



Shasta College

Office of Research and
Institutional Effectiveness

Shasta College Institutional Student Learning Outcomes

Spring
2017 Student
Survey Results

Data Source: Internal Institutional Student Learning Outcome Assessments.

Prepared by Jenna Barry Highfield, M.A., Shasta College Office of Research & Institutional Effectiveness, on 6/27/17.

Contact us at research@shastacollege.edu

Shasta College Institutional Student Learning Outcomes: *Spring 2017 Student Survey Results*

Introduction & Background

Institutional Student Learning Outcomes (ISLOs) are statements outlining the specific knowledge, skills, attitudes, and abilities that institutions expect students to develop across their entire academic career at that particular institution. These abilities are expected to be cultivated by the students' broad experiences with the College at all levels, which includes students' interactions with courses, programs, and student services. ISLOs provide clarification regarding our mission statement, to both students and employees. The goal of ISLOs are to provide the institution with guidance in developing course, program, and student services learning outcomes.

The Shasta College Learning Outcomes Handbook nicely summarizes the differences between ISLOs and other learning outcomes:

“ISLOs are the collective expression of the learning experiences the college offers to students as a result of their total experience with any aspect of the college, including courses, programs and student services. Other types of Learning Outcomes focus on the particular skills, knowledge, and attitudes that students learn in specific courses or activities.”

Shasta College Learning Outcomes Handbook, 2012

At Shasta College, a significant focus was placed on ISLOs through 2015, however that momentum slowed due to the vacancies in the Research Office and then the Assistant Superintendent/Vice President of Instruction's Office. Since 2016, the re-organized Office of Research and Institutional Effectiveness has worked collaboratively with the Student Learning Outcomes (SLO) Coordinator and SLO Committee as well as with the College Council to continue the ISLO assessment process. This includes updating timelines for implementation of the current ISLO survey instruments and solidifying an on-going strategy for ISLO assessment. The current two ISLOs of Quantitative Reasoning and Critical Thinking were chosen for assessment in Spring 2017 as they were most recently redesigned by faculty through Faculty Inquiry Groups (FIGs) in 2015, and had not yet been tested with students. After the completion of the Spring 2017 cycle, the College will resume the regular assessment cycle of one ISLO each term over a 3-year period, with one term measuring two ISLOs.

Methodology

Survey Instruments

In 2014-2015, Faculty Interest Groups (FIGs) were formed to review the Quantitative Reasoning and Critical Thinking ISLO Survey Instruments, both of which were administered for the first time during the 2013-2014 academic year, and to identify improvement plans for these instruments.

Critical Thinking

The Critical Thinking Faculty Interest Group consisted of faculty across a variety of disciplines with a wide array of perspectives. Faculty assessed the survey results and the instrument, determining that a new assessment instrument was necessary as some of the questions were not adequately assessing critical thinking. The FIG members reviewed assessment instruments used by other colleges, and reviewed specific survey items during meetings. The faculty determined that an 8-item survey would fit within the identified classroom survey administration time constraint of 10 minutes. This also makes it reasonable for on-line delivery. These items were determined at the final meeting by the FIG. Next steps would include working with the Office of Research & Institutional Effectiveness on administration of the surveys. See Appendix A for the Critical Thinking ISLO Survey Instrument.

Quantitative Reasoning

The FIG for the Quantitative Reasoning Survey included input from all full-time math faculty and some part-time faculty. The goal was to review the survey results, and assess potential changes needed to improve the survey instrument. A discussion regarding the definition of quantitative reasoning was also held. Faculty decided to revise the current survey due to poor results, and analyze the outcomes over the next several years. Some new questions were added and some previous questions were revised for clarity. The survey can continue to be improved as additional results are gained. See Appendix B for the Quantitative Reasoning ISLO Survey Instrument.

Procedure

Any student enrolled in a Shasta College course was included in the sample. Basic student information was gathered from Colleague, and contained in a secure location to ensure the confidentiality of the information. Students were informed through an introductory letter that participation in the survey was completely voluntary and would be kept confidential.

The surveys were hosted separately online by Survey Monkey. Students were randomly assigned to be e-mailed either the link to the Critical Thinking Survey or the Quantitative Reasoning survey. Random assignment was done in Microsoft Excel with the random assignment formula, shown below:

CHOOSE(RANDBETWEEN(1,2),"A","B")

Random Assignment function in Microsoft Excel

In the above equation, the numbers (1,2) are representative of the number of groups used in the random assignment (2), and "A","B" representing the values used to identify the two different groups to which each person was randomly assigned. For purposes of our study, Group A was assigned to Quantitative Reasoning, and Group B to Critical Thinking.

Students were sent an e-mail through Survey Monkey requesting participation (see Appendix C for the Introductory e-mail sent to students). They were informed that an incentive of a \$15 gift certificate to the Shasta College bookstore was being offered as a drawing, and that they could choose to enter themselves into this drawing at the conclusion of the survey. They were provided with a button to begin the survey.

Before being taken to the survey, a welcome letter was provided to the student (see Appendices D and E), informing them that participation in the survey was completely voluntary, and confidential. The survey topic and rationale was briefly explained and the length of the survey was estimated. Students were provided with contact information should they have questions about the survey.

The survey was open between May 4, 2017 and May 14, 2017. Two reminder e-mails were sent to non-responding students on May 9 and May 11, 2017. Two students from each survey group were randomly selected as the winners of the gift certificates and notified via e-mail.

Data and Analysis

Data

Data was downloaded from Survey Monkey into an Excel file separately for each assessment. Only participants who answered every question or statement on the assessment, or survey, were retained for analyses as total scores had to be calculated for assessment results. Once it was determined that participants completed every question/statement by removing any blank responses through the filtering option in Excel, the data was uploaded into SPSS for further analysis. The assessment results were then merged with the respondent's demographic information taken from Colleague by matching e-mail addresses of students responding to the assessment to the e-mail addresses of all students sent the assessment. This was done separately for each assessment test to examine disaggregated student information across the results of both assessment tests.

Survey Scoring

Both assessments are skills-based assessments, therefore the number of items with a correct response are counted as the total score. To calculate the percentage of correct responses, the number of correct items (or the Total Score) is divided by the total number of items on the assessment. For each assessment, percent values are calculated for the following proficiency (or mastery) categories:

- 100% represents mastery
- 75% to 99% represents an acceptable proficiency
- 25% to 74% represents developing abilities
- 0% to 24% represents limited or emerging abilities

The value of 75% and higher was originally set as the baseline for proficiency on the ISLOs in 2014, and will be retained as the baseline for proficiency in the current analysis. A variable will be created with two categories, one for students with proficiency in critical thinking abilities (scoring 75% or above on the assessment) and one for students without proficiency in critical thinking abilities (scoring below 75% on the assessment). These categories and baseline proficiency numbers were determined by previous researcher(s), thus the conceptual methodology regarding reasons why each cutoff point was chosen is not available at this time. (This methodology will be reviewed for validity before administering subsequent ISLO assessments.)

Results

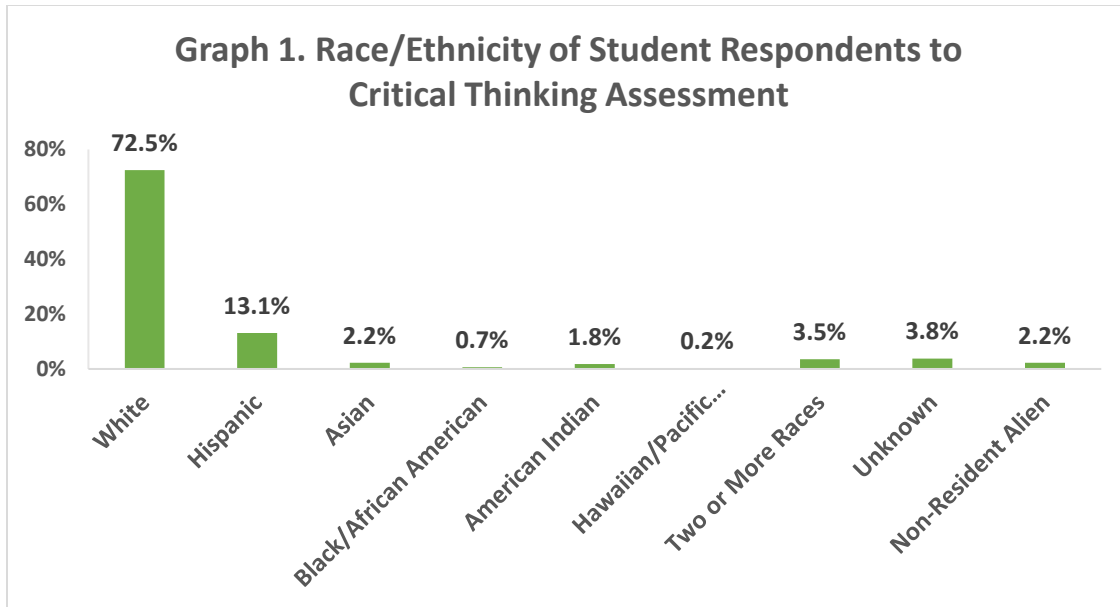
Critical Thinking Assessment

Participant Demographics

Out of the 4,792 Shasta College students invited to participate in the Critical Thinking Institutional Student Learning Outcome assessment, 548, or 11.4%, responded to the survey. However, 97 of these students did not complete the entire assessment, resulting in a total of 451 student completers. Students completing the entire assessment are included in analyses presented below, with the remaining students excluded.

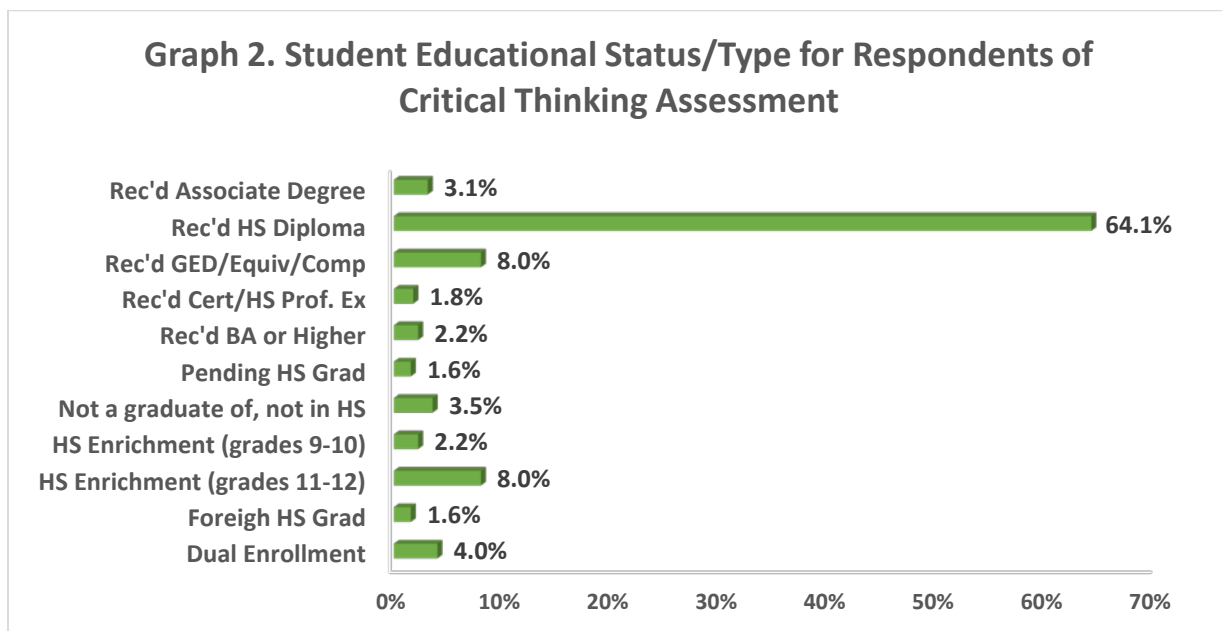
Gender & Race/Ethnicity

There were significantly more female respondents than male, with 71.6% of respondents being female compared to 27.9% male; additionally, 0.4% of respondents did not identify as either male or female. The majority of student respondents reported to be White (72.5%), with students identifying as Hispanic representing the next largest racial/ethnic category at 13.1%. Graph 1 displays all percentages of students responding to the assessment by racial/ethnic group.



Educational Status

Student educational status is recorded in Colleague from each student’s application. Of the students completing the assessment, 64.1% had received their high school diploma. A little over 14% of students were still enrolled in high school (enrolled as high school enrichment grades 9-10, high school enrichment grades 11-12, or dual enrollment). Students who received their GED, high school equivalency or competency certificates made up 8% of the sample. There were 3.5% of students who indicated they were not a graduate of, nor were they currently enrolled in high school. See Graph 2 for all student educational status categories.



Active Credits, Cumulative Completed Credits, Cumulative GPA, and Student Age

Table 1 displays descriptive statistics (i.e., mean, median, mode, standard deviation) for the student characteristics of current active credits, cumulative completed credits, cumulative GPA, and age of students who completed the Critical Thinking assessment.

Students took 9.54 credits ($SD = 4.58$) on average during the Spring 2017 semester, which is equivalent to half-time (or less) term enrollment. Student active credit status ranged from 0 credits to 21 credits. Students earned a range of 0 cumulative credits to 141 cumulative credits, with a mean of 33.46 cumulative completed credits ($SD = 28.84$). Regarding cumulative GPA, students had a mean GPA of 2.85 ($SD = 1.13$). Students were 29.7 years old on average ($SD = 12.87$, *range* = 14 to 70 years old).

Table 1. Descriptive Statistics for Student Active Credits, Cumulative Completed Credits, Cumulative GPA, and Student Age of Students Completing the Critical Thinking Assessment

	Active Credits	Cumulative Completed Credits	Cumulative GPA	Student Age
Mean	9.54	33.46	2.85	29.7
Median	11.00	27.00	3.10	26
Mode	12.00	0.00	4.00	18
Std. Deviation	4.58	28.84	1.13	12.87
Minimum	0.00	0.00	0.00	14
Maximum	21.00	141.00	4.00	70
Valid N	440	451	451	451
Missing	11	0	0	0

Term Load

Of the students responding, 444 had their term load indicated. Of these students, 22.7% were enrolled less than half-time, with 28.8% enrolled in half-time. There were 47.7% of students enrolled in courses full-time, and 0.7% of students with 20 or more units, which is considered “overload.”

Additional Student Characteristics

Regarding additional student characteristics, 12.9% ($n = 58$) of students reported to be single parents, with 13.7% ($n = 62$) of students not providing a response to this question. Nearly half of the students (47.2%, $n = 213$) responding to the survey were identified as economically disadvantaged, with 13.7% ($n = 62$) of students not providing a response. Only two students (0.4%) identified themselves as foster youth, and none of the students responding to the assessment were in EOPS. Eleven students completing the survey (2.4%) were identified as veterans, with 9.3% ($n = 42$) in DSPS. High school students enrolled in college courses (generally considered dual enrollment students, concurrent enrollment students, or high school enrichment students) comprised 14.2% ($n = 64$) of the sample.

Assessment Results

Students completing the Critical Thinking Institutional Student Learning Outcome (ISLO) assessment answered 54.5% of the responses correct on average, equivalent to answering an average of 4.4 questions, or 4 of 8 total questions, correct.

See Table 2 below for all descriptive statistics for the percent of questions students answered correctly and the total number of questions students answered correctly.

Table 2. Descriptive Statistics for Percent of Questions Answered Correctly and Total Number of Questions Answered Correctly on the Critical Thinking Assessment

	Total N	Mean	Median	Mode	SD	Min.	Max.
Percent Correct	451	54.49%	50.00%	62.50%	18.67%	0%	100%
Total # Correct	451	4.36	4	5	1.49	0	8

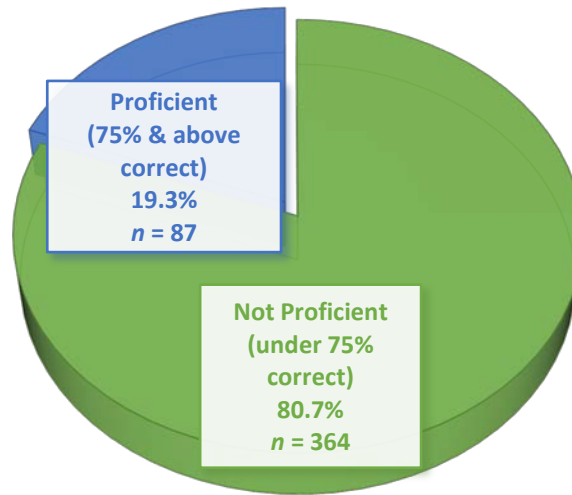
Proficiency in Critical Thinking Results

The majority (80.7%, $n = 364$) of the 451 students who completed the Critical Thinking ISLO assessment fell into the *not proficient* category, earning less than 75% correct on the assessment. The 19.3% ($n = 87$) of the remaining students answered 75% or above of responses correctly on the assessment, thus being identified as *proficient* in Critical Thinking abilities. See Graph 3 for a graphical display of these percentages.

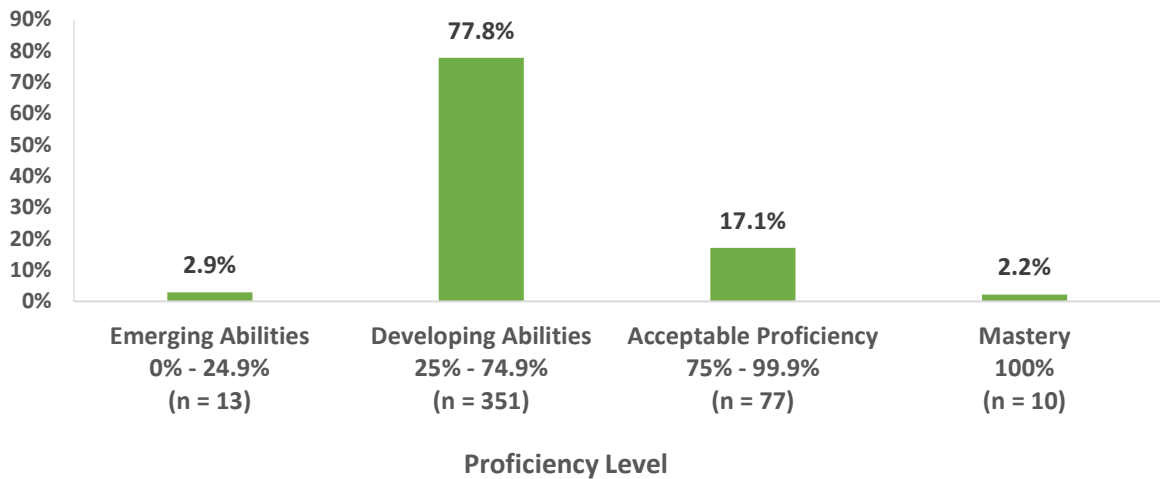
Only 10 students (2.2%) demonstrated *mastery* of Critical Thinking as evidenced by them answering all questions correctly on the assessments. A little over 17% of students (17.1%) demonstrated *acceptable proficiency* on the assessment, answering between 75% and 99.9% of questions correctly. These two categories comprise the *proficiency* category described above.

The majority of students (77.8%) fell into the *developing abilities* category, earning between 25% and 74.9% correct on the assessment. Finally, there were 2.9% of students who earned between 0% and 24.9% correct in the assessment, placing them into the *emerging abilities* category. See Graph 4 below for a display of all percentages.

Graph 3. Student Proficiency In Critical Thinking



Graph 4. Percentage of Students at Each Level of Proficiency in Critical Thinking



Cumulative Completed Credits by Proficiency Level

The number of cumulative completed credits earned by students was examined with descriptive statistics (e.g., mean, standard deviation, minimum and maximum values). Average cumulative completed credits were compared across the identified mastery categories/levels of proficiency as well as across students who were proficient versus those who were not proficient in critical thinking skills.

The 10 students (2.2%) who answered all assessment items correctly and were in the *mastery* proficiency level had an average of 46.25 cumulative completed credits at Shasta College, greater than all other groups (though not significantly). Students demonstrating acceptable proficiency ($n = 77$) by answering between 75% and 99.9% of the questions correctly earned an average of 34.90 cumulative completed credit units. This was similar to students with developing abilities ($n = 351$), scoring between 25% and 74.9% on the assessment, who had 32.92 cumulative completed credits on average. Finally, students with emerging abilities ($n = 13$), earning between 0% and 24.9% on the assessment, had 29.69 cumulative completed credits on average. See Table 3 below for additional descriptive statistics.

Table 4 presents average cumulative completed credits earned by students by proficiency or non-proficiency in Critical Thinking. Students not proficient in Critical Thinking skills as evidenced by them earning less than 75% correct on the assessment, earned less cumulative credit hours ($M = 32.81$) than proficient students (scoring 75% and above; $M = 36.20$). Overall, students completed an average of 33.46 ($SD = 28.84$) cumulative credit units. See the table below for all descriptive statistics.

Table 3. Cumulative Completed Credits by Proficiency Level for Students Completing the Critical Thinking ISLO Assessment

Mastery Level in Critical Thinking Abilities	N	Mean # Cum. Completed Credits	Std. Dev.	Min. Credits	Max. Credits
Emerging Abilities (0% - 24.9%)	13	29.69	31.15	0.0	95.5
Developing Abilities (25% - 74.9%)	351	32.92	28.42	0.0	135.0
Acceptable Proficiency (75% - 99.9%)	77	34.90	30.82	0.0	141.0
Mastery (100%)	10	46.25	24.79	18.5	93.0
Total	451	33.46	28.84	0.0	141.0

Table 4. Descriptive Statistics of Cumulative Credits Earned by Categories of Proficient or Not Proficient in Critical Thinking Abilities

Proficiency in Critical Thinking Abilities	N	Mean # Cum. Completed Credits	Std. Deviation	Min. Credits	Max. Credits
Not proficient (under 75% correct)	364	32.81	28.49	0.0	135.0
Proficient (75% & above correct)	87	36.20	30.28	0.0	141.0
Total	451	33.46	28.84	0.0	141.0

Student Proficiency Disaggregated by Student Demographics

Of the male students who responded to the assessment, 20.63% were proficient in Critical Thinking skills compared to 18.89% of female students. Students with an undeclared gender cannot be reported on due to having less than 10 students in each category. See Table 5 below for additional percentages of student proficiency by gender. Some of the totals are removed from the table to protect student confidentiality.

Students not proficient in critical thinking skills were nearly identical in age to students who were proficient ($M_{proficient} = 29.47$ years; $M_{not\,proficient} = 29.47$ years). See Table 6 below.

Student proficiency in critical thinking skills was disaggregated by race/ethnicity and some of the frequencies and percentages of the racial/ethnic groups are provided in Table 7 below. However, many of the counts had to be suppressed due to having less than 10 people in that subgroup; other numbers were protected, or masked, in order to maintain that confidentiality (and not allow readers to calculate the missing values).

Nonetheless, the only subgroup that was large enough to report on was students who identified as White. Of these students, 19.27% were proficient in critical thinking skills. Students identifying as Hispanic were primarily not proficient at 88.14% ($n = 52$). See Table 7 below for additional percentages and frequency counts.

Table 5. Student Proficiency Status in Critical Thinking Skills Disaggregated by Student Gender

	Not proficient		Proficient		Total	
	n	%	n	%	n	%
Male	100	79.37%	26	20.63%	126	27.94%
Female	262	81.11%	61	18.89%	323	71.62%
Undeclared	*	-	*	-	*	-
Total	**	80.71%	**	19.29%	451	100.00%

*Count < 10 so data is suppressed (not shown) per data confidentiality regulations.

**Number removed to protect confidentiality of respondents per data confidentiality regulations.

Table 6. Student Proficiency Status in Critical Thinking Skills Disaggregated by Student Age

	N	Mean Age	Standard Deviation
Not Proficient	364	29.75	12.49
Proficient	87	29.47	14.42
Total	451	29.70	12.87

Table 7. Student Proficiency Status in Critical Thinking Skills Disaggregated by Student Race/Ethnicity

	Not proficient		Proficient		Total	
	n	%	n	%	n	%
White	264	80.73%	63	19.27%	327	72.51%
Hispanic	52	88.14%	*	-	**	-
Asian	*	-	*	-	10	2.22%
Black/African American	*	-	*	-	*	-
American Indian	*	-	*	-	*	-
Hawaiian/Pacific Islander	*	-	*	-	*	-
Two or More Races	**	62.50%	*	-	16	3.55%
Unknown	**	76.47%	*	-	17	3.77%
Non-Resident Alien	*	-	*	-	10	2.22%
Total	364	80.71%	87	19.29%	451	100.00%

*Count < 10 so data is suppressed (not shown) per data confidentiality regulations.

**Number masked to protect confidentiality of respondents per data confidentiality regulations.

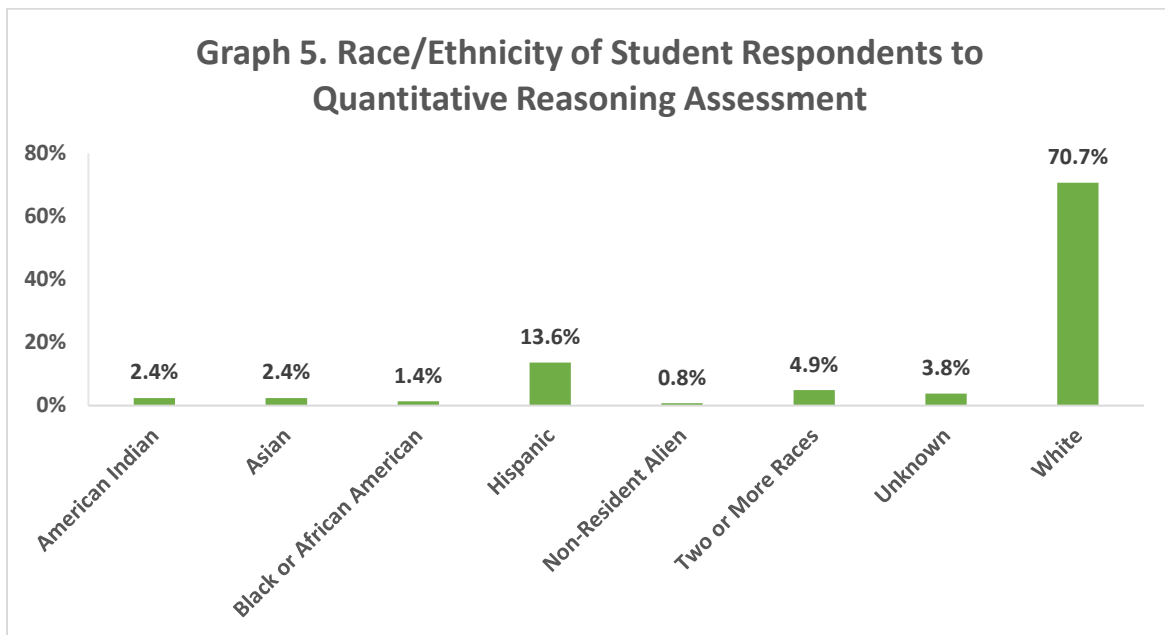
Quantitative Reasoning Assessment

Participant Demographics

There were 4,880 Shasta College students invited to participate in the Quantitative Reasoning Institutional Student Learning Outcome assessment. Out of these students, 540 students, or 11.1%, responded to the assessment. However, 171 (31.7%) of these students who responded to the assessment did not complete it. This resulted in a total of 369 students completing the entire survey, or 7.6%. Only students who completed the entire assessment are included in the analyses presented below, with the remaining students excluded.

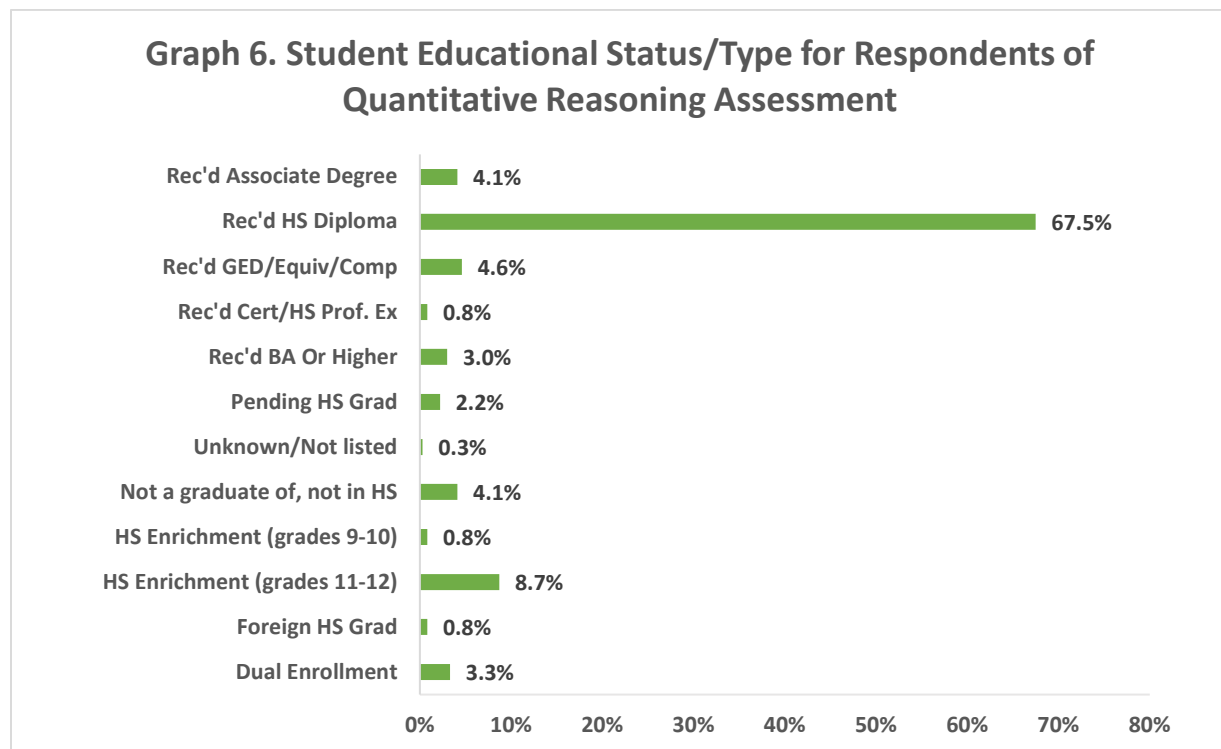
Gender & Race/Ethnicity

Females comprised the majority of the sample, with 276 (74.8%) of the student respondents being female compared to only 93 males (25.2%). The sample consisted of 70.7% of students who identified as White, with Hispanics, the next largest racial/ethnic group, comprising 13.6% of the sample. Students identifying as two or more races made up 4.9% of the sample. See Graph 5 below for the percentage of each racial/ethnic group within the sample.



Educational Status

Student educational status is recorded in Colleague from each student's application. Of the students completing the assessment, 67.5% ($n = 249$) had received their high school diploma. There were 12.8% of students still enrolled in high school (enrolled as high school enrichment grades 9-10, high school enrichment grades 11-12, or dual enrollment). Students who had received their GED, high school equivalency or competency certificates comprised 4.6% of the sample completing the assessment. Additionally, 4.1% of students who completed the assessment had received an Associate Degree. See Graph 6 for student educational status categories.



Active Credits, Cumulative Completed Credits, Cumulative GPA, and Student Age

Table 8 displays descriptive statistics (i.e., mean, median, mode, standard deviation) for the student characteristics of current active credits, cumulative completed credits, cumulative GPA, and age of students who completed the Quantitative Reasoning assessment.

On average, students were taking 9.12 credits ($SD = 4.56$) during the Spring 2017 semester, which is equivalent to half-time (or less) term enrollment status. Student active credit status ranged from 0 credits to 23 credits. Students earned on average 32.74 cumulative completed credits ($SD = 31.85$), with cumulative credits completed ranging from 0 credits to 198.5 credits. Regarding cumulative GPA, students had an average GPA of 2.82 ($SD = 1.17$). Students were roughly 31 years old on average ($M = 30.98$, $SD = 14.37$), with student ages ranging from 14 to 76 years old.

Table 8. Descriptive Statistics for Student Active Credits, Cumulative Completed Credits, Cumulative GPA, and Age for Students Completing the Quantitative Reasoning Assessment

	Active Credits	Cumulative Completed Credits	Cumulative GPA	Student Age
Mean	9.12	32.74	2.82	30.98
Median	10.00	22.00	3.08	27.00
Mode	12.00	0.00	4.00	18.00
Std. Deviation	4.56	31.85	1.17	14.37
Minimum	0.00	0.00	0.00	14.00
Maximum	23.00	198.50	4.00	76.00
Valid N	362	369	369	369
Missing	7	0	0	0

Term Load

Of the students responding to the assessment, 366 had their term load indicated. Of these students, 26.8% were enrolled less than half-time, with 30.1% of students enrolled half-time. There were 42.6% of students enrolled full-time, and 0.5% ($n = 2$) of students with 20 or more units, which is considered “overload.”

Additional Student Characteristics

Regarding additional student characteristics, 12.2% ($n = 45$) of students reported to be single parents, with 14.4% ($n = 53$) of students not providing (or having) a response to this question. Over half of the students assessed were identified as economically disadvantaged ($n = 192$; 52%), with 54 students, or 14.6%, not providing a response. Four students (1.1%) identified themselves as foster youth, with 16 students (4.3%) identifying as Veterans and 43 students (11.7%) indicating they were part of DSPS. None of the students reported to be in EOPS. High school students enrolled in college courses (generally considered dual enrollment students, concurrent enrollment students, or high school enrichment students) comprised 12.7% ($n = 47$) of the sample.

Assessment Results

Students completing the Quantitative Reasoning Institutional Student Learning Outcome (ISLO) assessment answered 47.37% of the responses correct on average, equivalent to answering an average of 9.36 questions, or 9 of 19 total questions, correct. See Table 9 below for descriptive statistics for the percent of questions answered correctly and total number of questions students answered correctly.

Table 9. Descriptive Statistics for Percent of Questions Answered Correctly and Total Number of Questions Answered Correctly on the Quantitative Reasoning Assessment

	Total N	Mean	Median	Mode	SD	Min.	Max.*
Percent Correct	369	49.27%	47.37%	47.37%	19.60%	0%	94.74%
Total # Correct	369	9.36	9	9	3.72	0	18

*Maximum score earned by students; Maximum score possible = 19.

Proficiency in Quantitative Reasoning Results

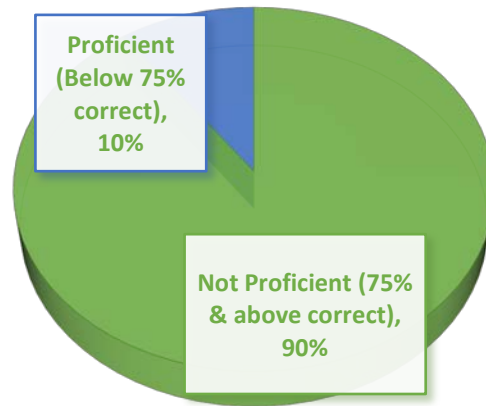
The majority (90%; $n = 332$) of the students completing the Quantitative Reasoning assessment fell into the *not proficient* category, earning less than 75% correct on the assessment. There were 10% of students ($n = 37$) who answered 75% or above of responses correctly on the assessment, and were thus identified as *proficient* in Quantitative Reasoning abilities. See Graph 7 for a graphical display of these percentages.

None of the students completing the Quantitative Reasoning ISLO assessment demonstrated *mastery* of Quantitative Reasoning skills (earning 100% on the assessment). Only 10% ($n = 37$) of students demonstrated *acceptable proficiency* as evidenced by these students answering between 75% and 99.9% of the answers on the assessment correctly.

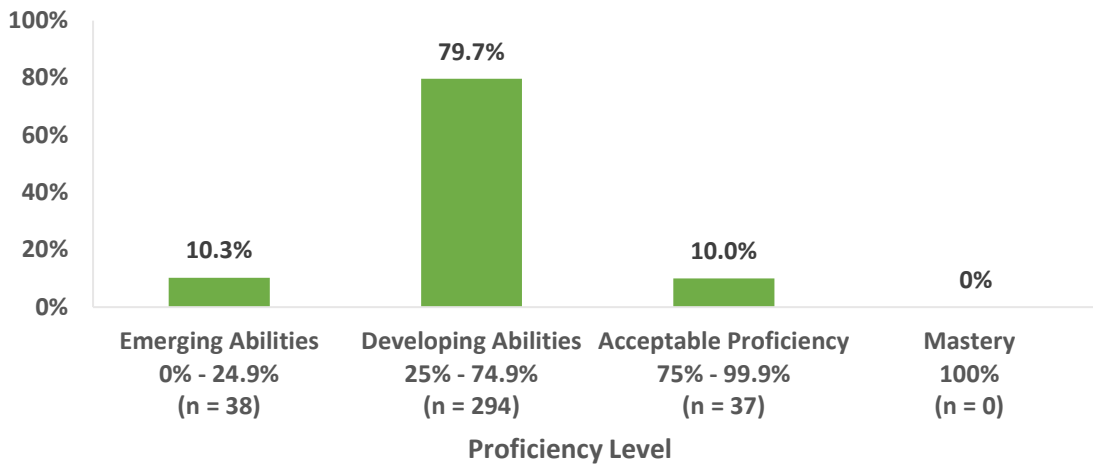
The majority of students were categorized as having *developing abilities* in Quantitative Reasoning skills, with 79.7% of students ($n = 294$) answering between 25% and 74.9% of the assessment

questions correctly. Finally, 10.3% of students ($n = 38$) had *emerging abilities* in Quantitative Reasoning, answering between 0% and 24.9% of the questions correctly. See Graph 8 below for a display of all percentages.

Graph 7. Student Proficiency in Quantitative Reasoning



Graph 8. Percentage of Students at Each Level of Proficiency in Quantitative Reasoning



Cumulative Completed Credits by Proficiency Level

The number of cumulative completed credits earned by students was examined with descriptive statistics (e.g., mean, standard deviation, minimum and maximum values). Average cumulative completed credits were compared across the identified mastery categories/levels of proficiency as well as across students who were proficient versus those who were not proficient in quantitative reasoning skills.

None of the students completing the Quantitative Reasoning assessment answered all 19 questions correctly to be placed in the mastery proficiency level. Students demonstrating acceptable proficiency ($n = 37$) by answering between 75% and 99.9% of the questions on the assessment correctly had earned the most credit hours out of the three groups, with an average of 36.85 cumulative completed credits ($SD = 32.94$). Students with developing abilities ($n = 294$), who answered between 25% and 74.9% of the questions on the assessment correctly, had completed an average of 32.67 credit units ($SD = 31.94$). Students with emerging abilities ($n = 38$) in quantitative reasoning, having answered between 0% and 24.9% of the questions correctly, averaged 29.24 ($SD = 30.49$) cumulative completed credit units. See Table 10 below for additional descriptive statistics.

Table 11 presents average cumulative completed credits earned by students by whether or not the student scored as *proficient* or *not proficient* on the Quantitative Reasoning assessment. Students who were not proficient in Quantitative Reasoning skills, as evidenced by them earning less than 75% correct on the assessment, earned about 4 credits less ($M = 32.28$, $SD = 31.75$) on average than students who were proficient in Quantitative Reasoning skills ($n = 37$). Students with proficiency in Quantitative Reasoning skills earned 36.85 cumulative completed credits on average ($SD = 32.95$). Overall, students completed an average of 32.74 ($SD = 31.85$) cumulative credit units. See Table 11 below for additional descriptive statistics.

Table 10. Cumulative Completed Credits by Proficiency Level for Students Completing the Quantitative Reasoning ISLO Assessment

Mastery Level in Quantitative Reasoning Abilities	N	Mean # Cum. Completed Credits	Std. Dev.	Min. Credits	Max. Credits
Emerging Abilities (0% - 24.9%)	38	29.24	30.49	0.0	98.5
Developing Abilities (25% - 74.9%)	294	32.67	31.94	0.0	198.5
Acceptable Proficiency (75% - 99.9%)	37	36.85	32.94	0.0	151.0
Total	369	32.74	31.85	0.0	198.5

Table 11. Descriptive Statistics of Cumulative Credits Earned by Categories of Proficient or Not Proficient in Quantitative Reasoning Abilities

Proficiency in Quantitative Reasoning Abilities	N	Mean # Cum. Completed Credits	Std. Deviation	Min. Credits	Max. Credits
Not proficient (under 75% correct)	332	32.28	31.75	0.0	198.5
Proficient (75% & above correct)	37	36.85	32.95	0.0	151.0
Total	369	32.74	31.85	0.0	198.5

Student Proficiency Disaggregated by Student Demographics

Of the male students who responded to the assessment, 18.28% were proficient in quantitative reasoning skills compared to only 7.25% of female respondents. See Table 12 below.

Students proficient in quantitative reasoning skills were slightly older ($M = 32.27$) than students who were not proficient in quantitative reasoning skills ($M = 30.83$). See Table 13 below.

Student proficiency in quantitative reasoning skills was disaggregated by race/ethnicity and some of the frequencies and percentages of the racial/ethnic groups are provided in Table 14 below. However, many of the counts had to be suppressed due to having less than 10 people in that subgroup; other numbers were protected, or masked, in order to maintain that confidentiality (and not allow readers to calculate the missing values).

Of the White students who responded, 28, or 10.73%, were proficient in quantitative reasoning skills. Additionally, there were 46 Hispanic students who were not proficient in quantitative reasoning skills. See Table 14 below for the available percentages and frequency counts.

Table 12. Student Proficiency Status in Quantitative Reasoning Skills Disaggregated by Student Gender

	Not Proficient		Proficient		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Male	76	81.72%	17	18.28%	93	25.20%
Female	256	92.75%	20	7.25%	276	74.80%
Total	332	89.97%	37	10.03%	369	100.00%

Table 13. Student Proficiency Status in Quantitative Reasoning Skills Disaggregated by Student Age

	N	Mean Age	Standard Deviation
Not Proficient	332	30.83	14.01
Proficient	37	32.27	17.40
Total	369	30.98	14.37

Table 14. Student Proficiency Status in Quantitative Reasoning Skills Disaggregated by Student Race/Ethnicity

	Proficient		Not Proficient		Total	
	n	%	n	%	n	%
American Indian	*	-	*	-	*	-
Asian	*	-	*	-	*	-
Black or African American	*	-	*	-	*	-
Hispanic	*	-	46	-	**	-
Non-Resident Alien	*	-	*	-	*	-
Two or More Races	*	-	**	-	18	4.88%
Unknown	*	-	**	-	14	3.79%
White	28	10.73%	233	89.27%	261	70.73%
Total	37	10.03%	332	89.97%	369	100.00%

*Count < 10 so data is suppressed (not shown) per data confidentiality regulations.

**Number removed to protect confidentiality of respondents per data confidentiality regulations.

Next steps: Having completed the Spring 2017 ISLO cycle for the assessment of institutional student learning outcomes, Shasta College will now review our results and their implications for student learning. This reflection will also include an examination of our surveys, constructs, methodology, and stated proficiency levels. The student surveys are conducted in conjunction with a larger mapping effort where faculty have linked SLO's with ISLO's in TracDat. As with past cycles, the combination of both efforts (ISLO surveys and curriculum mapping) will generate robust conversation about the extent to which our curriculum, instruction, and services are aligned with our institutional goals. In addition, reflection will shed light on what services (professional development, additional classroom resources, alignment with academic and student support services) will ensure that students are leaving Shasta College with the corresponding outcomes that encompass the collective student experience at Shasta College. The ISLO process will continue to be led by College Council in conjunction with the SLO committee and results of this process will be shared with all campus stakeholders.

Appendix A

Revised Critical Thinking Institutional Student Learning Outcome Survey Instrument

1. Assume the following claim is true:

If unicorns exist then today is Monday

Assume further that: *Today is Monday.*

Your friend concludes that *unicorns exist.*

Answers:

- a. Your friend's conclusion is reasonable.
- b. Your friend's conclusion is not reasonable.
- c. I do not know how to determine whether the conclusion is reasonable.

2. Assume the following claim is true:

If unicorns exist then today is Monday

Assume further that: *Today is not Monday.*

Your friend concludes that *unicorns do not exist.*

Answers:

- a. Your friend's conclusion is reasonable.
- b. Your friend's conclusion is not reasonable.
- c. I do not know how to determine whether the conclusion is reasonable.

3. Assume the following claim is true:

If unicorns exist then today is Monday

Assume further that: *Unicorns exist.*

Your friend concludes that: *Today is Monday.*

Answers:

- a. Your friend's conclusion is reasonable.
- b. Your friend's conclusion is not reasonable.
- c. I do not know how to determine whether the conclusion is reasonable.

4. Assume the following claim is true:

If unicorns exist then today is Monday

Assume further that: *Unicorns do not exist.*

Your friend concludes that: *Today is not Monday.*

Answers:

- a. Your friend's conclusion is reasonable.
- b. Your friend's conclusion is not reasonable.
- c. I do not know how to determine whether the conclusion is reasonable.

5. Consider that the following statements have been proven to be true:

“If Ralph voted in the last election, then he must be a citizen of the United States.
As a matter of fact, he is a citizen of the United States.”

Answers: Which statement below follows from the truth of the statements above?

- a. Ralph definitely voted in the last election.
 - b. Ralph definitely did not vote in the last election.
 - c. Ralph may or may not have voted in the last election.
 - d. If Ralph is a citizen of the United States, then he voted in the last election.
 - e. If Ralph did not vote in the last election, then he is not a citizen of the United States.
- 6.** How many spaces are there in a wheel with 90 spokes? *Note:* Spokes are the bars that radiate out from the hub of a wheel, such as a bicycle wheel.
- a. 89
 - b. 90
 - c. 91
 - d. 180
- 7.** Joel is stronger than Bill, but not as strong as Richard. Richard is not as strong as Donald. Lamont is stronger than Joel and Bill but not as strong as the others. Who is the second strongest?
- a. Joel
 - b. Bill
 - c. Richard
 - d. Donald
 - e. Lamont
- 8.** You hear your next door neighbor say: “People have the right to do whatever they want to their own bodies, as long as they do not harm anyone else. Therefore, women have the right to choose to obtain an abortion.”

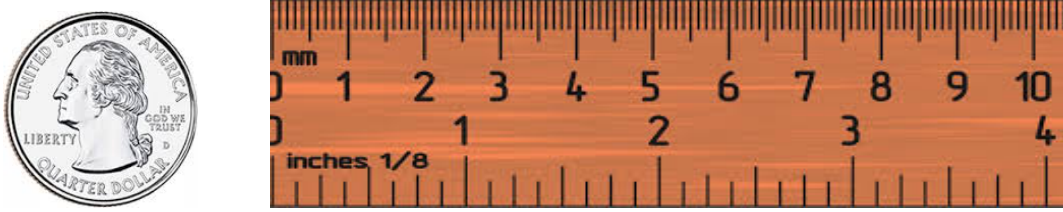
Answers:

Your neighbor's statement depends on which of the following?

- a. Abortion is morally wrong and therefore not permissible.
- b. In obtaining an abortion a woman harms someone else.
- c. The right to an abortion is guaranteed by the Constitution.
- d. Abortion is legal in the U.S.
- e. A woman receiving an abortion does not harm anyone else.

Appendix B

Revised Quantitative Reasoning Institutional Student Learning Outcome Survey Instrument

Question / Problem
<p>1. If you had $\frac{15}{16}$ pound of candy and $\frac{2}{3}$ of it got eaten at a party, which calculation would give the amount of candy that was eaten?</p> <p>a) unsure b) $\frac{15}{16} - \frac{2}{3}$ c) $\frac{15}{16} \div \frac{2}{3}$ d) $\frac{2}{3} \div \frac{15}{16}$ e) $\frac{2}{3} \times \frac{15}{16}$</p>
<p>2. Arrange the decimal numbers in order from smallest to largest.</p> <p>5.43 5.376 5.3072 5.4</p> <p>a) unsure d) 5.3072 5.376 5.4 5.43</p> <p>b) 5.43 5.4 5.3072 5.376 e) 5.4 5.43 5.376 5.3072</p> <p>c) 5.376 5.4 5.43 5.3072</p>
<p>3. You got a 10% raise, and you now earn \$2,200 per month. What was your salary before the raise?</p> <p>a) unsure b) \$1,980 c) \$2,000 d) \$1,650 e) \$2,420</p>
<p>4. A rectangle has an area of 40 in². If the length and width of the rectangle are doubled, what would the area be?</p> <p>a) unsure b) 160 in² c) 80 in² d) 100 in² e) 120 in²</p>
<p>5. Which measurement is most likely to be the diameter of the coin shown below?</p> <p>a) unsure b) 0.24 cm c) 0.24 m d) 2.4 mm e) 24 mm</p> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="margin-right: 20px;">←</div>  </div> <p>The image shows a US quarter coin on the left and a wooden ruler on the right. The ruler has markings in millimeters (0-10) and inches (0-4). The coin's diameter is approximately 24 mm.</p>
<p>6. A car travels at 60 miles per hour, while a truck travels at 55 miles per hour. After 3 hours, how much more distance does the car travel than the truck?</p> <p>a) unsure b) 25 miles c) 50 miles d) 10 miles e) 15 miles ??</p>
<p>7. Pick the answer which correctly fills in the blank.</p> <p>If a positive number is subtracted from a negative number, the sign of the result _____.</p> <p>a) unsure b) Is positive c) is negative d) depends on the absolute values of the numbers</p>

8. Jamal is filling bags of sand. All of the bags are the same size. Each bag must weigh less than 50 pounds. One sand bag weighs 57 pounds and another weighs 41 pounds. Determine whether Jamal can pour sand from one bag into the other so that the weight of each bag is less than 50 pounds.
- a) unsure
 - b) It is not possible for Jamal to make both bags weight under 50 pounds
 - c) Jamal can pour 7 pounds out of the bag starting with 57 pounds into the bag starting with 41 pounds.
 - d) Jamal can take the 57 pound bag and pour 8 pounds of sand into the 41 pound bag.**
 - e) By pouring 9 pounds into the 41 pound bag from the 57 pound bag, Jamal has solved his problem.

9. Which of the following is the largest if the value of x is 2 and the value of y is 3?

- a) unsure
- b) $(-x)^{15}$
- c) $(-x)^{10}$
- d) $(-y)^{15}$
- e) $(-y)^{10}$**

10. Pick the answer which correctly fills in the blank.

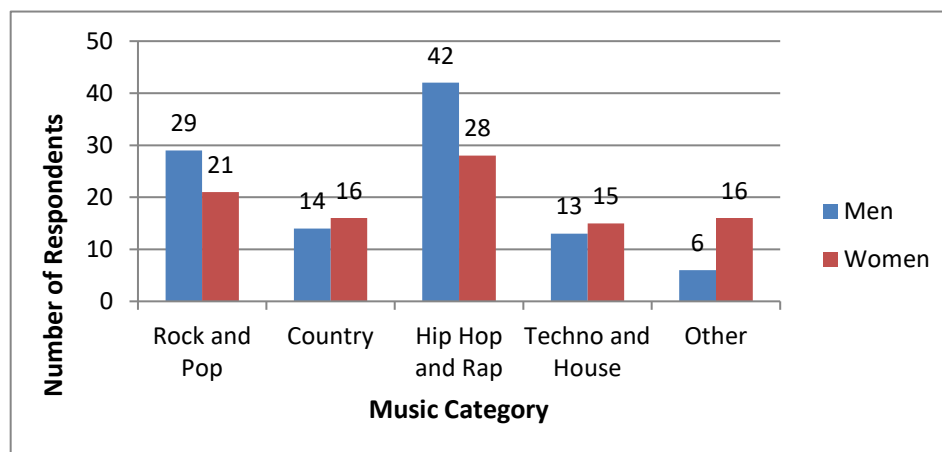
← Currently the average (mean) of all your test scores is 76%. You take another test and your score on that test is 66%. How will this additional score affect your overall average?
The new average would be _____ the original average.

- a) unsure
- b) less than**
- c) greater than
- d) about the same as

11. You read in the newspaper that the mean and median prices of homes in a well-to-do city are \$600,000 and \$800,000. The article does not specify which number is the mean and which is the median. Which is more reasonable?

- a) unsure
- b) Neither. Home prices are best looked at separately.
- c) The median because it is not affected by outlying scores.**
- d) The mean because it's the average.

For a statistics project, Rachel surveyed 200 college students to determine relative preferences for types of music. The results are given in the graph below. Use this graph to answer questions 12 and 13 below.



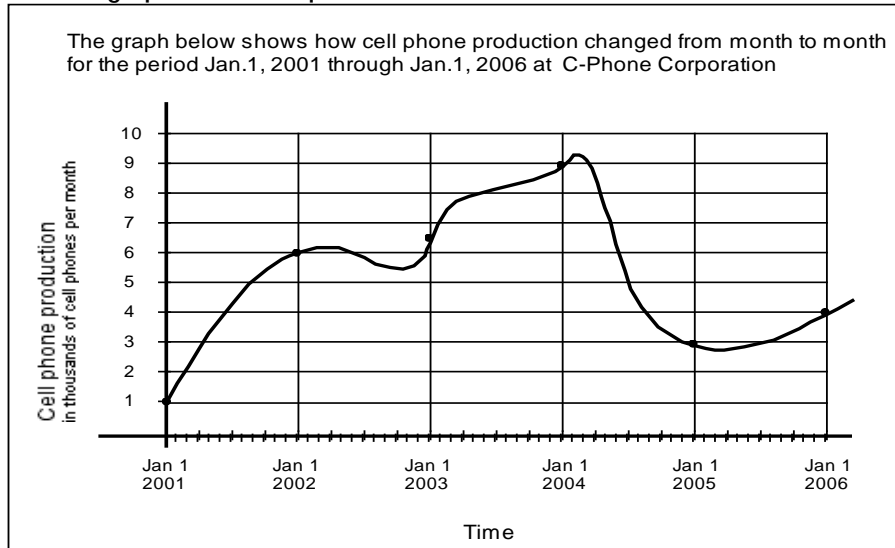
12. Of the people who prefer hip hop and rap, what fraction are women?

- a) unsure b) 28% c) $\frac{2}{5}$ d) $\frac{7}{50}$ e) $\frac{2}{3}$

13. Write the ratio of women who preferred hip-hop and rap to women who preferred rock and pop.

- a) unsure b) $\frac{3}{4}$ c) 7% d) $\frac{4}{7}$ e) $\frac{4}{3}$

Use this graph to answer questions 14 and 15.



14. During which year did the production increase the most?

- a) unsure b) 2001 c) 2002 d) 2003 e) 2004

15. Which year had approximately zero net change in production?

- a) unsure b) 2001 c) 2002 d) 2003 e) 2004

16. Abby is slower than Bob but faster than Chris. Chris is slower than Abby but faster than Deb. Choose the option below with the names of the people in order from fastest to slowest.

- a) Unsure
b) Abby, Deb, Chris, Bob
c) Deb, Abby, Bob, Chris
d) Chris, Deb, Abby, Bob
e) Bob, Abby, Chris, Deb

17. The fire department wants to send one booklet on fire safety to each teacher and homeowner in town. How many booklets will the department need if there are 30,000 homeowners, 500 teachers, and 350 teachers who own their own home?

- a) Unsure b) 30,150 c) 30,500 d) 30,850 e) 30,000

18. What is the next number in the sequence?

1, 3, 7, 15, 31, ...

- a) Unsure
- b) 70
- c) 63
- d) 42
- e) 104

19. In Mr. Geno's clock shop, two cuckoo clocks were brought in for repairs. One clock has the cuckoo coming out every six minutes, while the other one has the cuckoo coming out every eight minutes. Both cuckoos come out at exactly 12:00 noon. What time will it be when they both come out together again, the first time this happens after 12:00 noon?

- a) Unsure
- b) 12:48 pm
- c) They will never come out at the same time.
- d) 12:24 pm
- e) 2:32 pm

Appendix C

E-mail Requesting Participation in the Survey

NOTE. By replacing “Quantitative Reasoning” for “Critical Thinking,” the e-mail sent to students in the Quantitative Reasoning is written.

- **date:** Thursday, May 04, 2017 3:38 PM
- **sent to:** 4,780 recipients
- **subject:** Shasta College Institutional Learning Outcomes: We need your opinion! Win a gift card!

Institutional Student Learning Outcomes: Critical Thinking

Shasta College is assessing its Institutional Student Learning Outcomes by conducting a student survey about critical thinking abilities, and we need your help!

We would greatly appreciate your participation in the short survey by clicking on the button below.

By participating, you can choose to be entered into a drawing for a \$15 gift card to the Shasta College Book Store!
We thank you in advance for your participation!

If you have any questions, please feel free to email the Office of Research and Institutional Effectiveness at research@shastacollege.edu .

[Begin Survey](#)

Appendix D

Welcome Letter to Participants: Critical Thinking

Thank you for your willingness to participate in this short yet important survey about your **Critical Thinking** skills! Your answers will remain confidential and will help provide Shasta College with information regarding student critical thinking ability.

You can choose to be entered into a drawing for a \$15 gift card to the Shasta College Book Store by entering your e-mail address on the last page of the survey.

Your responses will still remain confidential.

Critical thinking is the ability to think clearly and rationally, and a fundamental tool by which one can arrive to reasoned conclusions based on a reasoned and organized process which is guided by method, discipline, knowledge, and common sense.

Please answer the questions on the following pages to the best of your ability and do not spend too much time on any one question.

We thank you for your participation.

Appendix E

Welcome Letter to Participants: Quantitative Reasoning

Thank you for your willingness to participate in this short yet important survey about your quantitative reasoning skills! Your answers will remain confidential and will help provide Shasta College with information regarding student quantitative reasoning abilities.

You can choose to be entered into a drawing for a \$15 gift card to the Shasta College Book Store by entering your e-mail address on the last page of the survey.

Your responses will still remain completely confidential.

Quantitative Reasoning is the ability to use appropriate mathematical methods, which include but are not limited to the ability to measure, compute, solve problems, and read and interpret data.

In order for us to evaluate your actual knowledge, we ask that you please **do not** use a calculator, and please **do not guess**. If you are unsure of how to arrive at the correct answer, please select the answer *unsure*.

Please do not spend too much time on any one question, and provide your best efforts.

We thank you again for your participation.