

Course Assessment Report
Washtenaw Community College

Discipline	Course Number	Title
Mathematics	034	MTH 034 07/01/2015- Foundations of Numeracy
Division	Department	Faculty Preparer
Math, Science and Engineering Tech	Mathematics	Jason Davis
Date of Last Filed Assessment Report		

I. Assessment Results per Student Learning Outcome

Outcome 1: Calculate mentally, problems involving addition, subtraction, multiplication, and division (without remainder), of one digit-by-one digit whole numbers and integers from the 0 through 9 tables.

- Assessment Plan
 - Assessment Tool: common final exam
 - Assessment Date: Fall 2014
 - Course section(s)/other population: All sections
 - Number students to be assessed: Random sample of a minimum of 30 students
 - How the assessment will be scored: Departmentally-developed rubric
 - Standard of success to be used for this assessment: At least 75% of students sampled will score at the 100% level.
 - Who will score and analyze the data: A member of the math faculty will be chosen to blind-score the tests.

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2015	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
138	30

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

A sample size of $n=30$ will yield statistically significant results.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All students from all sections of Mth034 during the Winter 2015 semester were required to take the common final exam. These exams were then numbered, and a set of 30 random numbers were generated. This list of 30 random numbers was used to select the tests that would be assessed. This ensured that the sample of $n=30$ tests was truly random and representative of the entire population of Mth034 students.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

Five questions from the common final exam were used to assess this outcome. This outcome deals with mental arithmetic so no partial credit was assigned. Questions were marked correct or incorrect. The number of correctly answered questions was then divided by five to calculate the percent correct. Students who received 100% were considered successful. Anything less than 100% was considered unsuccessful.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

28 of the 30 students assessed were able to achieve a score of 100%. This puts the success rate of outcome #1 at 93.3% which exceeds the standard of success which is 75%.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

93.3% of students assessed were able to achieve a score of 100% on questions pertaining to outcome #1. This percentage far exceeds our expectation that 75% of students would achieve a 100% for questions pertaining to outcome #1.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

Only two of the 30 students were not able to achieve a score of 100% on questions pertaining to outcome #1. Of these two students, one earned 80%, missing only one question, and one earned a 60%, missing three questions. The 80% score may be attributed to human error and not necessarily a lack of understanding of the material. The student who missed three of five mental arithmetic questions is of greater concern. Early detection and one-on-one tutoring of low performing at risk students is essential.

Outcome 2: Calculate problems involving addition, subtraction, multiplication, and division of whole numbers, integers, fractions, and decimals.

- Assessment Plan
 - Assessment Tool: common final exam
 - Assessment Date: Fall 2014
 - Course section(s)/other population: All sections
 - Number students to be assessed: Random sample of a minimum of 30 students
 - How the assessment will be scored: Departmentally-developed rubric
 - Standard of success to be used for this assessment: At least 75% of students sampled will score at the 75% level.
 - Who will score and analyze the data: A member of the math faculty will be chosen to blind-score the tests.

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2015	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
138	30

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

A sample size of $n=30$ will yield statistically significant results.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All students from all sections of Mth034 during the Winter 2015 semester were required to take the common final exam. These exams were then numbered, and a set of 30 random numbers were generated. This list of 30 random numbers was used to select the tests that would be assessed. This ensured that the sample of $n=30$ tests was truly random and representative of the entire population of Mth034 students.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

15 questions from the common final exam were used to assess this outcome. The Math department rubric was used to score these questions (see attached document). The students' total acquired points were then calculated and divided by the total points possible (60 points) to calculate their percentage score for outcome #2. Students who received 75% or higher were considered successful. Anything less than 75% was considered unsuccessful.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: No

22 of the 30 students assessed were able to achieve a score of 75%. This puts the success rate of outcome #2 at 73.3%. The standard of success was not achieved, but it was missed by only 1.7%. If the standard of success were aligned with the college-wide standard of 70% or higher then 24 of 30 students successfully achieved that score and the success rate would increase to 80% success.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

The standard of success is rather high at 75% of all students achieving a score of 75% or better, and it was nearly met at 73.3% of students being able to achieve that score. The students assessed had a firm grasp of the rules for calculating with

signed numbers. Nearly half (14 of 30) students scored above 90% for questions pertaining to outcome #2 this shows a high mastery of the material.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

There were a few areas in which most of the errors were concentrated. Students struggled with problems involving multiplying and dividing decimals. The most common error in these problems involved decimal placement. More time needs to be spent on placing the decimal point properly when multiplying or dividing decimals. The area of poorest performance overall was on questions involving fractions. Students struggled with finding the lowest common denominator which led to arithmetic errors within the problem. They also struggled with reducing their answers to lowest terms. Taking into consideration the results of this assessment, time needs to be found within the schedule to open up more days for work with fractions.

Outcome 3: Identify inequalities involving whole numbers, integers, and fractions.

- Assessment Plan
 - Assessment Tool: common final exam
 - Assessment Date: Fall 2014
 - Course section(s)/other population: All sections
 - Number students to be assessed: Random sample of a minimum of 30 students
 - How the assessment will be scored: Departmentally-developed rubric
 - Standard of success to be used for this assessment: At least 75% of students sampled will score at the 75% level.
 - Who will score and analyze the data: A member of the math faculty will be chosen to blind-score the tests.

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2015	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
------------------------	------------------------

138

30

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

A sample size of $n=30$ will yield statistically significant results.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All students from all sections of Mth034 during the Winter 2015 semester were required to take the common final exam. These exams were then numbered, and a set of 30 random numbers were generated. This list of 30 random numbers was used to select the tests that would be assessed. This ensured that the sample of $n=30$ tests was truly random and representative of the entire population of Mth034 students.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

3 questions from the common final exam were used to assess this outcome. The Math department rubric was used to score these questions (see attached document). The students' total acquired points were then calculated and divided by the total points possible (12 points) to calculate their percentage score for outcome #3. Students who received 75% or higher were considered successful. Anything less than 75% was considered unsuccessful.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

26 of the 30 students assessed were able to attain a score of 75% or higher. This puts the success rate of outcome #3 at 86.6% which exceeds the standard of success which is 75%.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Overall mastery of outcome #3 was high. 26 of 30 students mastered outcome #3, achieving a score of 100% for the three questions pertaining to this outcome.

- Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

Of the four students who did not achieve a score of 75% or better, all missed the question involving inequalities with fractions. Time should be made in the schedule for further mastery of finding the lowest common denominator between two fractions.

II. Course Summary and Action Plans Based on Assessment Results

- Describe your overall impression of how this course is meeting the needs of students. Did the assessment process bring to light anything about student achievement of learning outcomes that surprised you?

When this course was created, a high standard of success was set. Nationally, less than 50% of developmental students at this level are successful in completing their course. It was assumed that Mth034 would need to be re-envisioned as we learned more about this population of students and that success rates would be slow to increase. I was surprised to see that we are already nearly achieving the high level of success that we set for ourselves. Seeing that 73.3% of Mth034 students were able to achieve the most challenging of the three outcomes was excellent news. It shows that our students are performing at levels greatly exceeding the national average.

- Describe when and how this information, including the action plan, was or will be shared with Departmental Faculty.

The results of this assessment will be shared with the math department during the Fall 2015 in-service meeting. It will also be shared by the course mentor with all Mth034 faculty during the Fall 2015 in-service meeting. A sample Mth034 schedule that reflects the information gained by this assessment will be prepared, shared, and discussed.

- Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Outcome Language	The standard of success should be changed from "at least 75% of students sampled will score at the	This change should be made to reflect the standard of success set by the college and used by our institutional	2016

	75% level." to "at least 75% of students sampled will score at the 70% level."	research department. This standard of success would still place us far above the national average rate of success.	
--	--	--	--

4. Is there anything that you would like to mention that was not already captured?

5.

III. Attached Files

[mth034 assessment data rubric](#)

Faculty/Preparer: Jason Davis **Date:** 07/01/2015
Department Chair: Lisa Rombes **Date:** 07/03/2015
Dean: Kristin Good **Date:** 07/06/2015
Assessment Committee Chair: Michelle Garey **Date:** 08/24/2015

COURSE ASSESSMENT REPORT

I. Background Information

1. Course assessed:
 Course Discipline Code and Number: **Mth034**
 Course Title: **Foundations of Numeracy**
 Division/Department Codes: **12200**

2. Semester assessment was conducted (check one):
 Fall 2012
 Winter 20__
 Spring/Summer 20__

3. Assessment tool(s) used: check all that apply.
 Portfolio
 Standardized test
 Other external certification/licensure exam (specify):
 Survey
 Prompt
 Departmental exam
 Capstone experience (specify):
 Other (specify):

4. Have these tools been used before?
 Yes
 No

If yes, have the tools been altered since its last administration? If so, briefly describe changes made.

5. Indicate the number of students assessed/total number of students enrolled in the course.
30 students were assessed / 185 students were enrolled.

6. Describe how students were selected for the assessment.
All final exams that were turned in to me by 12/19/2012, 109 exams total (7 of 9 sections received) were given a unique number. A random number generator was then used to select 30 of the numbered exams.

II. Results

1. Briefly describe the changes that were implemented in the course as a result of the previous assessment.
NA

2. List each outcome that was assessed for this report exactly as it is stated on the course master syllabus.
Outcome #2: Calculate problems involving addition, subtraction, multiplication, and division of whole numbers, integers, fractions, and decimals.

3. Briefly describe assessment results based on data collected during the course assessment, demonstrating the extent to which students are achieving each of the learning outcomes listed above. *Please attach a summary of the data collected.*
To assess this outcome 24 common final exam questions were created. Questions from this common final exam were then graded as they are on the Math level 1 placement test as correct/incorrect. No partial credit was given for partially correct answers or answers that were not reduced to lowest terms if they involved fractions or mixed numbers. Each question was given equal weight (1 point) and the average was then calculated by dividing the student's score by 24. Of the 30 students who were assessed, 50% of them attained an overall score of 75% or higher, with an overall group mean score of 72%.

4. For each outcome assessed, indicate the standard of success used, and the percentage of students who achieved that level of success. *Please attach the rubric/scoring guide used for the assessment.*

5. **The standard of success used was that at least 75% of those students sampled would score at the 100% level. This was an error on my part when submitting the master syllabus and not in line with national success rates of approximately 50%. Of the students sampled 10% achieved this 100% mastery level of success. 50% of those students sampled attained a score of at least 75%. This is a much more realistic standard of success and was the level at which I intended to assess this outcome.**

logged 1/14/13 zjv

COURSE ASSESSMENT REPORT

6. Describe the areas of strength and weakness in students' achievement of the learning outcomes shown in assessment results.

Strengths: Students performed very well overall on integer topics having an average score of 84% on the first ten questions covering integer topics. They also had an average score of 70% on questions 11 through 16 covering decimal topics.

Weaknesses: The average score for questions 17 through 24 covering fractions and mixed numbers was 57%. This was due in part to poor wording of the directions on the common final exam.

Questions involving mixed numbers were marked as incorrect if the answer was given as an improper fraction. This was done to match the requirements of the Math Level 1 exam as well as the acceptable format for answers in Connect Math, the online homework system that is used for mth034. This issue is easily addressed by rewriting the directions for the fraction portion of the test and hopefully this will improve the results in future semesters.

III. Changes influenced by assessment results

1. If weaknesses were found (see above) or students did not meet expectations, describe the action that will be taken to address these weaknesses.

The 100% success goal was not met. This goal was written in error and the master syllabus needs to be edited and resubmitted to be brought in line with national success rates of 50%. From the data it is evident that students are still struggling with fraction topics. More emphasis needs to be placed on fraction topics and more time needs to be devoted to these topics. Since ACS101 has been successfully implemented, the study skills that were integrated into the mth034 course are no longer needed. The measurement topics embedded in this course are, for the most part, unrelated to the rest of the curriculum and should be removed. If these topics are removed from the master syllabus, more time can be dedicated to the topics of fractions and mixed numbers. It is also clear that the final exam directions were not clear enough. The directions for this test have been rewritten to better guide students as to what form of answer is expected. This should improve the results for further assessments.

2. Identify intended changes that will be instituted based on results of this assessment activity (check all that apply). Please describe changes and give rationale for change.

- a. Outcomes/Assessments on the Master Syllabus

Change/rationale: Remove the following student learning outcomes

Remove the following learning outcomes and their accompanying objectives

(4) Distinguish between one and two dimensions and measure lines in the plane.

Objectives: 26, 27, and 28

(5) Apply various student success strategies and identify where student resources are located on campus and how to access them.

Objectives: 29, 30, and 31

Number 4 is an isolated topic and not related to the rest of the curriculum. Students would get a greater benefit from spending more time on fraction and mixed number topics.

Number 5 is now much more thoroughly covered in the co-requisite course ASC101 and removing it from mth034 would free up more time for fractions and mixed number topics.

- b. Objectives/Evaluation on the Master Syllabus

Change/rationale: Objectives: 26, 27, and 28 these are objectives matched to outcome 4 to be removed
Objectives: 29, 30, and 31 these are the objectives matched to outcome 5 to be removed.

See above for rationale.

- c. Course pre-requisites on the Master Syllabus

Change/rationale:

- d. 1st Day Handouts

Change/rationale:

COURSE ASSESSMENT REPORT

e. Course assignments
Change/rationale:

f. Course materials (check all that apply)
 Textbook
 Handouts
 Other:

Xg. Instructional methods

Change/rationale: **More exposure to percent problems requiring more than one step. This is being implemented based on the large difference in the percent of students who were successful in completing problems 1 and 3 (problem three being a far more complex problem requiring several steps to complete) versus the results for problem 2 on this assessment.**

h. Individual lessons & activities
Change/rationale:

3. What is the timeline for implementing these actions?
Changes will be implemented starting Fall 2013

IV. Future plans

1. Describe the extent to which the assessment tools used were effective in measuring student achievement of learning outcomes for this course. **The assessment was very effective in measuring student achievement for the topics of integers and decimals. Since the directions were not clearly written for the fractions sections the assessment did not reflect what students could do and was therefore not effective in measuring student success.**

2. If the assessment tools were not effective, describe the changes that will be made for future assessments.
It is possible that wording played a role in the poor performance on question #2. **The directions have been rewritten to more clearly reflect expectations.**

3. Which outcomes from the master syllabus have been addressed in this report?

All _____ Selected **Outcome #2**

If "All", provide the report date for the next full review: _____.

If "Selected", provide the report date for remaining outcomes: **Outcome #1 & #3 will be assessed Winter 2014.**

Submitted by:

Print: <u>Jason Davis</u> Faculty/Preparer	Signature: <u>Jason Davis</u>	Date: <u>01/10/2013</u>
Print: <u>Kristin Good</u> Department Chair	Signature: <u>Kristin Good</u>	Date: <u>6/10/2013</u>
Print: <u>Martha Shewalter</u> Dean/Administrator	Signature: <u>Martha Shewalter</u>	Date: <u>1/14/13</u>