

# Course Student Learning Outcomes Assessment

**MATH 080 Intermediate Algebra**

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## **General Information (Course Student Learning Outcomes Assessment)**

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So get to work.

# Standing Requirements

## Course Description

A second course in algebra that includes systems of equations inequalities graphs and functions; radicals quadratic polynomials rational expressions; exponential and logarithmic functions problem solving.

## Course Student Learning Outcomes

### MATH 80 Intermediate Algebra Outcome Set

Outcome	
Outcome	Mapping
<b>Outcome 1</b> Read, define and apply algebraic and functional vocabulary and symbols.	<b>Institutional Student Learning Outcomes:</b> Communicate 1, Communicate 3, Think 1
<b>Outcome 2</b> Evaluate and perform algebraic operations on rational, radical, exponential and logarithmic expressions.	<b>Institutional Student Learning Outcomes:</b> Communicate 3, Think 1, Think 2
<b>Outcome 3</b> Set up and solve word problems involving quadratic, rational, absolute value, radical, exponential and logarithmic expressions.	<b>Institutional Student Learning Outcomes:</b> Act 3, Communicate 1, Communicate 3, Learn 2, Think 1, Think 2, Think 3
<b>Outcome 4</b> Graph linear, quadratic, absolute value and power functions, apply graphing transformations and find the equation of linear functions given appropriate information.	<b>Institutional Student Learning Outcomes:</b> Communicate 3, Think 1, Think 2

## 2014-2015 Assessment Cycle

### Measurements

#### Outcomes and Measures

### MATH 80 Intermediate Algebra Outcome Set

#### Outcome

##### Outcome 1

Read, define and apply algebraic and functional vocabulary and symbols.

▼ **Measure:** Math 80 SLO 1 - Fall 2014  
Course level; Direct - Exam

**Description of Measurement Tool:** A cluster sample of 316 math 80 final exams from Fall 2014 were assessed. Ten multiple choice questions were studied. These questions covered a wide range of algebraic and functional vocabulary and symbols. The multiple choice questions are assessed as correct or incorrect

**Criteria for Success: Individual & Collective Student Criterion:** Individually, success is defined as getting 7 or more of the questions correct. Collectively, success is defined as 70% of the class being individually successful.

**Cycle of Assessment:** This outcome is assessed every three years.

For this report, the data was gathered in Fall 2014, collated, analyzed, reported, and discussed in Spring 2015, with recommendations implemented in Fall 2015.

**Who is Responsible for Assessment Activity?:** The Math 080 coordinators of record for 2014-2015, Scott Sakamoto and Darlene Diaz, are responsible for the assessment.

### Findings

#### Finding per Measure

### MATH 80 Intermediate Algebra Outcome Set

#### Outcome

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**Who is Responsible for Assessment Activity?:** The Math 080 coordinators of record for 2014-2015, Scott Sakamoto and Darlene Diaz, are responsible for the assessment.

### Findings for Math 80 SLO 1 - Fall 2014

**Summary of Findings:** 0: 0

- 1: 4
- 2: 8
- 3: 28
- 4: 27
- 5: 43
- 6: 47
- 7: 60
- 8: 39
- 9: 49
- 10:21

- Mean =6.5 (65%)
- 53.4% (7 or more correct)

**Results:** Criteria for Success Achievement Status: Not Met

**Analysis of Findings:** The choice of using all 10 multiple choice questions was due to the broad nature of the SLO. We are looking for a wide range of abilities with vocabulary and symbols (thus the change from last assessment where only one question was assessed). Descriptive statistics clearly show the goals were not met. Although only 21% of students scored less than 5 out of 10. There is a lot of room for improvement.

**Recommendations:** We will need to put additional emphasis on vocabulary and symbols. This can be done with in the examples done in class and, homework questions, and test questions.

**This Findings is associated with the following Actions:**

**Math 80 SLO Plan of Action 2014-2015**

(Plans of Action; 2014-2015 Assessment Cycle)

### Overall Recommendations

*No text specified*

### Plans of Action

#### Actions

### MATH 80 Intermediate Algebra Outcome Set

#### Outcome

##### Outcome 1

Read, define and apply algebraic and functional vocabulary and symbols.

▼ **Action:** Math 80 SLO Plan of Action 2014-2015

**This Action is associated with the following Findings**

**Findings for Math 80 SLO 1 - Fall 2014**

(Measurements and Findings; 2014-2015 Assessment Cycle)

**Summary of Findings:** 0: 0

- 1: 4
- 2: 8
- 3: 28
- 4: 27
- 5: 43
- 6: 47
- 7: 60
- 8: 39
- 9: 49
- 10:21

- Mean =6.5 (65%)
- 53.4% (7 or more correct)

**Details of Plan of Action:** These results will be sent to all full-time and part-time math faculty, and will be discussed at our department meeting. The following will be addressed:

- 1) We will need to put additional emphasis on vocabulary and symbols.
- 2) Increase the number of examples done in class, homework questions, and test questions.
- 3) Brainstorm other ideas to improve student success with this SLO.

**Plan of Action Timeline:** Spring 2015: The Plan of Action will begin during the next scheduled faculty meeting after the assessment. Faculty meetings are once a month during Fall and Spring semesters.

Fall 2015 – Fall 2017: All faculty teaching Math 80 will be given reminders of the SLO results and the suggestions laid out in our Plan of Action at the beginning of each semester in their welcome packet.

Fall 2017: New Data will be collected to reassess this SLO.

**Who is responsible for carrying out the Plan of Action?:** The Math 080 coordinator(s) of record for 2015-2017 will be responsible for the assessment.

**How will you determine if the Plan of Action has been effective?:** We will reassess this SLO in three years to determine if this Plan of Action was successful.

**Additional Resources Required (if any):**

**Budget request amount:** \$0.00

**Priority:** Medium

## Status Reports

### Action Statuses

## MATH 80 Intermediate Algebra Outcome Set

### Outcome

#### Outcome 1

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#### ▼ Action: Math 80 SLO Plan of Action 2014-2015

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Fall 2017: New Data will be collected to reassess this SLO.

**Who is responsible for carrying out the Plan of Action?:** The Math 080 coordinator(s) of record for 2015-2017 will be responsible for the assessment.

**How will you determine if the Plan of Action has been effective?:** We will reassess this SLO in three years to determine if this Plan of Action was successful.

**Additional Resources Required (if any):**

**Budget request amount:** \$0.00

**Priority:** Medium

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**Status** for Math 80 SLO Plan of Action 2014-2015

*No Status Added*

### Status Summary

*No text specified*

### Summary of Next Steps

*No text specified*



## 2013-2014 Assessment Cycle

### Measurements

#### Outcomes and Measures

### MATH 80 Intermediate Algebra Outcome Set

#### Outcome

##### Outcome 3

Set up and solve word problems involving quadratic, rational, absolute value, radical, exponential and logarithmic expressions.

▼ **Measure:** Final Exam  
Course level; Direct - Exam

**Description of Measurement Tool:** Use 0-4 scale for 2 application problems from part 2 of the math 80 final from Spring 2013. Random samples of 6 exams from each section will be studied.

- 0= Blank
- 1= Some mathematical knowledge of the applications problem.
- 2= Correct set up of the problem (correct equation)
- 3= Mostly correct except maybe calculation error.
- 4= Correct set up and solution.

**Criteria for Success: Individual & Collective Student Criterion:** Individual student scores 3 or 4 on the specified rubric.

Collectively, 50% of the students should score a 3 or 4 on this SLO.

**Cycle of Assessment:** Spring of every third year beginning in Spring 2013. Thus, Spring 2016, 2019 . . .

**Who is Responsible for Assessment Activity?:** All faculty teaching Math 080 in Spring 2013.

##### Outcome 4

Graph linear, quadratic, absolute value and power functions, apply graphing transformations and find the equation of linear functions given appropriate information.

▼ **Measure:** Math 080 SLO 4  
Course level; Direct - Exam

**Description of Measurement Tool:** Students are given a departmental final with embedded questions pertaining to specific topics for this SLO. The rubric scale is from 0 - 4.

- 4 - Exemplary, complete understanding
- 3 - Thoughtful, clear understanding
- 2 - Developing, literal
- 1 - Limited, barely acceptable
- 0 - Minimal, unacceptable

**Criteria for Success: Individual & Collective Student Criterion:** A successful student must score a 3 or 4 on the rubric scale for each question. Collectively, the students are successful if the average success rate for all the questions is at least 70%.

**Cycle of Assessment:** This outcome will be assessed in the fall semester every three years.

For this report, the data was gathered in Fall 2013, collated, analyzed, reported, and discussed in Spring 2014, with recommendations implemented in Fall 2014.

**Who is Responsible for Assessment Activity?:** The Math 080 coordinators of record for 2013-2014, Scott Sakamoto and Darlene Diaz, are responsible for the assessment.

### Findings

#### Finding per Measure

## MATH 80 Intermediate Algebra Outcome Set

### Outcome

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**Who is Responsible for Assessment Activity?:** All faculty teaching Math 080 in Spring 2013.

#### Findings for Final Exam

*No Findings Added*

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Graph linear, quadratic, absolute value and power functions, apply graphing transformations and find the equation of linear functions given appropriate information.

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**Who is Responsible for Assessment Activity?:** The Math 080 coordinators of record for 2013-2014, Scott Sakamoto and Darlene Diaz, are responsible for the assessment.

#### Findings for Math 080 SLO 4

**Summary of Findings:** Using a 0-4 scale (0 nothing correct to 4 perfect).

N = 97

Fall 2013  
Mean 2.43  
42% scored 4  
55% scored 3 or 4  
23% scored 0

Spring 2014  
 Mean 1.93  
 34% scored 4  
 38% scored 3 or 4  
 30% scored 0

Average overall success rate: 46.5% for 2013-2014

**Results:** Criteria for Success Achievement Status: Not Met

**Analysis of Findings:** There was a significant decline in the success rates of graphing quadratic functions and labeling intercepts. Our goal of 70% success was not met.

**Recommendations:** The results will be shared and discussed with all Math faculty. We will continue to use the same method of assessment during our next assessment cycle to determine if the results are truly indicative of what we are hoping to measure.

### Overall Recommendations

*No text specified*

### Plans of Action

#### Actions

### MATH 80 Intermediate Algebra Outcome Set

#### Outcome

##### Outcome 3

Set up and solve word problems involving quadratic, rational, absolute value, radical, exponential and logarithmic expressions.

#### ▼ Action: Math 080, Spring 2013, SLO #3, Regular Review & Resource Utilization

**This Action is associated with the following Findings**

No supporting Findings have been linked to this Action.

**Details of Plan of Action:** At some point during the semester, many students are able to complete the problems correctly, however lose this ability as the semester progresses. Students need to be urged to review materials regularly throughout the semester.

Students need to utilize resources better.

**Plan of Action Timeline:** All faculty will encourage students to review word problems on a weekly basis beginning in the Fall 2013 semester and continuing through the Spring 2016 semester.

All faculty will encourage use of MaSH and DLAs throughout the semester.

**Who is responsible for carrying out the Plan of Action?:** All faculty teaching Math 080 in Fall 2013.

**How will you determine if the Plan of Action has been effective?:** Review results following next assessment cycle.

**Additional Resources Required (if any):** none

**Budget request amount:** \$0.00

**Priority:** High

**Outcome 4**

Graph linear, quadratic, absolute value and power functions, apply graphing transformations and find the equation of linear functions given appropriate information.

▼ **Action: Math 80 SLO 4**

**This Action is associated with the following Findings**

No supporting Findings have been linked to this Action.

**Details of Plan of Action:** These results will be shared and discussed among current and past Math 080 instructors.

Instructors will be encouraged to focus on graphing quadratic functions and labeling intercepts. Suggestions on teaching and assessing these topics will be discussed and implemented.

**Plan of Action Timeline:** We will reassess this SLO in Fall of 2016.

**Who is responsible for carrying out the Plan of Action?:** The Math 080 coordinator(s) of record for 2016-2017 will be responsible for the assessment.

**How will you determine if the Plan of Action has been effective?:** This Plan of Action is considered successful if the overall success rate improves by 5 percentage points or more.

**Additional Resources Required (if any):**

**Budget request amount:** \$0.00

**Priority:** Medium

 **Status Reports**

**Action Statuses**

**MATH 80 Intermediate Algebra Outcome Set**

**Outcome**

**Outcome 3**

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**Budget request amount:** \$0.00

**Priority:** High

**Status** for Math 080, Spring 2013, SLO #3, Regular Review & Resource Utilization

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**Additional Resources Required (if any):**

**Budget request amount:** \$0.00

**Priority:** Medium

**Status** for Math 80 SLO 4

*No Status Added*

**Status Summary**

*No text specified*

**Summary of Next Steps**

*No text specified*

## 2012-2013 Assessment Cycle

### Measurements

#### Outcomes and Measures

### MATH 80 Intermediate Algebra Outcome Set

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### Findings

#### Finding per Measure

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### Findings for Final Exam

**Summary of Findings:** 0: 67

1: 47

2: 6

3: 10

4: 28

79 students were assessed on each of two separate problems.

Mean = 1.27

24% scored 3 or 4

27.8% scored 2 or higher

**Results:** Criteria for Success Achievement Status: Not Met

**Analysis of Findings:** The data seems to indicate that students completing math 80 are not proficient in solving application problems. Only 27.8% of students could set up the application problems and only 24% were able to mostly complete the problems correctly.

**Recommendations:** See plan of action.

**This Findings is associated with the following Actions:**

**Math 080, Spring 2013, SLO #3, Regular Review & Resource Utilization**  
(Plans of Action; 2012-2013 Assessment Cycle)

## Overall Recommendations

*No text specified*

## Plans of Action

### Actions

## MATH 80 Intermediate Algebra Outcome Set

### Outcome

#### Outcome 3

Set up and solve word problems involving quadratic, rational, absolute value, radical, exponential and logarithmic expressions.

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#### Findings for Final Exam

(Measurements and Findings; 2012-2013 Assessment Cycle)

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Students need to utilize resources better.

**Plan of Action Timeline:** All faculty will encourage students to review word problems on a weekly basis beginning in the Fall 2013 semester and continuing through the Spring 2016 semester.

All faculty will encourage use of MaSH and DLAs throughout the semester.

**Who is responsible for carrying out the Plan of Action?:** All faculty teaching Math 080 in Fall 2013.

**How will you determine if the Plan of Action has been effective?:** Review results following next assessment cycle.

**Additional Resources Required (if any):** none

**Budget request amount:** \$0.00

**Priority:** High

## Status Reports

### Action Statuses

#### MATH 80 Intermediate Algebra Outcome Set

##### Outcome

##### Outcome 3

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**How will you determine if the Plan of Action has been effective?:** Review results following next assessment cycle.

**Additional Resources Required (if any):** none

**Budget request amount:** \$0.00

**Priority:** High



**Status** for Math 080, Spring 2013, SLO #3, Regular Review & Resource Utilization

**Current Status:** In Progress

**Budget Status:**

**Explanation of current status:** We have discussed ongoing reminders during math department meetings.

Course coordinators have discussed ideas for new DLAs.

**Has the Plan of Action been effective? What are the next steps?:** Based on anecdotal evidence from instructors, students are more aware of the importance of ongoing review of word problems.

**Status Summary**

*No text specified*

**Summary of Next Steps**

*No text specified*