

## General Education SLOA Summary

General Education Category Mathematics Semester: Academic Year 2018 (SU17, FA 2017 → SP 2018)

**Data Summary:** (link to excel spreadsheet or cut and paste a chart of summary data)

In **AY 2018** there were a total of **3112** students who enrolled in a Mathematics General Education course. There are a total number of **16** mathematics courses and of this total the **4** major general education mathematics courses (requiring only MAT 100 or the equivalent) enroll 1569 students: **MAT 101** (College Algebra), **MAT 103** (Finite Math), **MAT 109** (Introduction to Statistics) and **MAT 114** (Introduction to Applied Algebra). A fifth course, MAT 106 (Elements of Logic) is also a Gen Ed course but enrollments were insufficient in AY2016/AY2017 to run the course. It is being discontinued.

The remaining students were taking mathematics courses with a MAT 101 prerequisite. These courses satisfy the mathematics Gen Ed requirement for students who do not need to take MAT 101. This happens when a student “tests out” of MAT 101 with an SAT score in mathematics above 550, or on the COMPASS test. **Significantly**, of the **1569** students enrolled in MAT 101, 103, 109 or 114, 22.1% of the total students *never took the assessment* because they either officially withdrew (8.0%) or they were “walk-away Fs” (20.0%) (See Table 3). These students are not reflected in most of this assessment summary.

To summarize, the *general education assessment is administered in all math classes every semester* during final exams and measures the expected student learning outcome in Mathematics:

***The ability to use numerical data and apply mathematical concepts appropriately.***

The assessment allows for

- An item analysis on each question which gives the faculty data on the concepts and skills in their course/section that need to be addressed with a plan of action. This is summarized for each course **(See Table 2)** for all courses which administered this assessment tool in AY 2017.
- Each course is benchmarked with the national PRAXIS data which shows that the 4 major general education courses which the majority of HCC students use to satisfy their mathematics requirement have scores of which are below the national norm for some topics. For a summary of the aggregate scores for these 4 courses, **(See Table 1)**.
- The courses with a prerequisite of MAT 101 (require an SAT score of 550 or higher) do better and specific content areas are easily addressed. **(See Table 4)**

CAAP Testing is planned for later. This will provide another benchmark for general education math assessments. (100 students in MAT 101 and MAT 109). The last CAAP Testing was done in FA 2016 for MAT 101 and MAT 109 classes and HCC students were above the national norm.

### Discussion of Analysis Results:

**Who:** The FT faculty developed this assessment and made the decision to administer it in all mathematics classes taught by both FT and adjunct faculty, to insure that students in the higher level mathematics courses were also achieving the learning outcomes in the mathematics category. Compilation of data used in this report is done by a custom program nicknamed “*Mathy*”. Grades and % success are collected directly from Datatel. Instructors must enter the # of walk-away F’s and common assessment scores. This Gen Ed Summary report includes only the **Gen Ed** assessment for AY 2018 but there is another assessment given for every math


course (not the same assessment for every course) called the **common course assessment**. This assessment is included on the Annual SLOA Summary Report (this is the Annual Gen Ed SLOA Summary).

**What:** The assessment tool for all Gen Ed courses was developed from a released PRAXIS exam (2008) and consists of 8 questions that measure and benchmark results for the expected General Education student learning outcome in mathematics. The questions specifically address the students' ability to solve problems using numbers and operations, geometry and measurement, algebra, data analysis and probability. Students are given the questions on a separate paper from the rest of their exam and they circle the correct answers. Instructors grade the papers from their own students. The results for each question for each individual student are entered by hand into an Excel Spreadsheet by each instructor. The data can be correlated with each student's grade and summarized by section which provides a comparison of traditional, on-line and hybrid sections. A table of the content assessed by each question with the % correct for the National Cohort and the % correct for the HCC students taking this assessment in AY 2017.

**Table 1.**

<i>Question Number</i>	<i>Content Category</i>	<i>Percentage Correct</i>	<i>%Correct HCC *Gen Ed</i>
		National, n =2520	n = 1164
1	Geometry and Measurement	65%	65.8
2	Number and Operation	82%	82.3
3	Data Analysis and Probability	54%	62.2
4	Algebra	50%	58.7
5	Number and Operation	41%	40.7
6	Data Analysis and Probability	67%	68.5
7	Algebra	87%	82.7
8	Algebra	76%	77.5

\*includes only the 4 basic Gen Ed courses with a MAT 100 prerequisite (101,103,109,114).

 = below national norm

**Where:** The assessments were administered in the classroom as supplements to final exams or in the Testing Center if the final exam is given in the Testing Center. This assessment is NOT to be confused with the 5 problem SLOA supplement to the College Algebra final exam (which is a course-specific assessment which specifically measures course learning outcomes in College Algebra or the MAT 109 (Introduction to Statistics) 18-item common course assessment. Both of these assessments are different from the Gen Ed Assessment (8 questions) described in this report.

**When:** Most of the assessing occurs during the final exam period each semester. Data for the summer semester is not included here. Ideally, data analysis for these General Education assessments is done at the end of the academic year. Realistically, it occurs in late summer or early fall.

**What was determined?**


- HCC students (MAT 101, 109, and 114) scores for each question are compared to the national cohort in **Table 2.**
  - Statistics students are scoring below College Algebra students in most areas.
  - Question 4 (Algebra) scores for HCC MAT 114 students did not meet the national norm.
  - Question 7 (Algebra) scores for HCC students in every MAT 101 and MAT 109 course did not meet the national norm.

- Question 6 (Data Analysis and Probability) scores for statistics students did not meet the national norm.

**Table 2. Course Specific Item Analysis**

**Gen Ed Mathematics Assessment AY 2018 (MAT 101, 103-not offered, 109, 114)**

	National Cohort	MAT 101 SP2018	MAT 101 FA2017	MAT 109 SP2018	MAT 109 FA2017	MAT 114 SP2018	MAT 114 FA2017	Total FY 2018
<b>N = #of students tested</b>	2520	393	332	178	244	9	8	1164
<b>total score %</b>	65.3	63.5	66.8	60.4	63.3	66.8	83.1	67.3
<b>Q1 % correct</b>	65	70	73	48	54	67	83	65.8
<b>Q2 % correct</b>	82	78	85	76	77	78	100	82.3
<b>Q3 % correct</b>	54	55	60	56	63	56	83	62.2
<b>Q4 % correct</b>	50	58	53	58	56	44	83	58.7
<b>Q5 % correct</b>	41	34	43	36	37	44	50	40.7
<b>Q6 % correct</b>	67	64	66	60	60	78	83	68.5
<b>Q7 % correct</b>	87	77	78	79	79	100	83	82.7
<b>Q8 % correct</b>	76	72	76	70	80	67	100	77.5

 = below national norm

- The number of “walk-away” Fs (WF) and W are a concern in both MAT 101 and 109 and are not included in any of these numbers because these students leave before they take the assessment. Presumably before enrolling in MAT 101 or MAT 109 these students demonstrated that they were ready for a general education course by passing MAT 100 or by demonstrating MAT 100 level skills on the COMPASS exam.
- The National Community College Benchmark Project (NCCBP) provides Retention and Success data for Core Academic Skills as follows:

	National for 50 <sup>th</sup> %tile	*HCC Reported Value
Algebra Retention rate	86.41%	93.42% (official withdrawals only)
Algebra Enrollment success	66.35%	68.09%

Algebra Completer success 77.87% 72.89%

\* Fall 2015 data (NCCBP is always reporting on data which is about 3 years old)

**Table 3. % Success, Withdrawal, D,F for Math Classes AY 2018.**

	*Total registered	%A,B,C	%W	% Walk-away F	% D, F
MAT 101	630	60.6	7.9	12.7	31.5
MAT 102	3	99.9	0	0	0
MAT 103	4	100	0	0	0
MAT 107	28	100	0	0	0
MAT 108	30	86.7	3.3	6.7	10
MAT 109	459	58.2	13.3	9.4	28.5
MAT 114	17	76.5	5.9	0	17.6
MAT 161	110	69.1	10.9	7.3	20
MAT 164	18	50	27.8	11.1	22.2
MAT 203	121	85.1	3.3	0.8	11.5
MAT 204	66	63.6	13.6	10.6	22.8
MAT 205	12	91.7	8.3	0	0
MAT 206	33	87.9	6.1	6.1	6.1
MAT 207	20	90	0	5.0	10
MAT 208	5	40	40	20	20
MAT 209	Not yet reported				
<b>**NCCBP</b>	236 institutions	63.40%	14.10%	Not reported	22.50%

\* FA 16, SP 17, SU16 only

\*\*50<sup>th</sup> %tile values

**Table 4. Item Analysis of Praxis Assessment for every Mathematics Course, SP 18**

	Registered	Completed	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
National Norm		N=2520	65%	82%	54%	50%	41%	67 %	87%	76%
MAT 101	393	328	70	78	55	58	34	64	77	72
MAT 102	3									
MAT 103	4	4	100	100	100	100	100	100	100	100
MAT 107	15	15	67	73	53	67	67	53	87	76
MAT 108	15	14	64	93	50	64	64	64	93	86
MAT 109	178	107	48	76	56	58	36	60	79	70
MAT 114	9	9	67	78	56	44	44	78	100	67
MAT 161	45	35	83	91	71	74	46	80	91	74
MAT 164	9	6	100	83	67	83	50	67	83	83
MAT 203	41	32	84	91	69	88	69	84	91	94
MAT 204	35	21	90	100	90	62	52	81	100	90
MAT 205	12	0								
MAT 206	33	27	81	96	89	81	52	81	93	81
MAT 207										
MAT 209										

The number of students enrolled in a class who do not take the Gen Ed Assessment at the end of the course has been a concern. In the past there have been three groups of students in this category:

1. students who officially withdraw,
2. students who walk away from the course without withdrawing do not take the assessment and
3. ESSENCE students in the high schools who do not take the Gen Ed assessment (or the common course assessment) because the instructors fail to administer these tests. That problem was addressed in AY 14 and all ESSENCE students taking MAT 101, MAT 109 or MAT 203 (the only 3 ESSENCE courses given on site at the high schools) were given these exams. This was corrected in WCPS area schools but this is still occurring the PA schools.

**General Education Mathematics Data AY 2018**

**MAT 101, College Algebra**

Semester	N = # of students	# successful Students	Success, %	Walk away F	Withdrawal	Mean GPA	Course Out of 35	Gen Ed Out of 8
Total	788	511	64.8	132	50	1.9	25.89	5.16

**MAT 103, Finite Math**

Semester	N = # of students	# successful Students	Success, %	Walk away F	Withdrawal	Mean GPA	Course out of 19	Gen Ed Out of 8
Total	4	4	100	0	0	n/a	n/a	n/a

**MAT 109, Introduction to Statistics**

Semester	N = # of students	# successful Students	Success, %	Walk away F	Withdrawal	Mean GPA	Course	Gen Ed Out of 8
Total	473	281	59.4	86	58	1.97	n/a	4.87

**MAT 114, Applied Algebra**

Semester	N = # of students	# successful Students	Success, %	Walk away F	Withdrawal	Mean GPA	Course Out of 10	Gen Ed Out of 8
Total	17	13	76.5	0	1	3.43	5.14	6.00