list of the intended content within each document. The list is used to check that each piece of information is clearly provided in the documents and that unwanted information is not embedded. During the editorial process, information is added and removed from the documents to ensure that students can reach approximately three to four different conclusions. Typically, some conclusions are better supported by available evidence than others.

The document list also serves as a starting point for scorer training and is used in alignment with analytic descriptions in the PT scoring rubrics. After several rounds of revisions, the most promising PTs are

selected for piloting. During this stage, student responses are examined to identify any lack of clarity in the prompt or any unintentional ambiguity or unuseful information in the accompanying documents. After revisions are made, PTs that meet expectations by eliciting a full range and variety of responses become operational.

### SRQ Development

The development process for SRQs is similar to the one used for PTs. Writers create documents that are based on real-life data and topics and can support questions measuring higher-order thinking skills. When crafting these documents, writers present valid and invalid assumptions and conclusions, devise alternate hypotheses and conclusions, incorporate flawed arguments, and leave some issues intentionally unanswered. These characteristics serve as a foundation for the creation of SRQs.

When reviewing item sets, editors work with writers to confirm that correct answer options are in fact correct based on information provided in the documents. Editors and writers also ensure that incorrect answer options are not potentially plausible. Throughout this process, the development team also checks to make sure that questions assess the intended critical-thinking skills.

After several rounds of revision, the most promising SRQs are selected for piloting. During this stage, student responses are examined to identify any errors or lack of clarity in questions and answer options. Responses are also reviewed to check whether accompanying documents contain unintentional ambiguity or unuseful information. After revisions are made, SRQs that function well—questions that are of appropriate difficulty and that effectively discriminate between high- and low-performing students—become operational.



## APPENDIX H: SCORING CWRA+

### SCORING CRITERIA

Student responses to Performance Tasks are scored in three skill areas: Analysis and Problem Solving, Writing Effectiveness, and Writing Mechanics. Students receive criterion-referenced subscores for each skill category based on key characteristics of their written responses. These characteristics are described in detail within the Performance Task rubric, available on CAE's website at [www.cae.org/cwrAprubric](http://www.cae.org/cwrAprubric).

Selected-Response Questions are scored based on the number of correct responses that students

provide. Each of the three question sets represents a skill area: Scientific and Quantitative Reasoning (10 questions), Critical Reading and Evaluation (10 questions), and Critique an Argument (5 questions). Because some question sets may be more difficult than others, the subscores for each skill category are adjusted to account for these differences and reported on a common scale. Please see Appendix K, *Scaling Procedures*, for more information about the scaling process.

### THE SCORING PROCESS

During the piloting of Performance Tasks (PTs), all student responses are double-scored. Human scorers undertake this process, and the documentation they assemble is later used to train more scorers and program the machine-scoring engine for operational test administrations.

CAE uses a combination of human and automated scoring for its operational PTs. Student responses are scored twice: once by a human scorer and once by the Intelligent Essay Assessor (IEA). This automated scoring engine was developed by Pearson Knowledge Technologies to evaluate textual meaning, not just writing mechanics. Using a broad range of CWRA+ student responses and human-generated scores, Pearson has trained the IEA to evaluate CWRA+ PTs in a manner that maintains consistency between human and automated scoring.

The rigorous training that candidates undergo to become certified CWRA+ scorers further promotes the validity and reliability of the scoring process. Training sessions include an orientation to the prompts, scoring guides, and rubrics; extensive feedback and discussion after the evaluation of each student response; and repeated practice grading a wide range of student responses.

To ensure the continuous calibration of human scorers, CAE has also developed the E-Verification system for its online scoring interface. This system calibrates scorers by having them evaluate previously-scored responses, or "Verification

Papers," throughout the scoring process. Designed to improve and streamline scoring, the E-Verification system periodically substitutes student responses with Verification Papers. These papers are not flagged for the scorers, and the system does not indicate when scorers have successfully evaluated them. However, if a scorer fails to assess a series of Verification Papers accurately, that scorer is targeted for additional coaching in a remediation process or is permanently removed from scoring.

By the end of the scoring window, each student response receives three subscores in Analysis and Problem Solving, Writing Effectiveness, and Writing Mechanics. The subscores are assigned on a scale of 1 (lowest) to 6 (highest). Blank responses or responses unrelated to the task (e.g., what a student had for breakfast) are flagged for removal from test results.

Students also receive three subscores for the Selected-Response Questions (SRQs), one for each of the sets, which measure Scientific and Quantitative Reasoning, Critical Reading and Evaluation, and Critique an Argument. Unless a student fails to start the section or is unable to finish due to a technical glitch or connection error, any unanswered SRQs are scored as incorrect. However, if a student does not attempt at least half of the SRQs, the student will not receive a score for the section. Subscores are determined by the number of correct responses, adjusted based on item difficulty, and reported on a common scale. The adjustment



ensures that scoring is consistent, for example, whether a student answers seven questions correctly in an easier set or six in a more difficult one.

Scores are equated so that each subscore category has the same mean and standard deviation and all test forms are comparable. Score values range from approximately 200 to 800 for each SRQ section.

## APPENDIX I: MASTERY LEVELS

### SETTING STANDARDS FOR CWRA+

Following the creation of CWRA+, a standard-setting study was conducted to establish fair and defensible levels of mastery for the new and improved assessment. This formal study was held at CAE headquarters in New York City on December 13, 2013. Fifteen distinguished panelists, representing a variety of K-12 and higher education sectors, were invited to participate. The table below lists each panelist.

During the standard-setting study, panelists defined descriptions of three mastery levels: Basic, Proficient, and Advanced. Panelists returned in November 2014 to define a fourth level of mastery—Accomplished—using the same methods. Their discussions were based on the CWRA+ scoring rubric

as well as the knowledge, skills, and abilities required to perform well on CWRA+. The purpose of this activity was to develop consensus among the judges regarding each mastery level and to create a narrative profile of the knowledge, skills, and abilities necessary for CWRA+ students.

During subsequent rating activities, panelists relied on these consensus profiles to make item performance estimates. Judges broke into three groups of four, and each group evaluated characteristics related to one mastery level. The groups then reconvened and reported their findings to the group at large so they could form final consensus on student performance at each of the three mastery levels.

### CWRA+ Standard-Setting Study Participant List and Institutional Affiliation

PARTICIPANT	INSTITUTION
Mark Battersby	Capilano University (Canada)
Ray Bryant	Warwick Valley School District
Paul Carney	Minnesota State Technical and Community College
Peter Gow	Beaver Country Day School
John Gulla	E.E. Ford Foundation
Bonnie Hain	Baltimore County School District
Jonathan Martin	Independent Consultant
Syna Morgan	Douglas County School District
Andrew Niblock	Greenwich Country Day School
Dominic Randolph	Riverdale Country School
Drew Schrader	New Tech Network
Tyler Thigpen	Mount Vernon Presbyterian School
Amada Torres	National Association of Independent Schools
Todd Wirt	Wake County School District
Doug Wren	Virginia Beach School District

## CWRA+ MASTERY LEVELS

CAE uses outcomes from the 2013 standard-setting study to distinguish between CWRA+ students with varying knowledge, skills, and abilities as measured by the assessment. On individual reports, Mastery Levels are determined by students' Total CWRA+ scores. On institutional reports, they are determined by each class level's mean Total CWRA+ score.

Institutions should not use mastery levels for purposes other than the interpretation of test

results. If an institution wishes to use the attainment of CWRA+ mastery levels as part of a graduation requirement or the basis for college entrance decisions, the institution should conduct a separate standard-setting study with this specific purpose in mind.

The following table summarizes each level of mastery and provides a description of students below the basic level of mastery.

### Student Levels of Mastery Profiles

LEVEL OF MASTERY	PROFILE
BELOW BASIC	Students who are below basic make severe errors that are frequent and often interfere with meaning. Students write simple sentences and some non-sentences.
BASIC	<p>Students at the basic level create responses that state or imply a decision, conclusion or position and provide some analysis that may be minimal, inaccurate or irrelevant. A basic student would provide an argument with some supporting information from sources and an attempt to cohesively organize that argument. Yet, the elaboration is limited and the organization lacks sufficient cohesion and clarity. For the basic student, severe errors are infrequent, but there are minor errors that sometimes interfere with meaning. The basic student also writes sentences that are similar in structure in length with an overreliance on sentences with simple structure. The basic student draws obvious inferences from sources, rarely recognizes relevant information, and takes all information at face value.</p> <p>Analysis and Problem Solving and Writing Effectiveness are more important than Writing Mechanics in making the cut score decision.</p>
PROFICIENT	<p>Students at the proficient level have the ability to make inferences from the document and provide some support for position but may omit some evidence. They address most elements of the task although sometimes tangentially. Students make a few accurate claims about the quality of evidence while citing the evidence provided in the documents. However, their responses may have a few misinterpretations of the information and evidence provided in the documents.</p> <p>The students at this level are writing generally understandable sentences with minor errors and use the conventions of standard written English. The student responses are communicated in a way that is readily comprehensible.</p> <p>There is an evaluation the relative value of common logical strategies (e.g., bad cause and effect). They extract meaningful information and recognize utility from basic graphs and are able to draw conclusions from them. There is an understanding of correlation versus causality as well as a basic understand of the design of the experiment. Proficient students will know what makes a credible scientific claim and provide an appropriate critical evaluation of sources.</p>

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**ACCOMPLISHED**

Students at the accomplished level of mastery have the ability to make inferences from the document and provide sufficient evidence (based on multiple sources) to support their claim. This would include generating accurate interpretations of the document library, developing coherent arguments using much of the information provided in the documents, and potentially identifying, but not fully developing potential future steps and the need for additional research. They are also able to identify and address bias when making inferences or drawing conclusions, assess the relevancy of the qualitative and quantitative data (e.g., read and understand a graph and identify limitations and shortcomings; demonstrate an understanding that correlation does not necessarily imply causality), distinguish credible versus non-credible sources of information, and generate counter-claims. Accomplished students state a decision/recommendation/position and develop their argument based upon the identified information; however, they fall short of using evidence to fully support and leverage their argument. They have the ability to identify and extend the impact of the supporting versus counter-evidence and their broader implications.

Accomplished students write responses that are cohesive, organized, and elaborated effectively. The student recognizes the correct audience and writes in a way that demonstrates understanding of the intended audience. The sources (documents) of evidence in support of students' claims can be identified. The student's intent is clear and the organization or the argument and understanding it represents is accurate and logical. There may be some minor spelling and syntax errors, but the sentences are generally well-constructed with varying and sometimes advanced vocabulary and structure, communicating a level of sophistication in the response.

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**ADVANCED**

Students at the advanced level discern the merit of information and evaluate the strength of arguments, including identifying bias. They demonstrate a thorough evaluation of the evidence by making connections between the information found in the documents, potentially identifying patterns, and if applicable, refuting false or weak claims, which ultimately informs one's response. They clarify potential further steps, either a next step moving forward or additional research that is needed or would be helpful. In order to strengthen their own arguments, students at the advanced level also address counter-arguments and demonstrate the weaknesses of the counter-arguments and/or the ways in which they are less compelling.

Advanced students provide a decision/recommendation with thorough support of the argument articulated in an effective way. The evidence is thoroughly examined, including addressing and navigating contradictory responses, and the interpretation of the documents is comprehensive. They fully respond to the prompt.

Student writing is precise, purposeful, uses a varied vocabulary, sentence structure and length, and is free—or almost entirely free—from mechanical error. Their responses are organized in a fluid, coherent, and engaging way. It is easy to follow the student's argument, which also has the correct audience in mind and appropriately addresses them. They use the correct genre to deliver the response, whether it is a blog response, report, memo, speech, etc.

Students should be able to consistently reason analytically and solve problems and be able to understand the nuances when integrating information across multiple sources.

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## APPENDIX J: DIAGNOSTIC GUIDANCE

### INTERPRETING CWRA+ RESULTS

CWRA+ test results can be used to evaluate an institution's overall performance on tasks measuring higher-order thinking skills. Test results can also be used to determine an individual student's areas of relative strength and weakness.

Examining performance across both sections of CWRA+ can serve as a comprehensive diagnostic exercise since the combination of necessary knowledge, skills, and abilities differs for the Performance Task (PT) and the Selected-Response Questions (SRQs). The PT measures Analysis and Problem Solving, Writing Effectiveness, and Writing Mechanics, while the SRQs measure Scientific and Quantitative Reasoning, Critical Reading and Evaluation, and Critique an Argument (the detection of logical flaws and questionable assumptions).

SRQ subscores are assigned based on the number of questions answered correctly; this value is then adjusted to account for item difficulty, and the adjusted value is converted to a common scale. Established in relation to the test performance of college freshmen in the fall of 2013, the scale has a mean of 500 and a standard deviation of 100. SRQ subscores thus range from approximately 200 to 800.

PT subscores are assigned on a scale of 1 (lowest) to 6 (highest). Unlike the SRQ subscores, PT subscores

are not adjusted for difficulty. These subscores remain as is because they are intended to facilitate criterion-referenced interpretations. For example, a score of "4" in Analysis and Problem Solving signifies that a response has certain qualities (e.g., "Provides valid support that addresses multiple pieces of relevant and credible information..."). Any adjustment to the score would compromise this interpretation.

The ability to make a claim such as, "Our students seem to be doing better in Writing Effectiveness than in Analysis and Problem Solving," is clearly desirable. These types of observations can be made by comparing the distributions for each subscore in Section 3 of your institutional report (specifically, on page 4). Please examine these test results in combination with the PT scoring rubric as well, available on CAE's website at [www.cae.org/cwra/trubric](http://www.cae.org/cwra/trubric).

CWRA+ Mastery Levels further contextualize PT and SRQ subscores by interpreting test results in relation to the qualities exhibited by examinees. Each Mastery Level corresponds to specific evidence of critical-thinking and written-communication skills. Please see Appendix I, *Mastery Levels*, for detailed information about each Mastery Level.

### COMPARING RESULTS ACROSS ADMINISTRATIONS

One way to assess institutional performance is to track changes in CWRA+ test scores over time. This goal can be achieved by testing a cohort of students longitudinally or by participating regularly in cross-sectional CWRA+ administrations.

The CWRA+ assessment format differs from that of its predecessor, the CWRA. Therefore, direct score comparisons are not feasible for test data collected before and after fall 2013. However, scaling equations can be used to adjust CWRA scores for the purpose of making comparisons with CWRA+.

Schools wishing to relate current CWRA+ test results to CWRA results in previous years can use the following equation, derived by comparing the CWRA

and CWRA+ total scores from 98 institutions that tested students on both forms of the assessment ( $r=0.902$ ):

**CWRA scores from fall 2010 – spring 2013:**

$$score_{CWRA+} = 71.805 + (0.896 \cdot score_{CWRA})$$

**CWRA scores from before fall 2010:**

$$score_{CWRA+} = 163.457 + (0.761 \cdot score_{CWRA})$$

In addition to making direct score comparisons across earlier test administrations, schools can also use their percentile rankings to determine changes in performance relative to other CWRA+ institutions.

Importantly, all test administrations after fall 2013 will be readily comparable. The institutional sample used for setting norms (percentile rankings, value, etc.) will be fixed as of the 2013-14 academic year. So, any changes in percentile ranking can now be

attributed to a school's CWRA+ test results rather than potential shifts in the norming sample.

## APPENDIX K: SCALING PROCEDURES

### CONVERTING CWRA+ SCORES TO A COMMON SCALE

To provide CWRA+ scores, CAE converts SRQ subscores and PT and SRQ section scores to a common scale of measurement.<sup>2</sup> This process allows us to combine score values from different assessment tasks and to compute mean scale scores for each CWRA+ section. The process also lets us calculate a total average scale score for the examination based on performance within both sections.

CAE uses college freshmen to set the scaling parameters for both CWRA+ and CLA+, based on scores received for a common PT and SRQ set. This procedure allows scores to be reported on a continuum from high school through college.

For each Performance Task (PT), raw subscores (for the three skill categories) are added to produce a raw section score. Because some PTs are more difficult than others, the raw section score is then converted to a common scale of measurement. The conversion produces scale scores that maintain comparable levels of proficiency across performance tasks and test forms. So, for example, a CWRA+ scale score would indicate approximately the same percentile rank regardless of the task a student received.

For the PT, CAE uses a linear transformation when converting raw scores to scale scores. The process creates a scale score distribution for CWRA+ students that has the same mean and standard deviation as the combined SAT Math and Critical Reading (or converted ACT) scores of CLA+ freshmen. The transformation was defined using data from college freshmen who took CLA+ in fall 2013. This type of scaling preserves the shape of the raw score distribution and maintains the relative standing of students. For example, the student with the highest raw score on a PT will also have the highest scale score for that task; the student with the next highest raw score will be assigned the next highest scale score, and so on.

This scaling practice ensures that a very high PT raw score (not necessarily the highest possible score) corresponds approximately to the highest SAT (or converted ACT) score earned by a CLA+ freshman

testing in fall 2013. Similarly, a very low PT raw score would be assigned a scale score value close to the lowest SAT (or converted ACT) score earned by a freshman taking CLA+ in fall 2013. On rare occasions when students earn exceptionally high or low raw PT scores, their scale scores may fall outside the normal SAT Math and Critical Reading score range of 400 to 1600.

For the Selected-Response Questions (SRQs), raw subscores (for the three skill categories measured by the three question sets) are determined based on the number of correct responses. These raw subscores are first equated and then placed on a common scale. This process adjusts the subscores based on the difficulty of the item sets so the subscores have the same mean and standard deviation across all question sets. Comparisons can then be made across test forms.

Using a linear transformation, CAE then converts the equated subscores to a more interpretable scale with a mean of 500 and standard deviation of 100, again, based on data from freshmen taking CLA+ in fall 2013. This scale produces SRQ subscores ranging from approximately 200 to 800, similar to the subsections of the SAT.

The weighted average of the SRQ subscores is then transformed again, using the same scaling parameters as the PT. As before, the process creates a scale score distribution for CWRA+ students that has the same mean and standard deviation as the combined SAT Math and Critical Reading (or converted ACT) scores of CLA+ freshmen. The transformation is based on data from college freshmen who took CLA+ in fall 2013. The application of common parameters places both CWRA+ section scores on the same scale.

Finally, CWRA+ Total Scores are calculated by taking the average of the two CWRA+ section scores. Thus, students who do not complete or provide scorable responses for both sections of the assessment do not receive Total CWRA+ scores.

<sup>2</sup> Again, PT subscores are not adjusted because they support criterion-referenced interpretations based on the use of a scoring rubric.

## APPENDIX L: PERCENTILE LOOK-UP TABLES

### PERCENTILE LOOK-UP TABLES FOR CWRA+ SCORES

For schools interested in the distribution of CWRA+ performance, CAE provides percentile tables that list scores for total CWRA+, as well as each section of the examination (PT and SRQs), all associated with a percentile value.

These tables are available on CAE's website. Institution-level percentile scores can be found at [www.cae.org/cwrapluschoolpercentiles](http://www.cae.org/cwrapluschoolpercentiles), and student-level percentile scores can be found at [www.cae.org/cwraplusStudentpercentiles](http://www.cae.org/cwraplusStudentpercentiles).



## APPENDIX M: STUDENT DATA FILE

### EXPLORING STUDENT DATA

In tandem with your institutional report, CAE provides a CWRA+ Student Data File, which gathers content from three sources: CWRA+ scores and identifiers computed by CAE, academic data and demographic information provided by your registrar, and self-reported information from your students' CWRA+ online profiles and post-assessment surveys. Each piece of data in the spreadsheet is identified as a separate variable.

The Student Data File contains information identifying each student and the test administrations being reported. Here, you will also find testing times and a full range of scoring information, such as Performance Task (PT) subscores and section scores, Selected-Response Question (SRQ) subscores and section scores, and Total CWRA+ scores. Other scoring information includes percentile ranks for each section and the test as a whole, and overall mastery levels.

The data file provides student grade point average and demographic information as well, including student responses to new survey questions regarding how much effort they put into each CWRA+ section and how engaging they found these sections to be. Student responses may help contextualize individual scores and institutional results. These responses may also help schools identify motivational issues within participant groups, so schools can adjust their outreach and recruitment methods for future administrations.

Local Survey is a tool that allows institutions to add as many as nine questions of their own to the post-assessment survey. If an institution uses the Local

Survey feature within the CWRA+ testing platform, responses to these questions will also appear in the Student Data File. The set of combined questions allows schools to create a richer, customized collection of data to facilitate institutional research using CWRA+.

You may link the student-level information in this file with other data you collect—for example, from local portfolios, assessments, or studies of course-taking patterns, specialized program participation, etc. The gathered information can help you hypothesize about a range of factors related to institutional performance.

Student-level scores were not originally designed to serve a diagnostic purpose at the individual level. However, with the advent of CWRA+, these scores have greater utility. Student-level results can now be used for formative purposes, to identify areas of weakness for individual students and to help determine performance issues across participant groups. Schools may analyze the performance of student subgroups to determine whether certain students may benefit from targeted educational enhancements.

Starting with the fall 2013 administration, student-level CWRA+ results can now be compiled from year to year, yielding a larger and much richer data set than one gathering results from a single academic year. Student data aggregated across years will allow schools to track performance longitudinally so they can identify improvements in critical thinking and written communication made by their students.

## APPENDIX N: MOVING FORWARD

### WHAT NEXT?

The information presented in your institutional report is designed to help you better understand the contributions your school has made toward student learning. Yet, the report alone provides only a snapshot of student performance. By combining it with other tools and services that CWRA+ has to offer, the institutional report can become part of a powerful evaluation and enrichment strategy. It can help you and your school target specific areas of improvement and align teaching, learning, and assessment effectively to enhance student performance over time.

We encourage institutions to examine CWRA+ performance closely and review the results carefully with their educators. Schools can extend these analyses by linking student-level CWRA+ outcomes with other data sources and pursuing in-depth sampling. Collaboration with peer schools and participation in professional development opportunities can support institutions and their educators further by showing how research findings can inform teaching practices and help improve student learning.

Using your Student Data File, you can relate student-level CWRA+ results to data you collect on course-taking patterns, grade achievement, and other topics of inquiry. CWRA+ subscores in Analysis and Problem Solving, Writing Effectiveness, Writing Mechanics, Scientific and Quantitative Reasoning, Critical Reading and Evaluation, and Critique an Argument can contribute to analyses of portfolios, student surveys, and other sources by helping you focus on specific areas that may benefit from improvement. Internal analyses conducted through in-depth sampling can help you generate hypotheses and develop a basis for additional research.

CWRA+ can offer peer group comparisons, but the true strength of peer learning comes through collaboration. CAE facilitates cooperative

relationships among CWRA+ schools by encouraging the formation of consortia. Moreover, CAE hosts web conferences that periodically feature campuses engaged in promising work with CWRA+.

CAE also provides workshops geared toward helping institutions maximize the utility of their Student Data Files. In these sessions, CAE researchers work with institutional staff, showing them ways to dig deeper into student results so they can answer questions about performance on the CWRA+ and identify areas of strength or weakness. To reserve one of these sessions for your institution, please email [clateam@cae.org](mailto:clateam@cae.org).

Finally, our professional development services shift the focus from assessment outcomes to pedagogical tools in Performance Task Academies. These two-day, hands-on training workshops offer faculty members guidance in the creation of their own performance tasks. Modeled on the structure of CWRA+ tasks and designed to support the teaching objectives of individual courses, faculty-developed tasks can be used as classroom exercises, homework assignments, or even local-level assessments. To learn more about Performance Task Academies, please consult CAE's website ([www.cae.org/pta](http://www.cae.org/pta)).

In all these ways, we encourage institutions to explore a system of continuous improvement driven by the diagnostic potential of CWRA+. When used in combination, our programs and services reinforce the belief that institutions must connect teaching, learning, and assessment in authentic and meaningful ways to strengthen and advance their students' higher-order thinking skills.

Without your contributions, CWRA+ would not be on the exciting path it is on today. We thank you for your participation and look forward to your continued involvement!

## APPENDIX O: CAE BOARD OF TRUSTEES AND OFFICERS

### CAE Board of Trustees and Officers

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