WEST LOS ANGELES COLLEGE
SLO Course Assessment Tool

<table>
<thead>
<tr>
<th>Date and Semester:</th>
<th>Material taken from Spring 2011—done in Fall 2011.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty Name or Team Names:</td>
<td>William Bucher in conjunction with Brian Carty, Thomas Harjuno, Tedja Oepomo, Tim Russell, Henri Feiner, Charmaine Wijesekera.</td>
</tr>
<tr>
<td>Course Name and Number:</td>
<td>Math 105 Arithmetic</td>
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### Institutional SLOs: (ILOs)

<table>
<thead>
<tr>
<th>Check Box(s) Below</th>
<th>Select from the list below all institutional learning outcomes (ILOs) integrated to this course (select all that apply). For additional SLO information: <a href="http://www.wlac.edu/staffandfaculty/SLO_ration_scale/tables4web/slo_list.pdf">http://www.wlac.edu/staffandfaculty/SLO_ration_scale/tables4web/slo_list.pdf</a></th>
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<tbody>
<tr>
<td>A. Critical Thinking</td>
<td></td>
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<tr>
<td>B. Communication</td>
<td></td>
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<td>X C. Quantitative Reasoning</td>
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<td>D. Self-awareness/Interpersonal Skills</td>
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<td>E. Civic Responsibility</td>
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<td>F. Technical Competence</td>
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<td>G. Cultural Diversity</td>
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<td>H. Ethics</td>
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<td>I. Aesthetics</td>
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### Program SLOs:

<table>
<thead>
<tr>
<th>Check Box(s) Below</th>
<th>Select the Program SLO's assessed in this course (insert all that apply) For additional Program SLO information: <a href="http://www.wlac.edu/staffandfaculty/SLO_ration_scale/tables4web/">http://www.wlac.edu/staffandfaculty/SLO_ration_scale/tables4web/</a></th>
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<tbody>
<tr>
<td>1. Apply quantitative thinking processes using basic mathematical operations to solve common academic, workplace, and family problems. (Theme: mathematical operations)</td>
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<td>2.</td>
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<td>3. Use mathematical tools essential for analyzing quantitative problems and for producing solutions. (Theme: mathematical tools)</td>
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<td>4.</td>
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<tr>
<td>5. Select appropriate math strategies for solving and handing real life problems involving finance, economics, and family issues. (Theme: mathematical problem-solving)</td>
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<td>6.</td>
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<td>7.</td>
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### Assessment Instrument:

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<tr>
<th>Check Box(s) Below</th>
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<tbody>
<tr>
<td>Written exam</td>
<td>Presentation</td>
</tr>
<tr>
<td>X Multiple choice exam</td>
<td>Portfolio</td>
</tr>
<tr>
<td>Essay/Research Paper</td>
<td>Department exam</td>
</tr>
<tr>
<td>Case scenarios</td>
<td>Skill evaluation</td>
</tr>
<tr>
<td>X Other: Final Exam--Assessment</td>
<td></td>
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### Rating/Rubric Scale:

Describe the criteria for each value/rating.
In addition to the instructor’s final exam, we administer a 25-item, multiple choice instrument to all Math 105 sections. Because of time limitations, most, but not all of the course objectives are covered on this assessment. The questions vary from relatively simple to fairly complex. No calculators are allowed, but the numbers are kept very reasonable.

One advantage of multiple choice exams is that they obviate the use of elaborate rubrics in the grading process. The results are very objective. This last spring semester we used the results from seven sections of Math 105 with a total number of students 164. We analyzed the percentage of correct responses for each of the 25 questions on the exam (see attached breakdown). We also ran single factor ANOVA tests on the means of the seven sections. Two sections had significantly higher mean scores than the other 5 groups. Between these last two sections five sections, the mean scores were not different significantly. This information is kept within the department. It is used to identify best practices.

There were nine questions on the test for which the percentage of correct responses was less than 60%. These were:

Question 9: Distinguishing between Prime and Composite numbers (53%).
Question 10: Finding the LCM of a group of three numbers (43%).
Question 15: Adding mixed numbers where one has to carry (52%).
Question 16: Determining whether two fractions are equivalent (54%).
Question 18: Converting from a decimal to a reduced fraction (37%).
Question 21: Dividing a whole number by a two digit decimal (30%).
Question 22: Converting a percent to a fraction (52%).
Question 23: Converting a fraction to a percent (38%).
Question 24: Converting a percent to a decimal (53%).

There was nothing wrong with these questions. The numbers involved were simple and easily doable without a calculator. The concepts were covered in the classes. It was resolved that the instructors should try to spend more time on these topics in order to improve the students’ understanding and skills.

All in all, the results on this assessment were consistent with the other measurements in the courses; namely, homework, quizzes, tests, and projects.
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| Sample of Student Projects: | Submit: Essays, research projects, skill evaluation forms or department exams illustrating grades of A through F (one sample of each grade) to Todd Matosic, WLAC SLO Coordinator.  
Attach to this form or email as attachments to: matosit@wlac.edu  
Todd Matosic college mail box #169A or Office CE 213, Phone # 310 287-4213 |
| --- | --- |
| Faculty Reflection: Faculty member’s reflection on the process | What did I learn?  
We learned which concepts are the most problematic for students. This is important because now we can put extra emphasis on these topics next semester in order to improve the percentage of correct responses. |
| Plan of Action: | What do I want to change?  
We need to put more emphasis on the conversion process between fractions, decimals, and percents. These come toward the end of the syllabus, but we need to budget sufficient time to get these topics covered adequately in all sections. These play a significant role in the courses that come after Math 105 in the sequence.  
| | What changes do you propose to improve student learning for the SLOs assessed?  
1.) More hands on work or guided exercises during class.  
2.) More use of interactive computer program assignments, using programs such as Plato, in the Learning Resource Center. |
| If Applicable: What changes have been implemented since the previous course assessment? | |
ANALYSIS OF SCORES
PERCENT OF CORRECT RESPONSES ON 105 ASSESSMENT

N = 164

*Less than 60%

1.) 95% 14.) 77%
2.) 96% 15.) 52%*
3.) 88% 16.) 54%*
4.) 77% 17.) 72%
5.) 91% 18.) 37%*
6.) 63% 19.) 91%
7.) 75% 20.) 76%
8.) 85% 21.) 30%*
9.) 53%* 22.) 52%*
10.) 43%* 23.) 38%*
11.) 70% 24.) 53%*
12.) 66% 25.) 68%
13.) 80%
TEST AND KEY
Outcome Assessment
Math 105

Do NOT write in booklet.
Do all work on scratch paper. Put answers on scantron. NO CALCULATORS OR CELL PHONES ALLOWED.

Good Luck

TEST#: 25
Directions: DO NOT WRITE ON THIS EXAM. USE THE SCRATCH PAPER PROVIDED. Translate your answers to the SCANTRON form for all problems 1-25. Good luck! You have 1 hour, 15 minutes to complete this exam. Be sure to turn in ALL scratch paper along with this exam.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Write the whole number in words.
1) 70,146
   A) Seven million, one thousand, forty-six
   B) Seventy thousand, one hundred forty-six
   C) Seven hundred one thousand, forty-six
   D) Seven thousand, one hundred forty-six
   1) ______

Write the whole number in standard form.
2) Raul collected eighty-two thousand dollars for his campaign.
   A) 82,000
   B) 80,002
   C) 802,000
   D) 8200
   2) ______

Subtract. Check by adding.
3) 653
   - 55
   A) 708
   B) 498
   C) 598
   D) 592
   3) ______

Divide.
4) \[ \frac{44}{44} \]
   A) 880
   B) 900 R 26
   C) 890
   D) 895 R 18
   4) ______

Multiply.
5) 1391 \times 72
   A) 9837
   B) 100,152
   C) 97,372
   D) 12,519
   5) ______

Simplify.
6) \[ 6(3^2 + 7(3 + 2)) \]
   A) 480
   B) 53
   C) 264
   D) 192
   6) ______

List all the factors of the number.
7) 42
   A) 1, 2, 3, 6, 7, 14, 28, 42
   B) 1, 7, 6, 42
   C) 7, 6, 14, 42
   D) 1, 2, 3, 6, 7, 14, 21, 42
   7) ______

Find the prime factorization of the number. Write any repeated factors using exponents.
8) 120
   A) 2 \cdot 3 \cdot 5
   B) 2 \cdot 3^3 \cdot 5
   C) 2^3 \cdot 3 \cdot 5
   D) 2^2 \cdot 3 \cdot 5
   8) ______

Identify the number as prime or composite.
9) 1191
   A) Composite
   B) Prime
   9) ______
Find the least common multiple (LCM) of the list of numbers.
10)  60, 80, 70
   A) 840  B) 10  C) 240  D) 1680

11) \( \frac{10}{7} = \frac{21}{21} \)
   A) \( \frac{10}{21} \)  B) \( \frac{70}{21} \)  C) \( \frac{30}{21} \)  D) \( \frac{3}{21} \)

Add and simplify.
12) \( \frac{1}{2} + \frac{3}{8} \)
   A) \( \frac{1}{2} \)  B) \( \frac{15}{16} \)  C) \( \frac{2}{5} \)  D) \( \frac{7}{8} \)

Subtract. Convert your answer to a mixed number, if possible.
13) \( \frac{28}{13} - \frac{5}{13} \)
   A) \( \frac{1}{2} \)  B) \( 2\frac{7}{13} \)  C) \( \frac{2}{3} \)  D) \( 1\frac{10}{13} \)

Write a fraction to represent the shaded part of the figure.
14) 

\[ \begin{array}{c}
\includegraphics[width=0.2\textwidth]{triangle.png}
\end{array} \]
   A) \( \frac{9}{16} \)  B) \( \frac{7}{9} \)  C) \( \frac{9}{7} \)  D) \( \frac{7}{16} \)

Add and simplify.
15) \( \frac{9}{7} + \frac{6}{7} \)
   \( \frac{10}{7} + \frac{3}{7} \)
   \( + \frac{15}{6} \)
   A) \( 35\frac{1}{7} \)  B) 36  C) \( 37\frac{1}{7} \)  D) \( 36\frac{1}{7} \)
Determine whether the pair of fractions is equivalent.

16) \( \frac{25}{55} \) and \( \frac{20}{44} \)
A) equivalent   B) not equivalent

Write the decimal number in words.

17) 1.799
A) one and seven hundred ninety-nine millionths
B) one and seven hundred ninety-nine tenths
C) one and seven hundred ninety-nine thousandths
D) one and seven hundred ninety-nine hundredths

Write the decimal as a fraction or mixed number in simplest form.

18) 0.328
A) \( \frac{1}{107,584} \)  B) \( \frac{1}{328} \)  C) \( \frac{41}{125} \)  D) \( \frac{41}{12} \)

Solve.

19) Find the total monthly cost of owning and maintaining a car given the information shown.
Monthly car payment: $282.83
Monthly insurance cost: $80.30
Average cost of gasoline per month: $64.10
Average maintenance cost per month: $23.50
A) $460.73  B) $450.73  C) $450.63  D) $451.73

20) Mercedes bought a car part for $21.50. If he paid with two $20 bills, what was his change?
A) $19.50  B) $18.60  C) $18.50  D) $19.00

Divide.

21) Divide 18 by 0.06
A) 300  B) 30  C) 0.3  D) 3

Write the percent as a fraction or mixed number in simplest form.

22) 80%
A) \( \frac{4}{5} \)  B) 8  C) \( \frac{2}{5} \)  D) \( 1\frac{3}{5} \)

Write the fraction or mixed number as a percent.

23) \( \frac{3}{16} \)
A) 24%  B) 18%  C) \( 24\frac{3}{4}% \)  D) \( 18\frac{3}{4}% \)

Write the percent as a decimal.

24) 823%
A) 823  B) 0.823  C) 8.23  D) 82.3
Solve.

25) 40% of the students in a school are female. If there are 255 students altogether, how many students are female?
   A) 102 students  B) 16 students  C) 153 students  D) 638 students