MAT XXX Lab Template

Background for Instructors:

Sheet 1 Instructions for The Instructor’s Page
Most elements should be self-explanatory, except for the Text/Unit Reference. Do NOT adapt an activity from a text. Rather, if the activity will support a particular unit and/or coordinates with a particular section of a specific text, indicate this by listing the text, author and section of the text in this area of the instructor’s page. This will vary from lab to lab, but please include the following:

- Objective(s):
- Materials Required:
- Time for completion:
- Directions for Instructor:
- Scoring suggestions/Grading rubric:
- Text/Unit Reference:
- Submitted by:
- Other:

Sheet 2 Instructions for The Student’s Page
Provide a handout for students or a detailed instruction sheet. This will vary from lab to lab, but please include the following:

- Student Learning Outcomes
- Rubric/Scoring Guide
- Background Information if required
- Directions
- Space for students to show work if needed

Sheet 3 Accessible Table for a Rubric
Tables in WORD 2010 are a good way to present data. The Rubric Table follows accessibility guidelines.

Reference: WebAIM.org opens in a new window
webaim.org/techniques/word/
The Instructor’s Page

LAB TITLE HERE

Learning Objective(s):

Upon completion student will be able to:

Materials Required:

Time for completion:

Please indicate if this is an estimate. If you have done the activity with students, give a range of time.

Directions for Instructor:

Scoring suggestions/Grading rubric:

May attach if necessary. Include answer key as appropriate.

Text/Unit Reference:

If applicable, give author and text and section that would complement this activity.

Submitted by:

Other:
LAB TITLE HERE

Learning Outcomes:
Upon completion students will be able to:

Scoring/Grading rubric:

Introduction:

Directions:

Grading Rubric for Lab

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Excellent</th>
<th>Good</th>
<th>Average</th>
<th>Needs Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria Guidelines</td>
<td>No mistakes</td>
<td>Some mistakes</td>
<td>Mistakes</td>
<td>Too many mistakes</td>
</tr>
<tr>
<td>Criteria Points</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D-F</td>
</tr>
</tbody>
</table>
Writing Contextualized Labs, AMATYC 2014
Hilary Seagle & Sharon Welker
North Carolina Community College System Math-Curriculum Improvement Project
Example-Lab for Geometry and Measurement

The Instructor's Page

Project Dog Lab

Learning Objective(s):

Upon completion student will be able to:

- Estimate and calculate area, perimeter, and volume for regular and irregular shapes in applied problems.
- Illustrate a competency with various tools of measurement; e.g. standard ruler, tape measure, protractor, calipers, beakers, etc., in English and metric scales.

Materials Required:

Graph Paper and Ruler

Time for completion: 1 hr.

Directions for Instructor:

Put students into groups.

Scoring suggestions/Grading rubric:

See worksheet.

Text/Unit Reference:

None.

Submitted by: Tammy Sullivan, AB-Tech CC Revised by LC Roth WTCC 9/14

Other:
Project Dog Lab

Learning Outcomes:

Upon completion students will be able to:

- Estimate and calculate area, perimeter, and volume for regular and irregular shapes in applied problems.
- Illustrate a competency with various tools of measurement; e.g. standard ruler, tape measure, protractor, calipers, beakers, etc., in English and metric scales.

Scoring/Grading rubric:

See Worksheet.
Learning Objective: Upon completion students will be able to estimate and calculate area, perimeter, and volume for regular and irregular shapes in applied problems.

Client assignment:
Fido’s Doggie Day Care and Training is a local business that contacted your company for plans to design and construct a new dog play area at their facility. It is your team’s task to design the rectangular training area in which dogs can be trained.

Requirements:
- Fido’s Doggie Day Care and Training requires a play area that is 2,160 yd$^2$ and includes a 15 yard tunnel that will not bend. The area may be slightly over or under this size.
- The company requires three (3) options with different dimensions that will meet the 2,160 yd$^2$ area/space they have in mind.
- The 15 yard tunnel must be included in each of the three designs for them.
- The new play area is to be fenced in with 4 foot tall chain link fencing. How many feet of fencing will be needed for each of the 3 options?
- The entire enclosure will have new grass sod installed to help maintain an attractive space for play and training. How many square feet of sod will be needed rounded to the nearest whole square yard?
- Your written report to your boss for the presentation to Fido’s Doggie Day Care and Training should include the following for each of the 3 options.
  1. A cover letter summarizing the options (See #6 in the rubric)
  2. A small sketch of each of the 3 options showing the placement of the dog tunnel. The dimensions of the play area are to be included.
  3. The total number of square yards of play space and the number of square feet of sod needed.
  4. The total number of feet of chain link fencing needed to fence in the new play area.

Grading Rubric: Point Distribution
- 3 play areas that are different shapes and/or sizes – 15 points
- Sketches/layouts with tunnel placement including dimensions and area for each, use grid paper – 45 points
- Fencing requirements and sod requirements - 15 points
- Summary letter to the client – 15 points
- Prepare your packet for your boss that includes on page 1, a letter to the client summarizing the options. On subsequent pages sketches of the 3 options (1 per page of grid paper), and the fencing and sod requirements. The letter should be typed (size 12 font and 1 inch margins all around) and the packet assembled in a manner that presents Fido’s Doggie Day Care and Training with precise, concise, and correct information and is no more than four (4) pages. – 10 points
Example – Financial Literacy

The Instructor’s Page

BUDGET LAB

Learning Objective(s):
Upon completion student will be able to:

- Use online tools to determine payments on consumer loans, and to ask appropriate questions about loans.
- Examine credit card terminology, perform basic credit card computations, and evaluate payoff options.

Materials Required: Computer with internet access.

Time for completion: 2 hrs

Directions for Instructor:
A budget scenario is given to the students. The Baggins family has recently had a decrease in family income. Students will work in groups to research budget alternatives for this family. They will make recommendations that will help the family reduce their spending and balance their budget.

Scoring suggestions/Grading rubric:

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<tr>
<td>Criteria Guidelines</td>
<td>Well considered, thoroughly researched recommendations</td>
<td>Well considered, somewhat researched recommendations</td>
<td>Well considered recommendations, little research</td>
<td>Poor recommendations, little research</td>
</tr>
<tr>
<td>Criteria Points</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D-F</td>
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</tbody>
</table>

Website/Video References:
https://www.bankofamerica.com/deposits/manage/creating-a-budget.go
http://www.bettermoneyhabits.com
http://www.bankrate.com/calculators.aspx
http://www.epi.org/resources/budget/

Submitted by: Joan Romano, Wake Tech CC
Learning Outcomes:
Upon completion students will be able to: Develop a personal budget

Grading Rubric

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</table>

Introduction:
Bungo and Esmerelda Baggins and their 13 year old son, Fosco, live in a beautiful house in Cary, North Carolina. Their house has 4 bedrooms, 4 baths and is 3,475 ft\(^2\). In 2012, shortly after the family purchased their home and a new Nissan Altima, Bungo lost his job. Since then he has been unable to find employment. Living on Bungo's unemployment insurance rather than his salary left the family with less money than they were used to spending, so they used credit cards to pay for some of their expenditures. In December of 2013, believing that he was about to be offered a prestigious new job, Bungo leased a 2014 Honda CR-V (36 month lease). That job fell through and his unemployment benefits have recently run out. The family can no longer meet their monthly expenses and have come to you group for help.

Directions:
Read the information found at:
https://www.bankofamerica.com/deposits/manage/creating-a-budget.go
and watch the videos found at
http://www.bettermoneyhabits.com (hint: if you have trouble watching some of the videos, read the transcript).

Look at the Baggins family expenses found on the attached Excel sheet. Research ways in which the family can cut its monthly expenses and balance its budget. Your recommendations must be realistic (for example the Baggins family can't stop eating or wearing clothes) and well researched. If you recommend saving money on housing, insurance, car payments, utilities, etc. you must research that budget item and find a less expensive alternative for them. If you recommend debt consolidation, you must find them a lower cost loan. Divide the research up among your group then consolidate your recommendations on your Final Worksheet. Fill out the New Budget column on the Baggins_Budget_Worksheet with your recommended changes. Be sure that their new budget covers all of their monthly expenses. Document your recommendations and cite your research in the text box on the worksheet.

Rename the Excel file as Your_Group_Name_Final and have one group member upload the file.

### Instructor’s Notes

| **Objective(s)** | Upon completion student will be able to:  
|                 | Interpret a variety of basic and sophisticated graphics from media sources. |
| **Materials Required** | Excel or graphing calculator |
| **Time for completion** | 30 – 45 minutes, estimate. |
| **Directions for Instructor** | Lab should be given when students have a computer available. The main purpose is for the student to be able to read and understand complicated graphs. |
| **Scoring suggestions/Grading rubric** | Questions 1-4: 7 points each  
|             | Questions 5-13: 8 points each  
|             | Total: 100 points |
| **Text/Unit Reference** | Material applicable to *Quantitative Literacy* (Crauder), chapter 2. |
| **Submitted by** | Terry Tolle, Southwestern CC |

**Other**

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VETERANS AFFAIRS
VETERANS AFFAIRS

Learning outcome:

Upon completion students will be able to...
  • Interpret a variety of basic and sophisticated graphics from media sources.

Scoring/Grading rubric:

• Questions 1-4: 7 points each
• Questions 5-13: 8 points each
• Total: 100 points

Introduction: Some graphs can be difficult to read properly. Carefully examine the charts to determine the correct answers.

Directions: Given the various charts and graphs dealing with veterans affairs, answer the following questions.
1. What was the total number of enrollees in the VA Health Care System on 3/31/2013?
   a. 8.76%
   b. 8,76
   c. $8.76 \times 10^6$
   d. 8,760,000,000

2. How many veterans were receiving VA disability compensation on 3/31/2013?
   a. 3.61%
   b. 3.61
   c. $3.61 \times 10^6$
   d. 3,610,000,000

3. What percent of total enrollees were receiving VA disability compensation on 3/31/2013?
   a. 3.61%
   b. 41.2%
   c. 2.43%
   d. 24.3%
4. Among veterans detailed, how many were from the Vietnam Era on 9/30/2012?
   a. $6.2 \times 10^3$
   b. 6,200,000
   c. $7.5 \times 10^3$
   d. 7,500,000

5. As of 9/30/2012, how many female veterans were projected among the US population?
   a. 2,232,800
   b. 10,000,000
   c. $2.2328 \times 10^3$
   d. 22,328,000

6. As of 9/30/2012, how many male veterans were projected among the US population?
   a. 22,328,000
   b. 90,000,000
   c. $2.009520 \times 10^5$
   d. 20,095,200
7. Does the **Number of Veterans with a Service-Connected Disability** chart show where the number of veterans and the number of veterans with a service-connected disability are the same?
   a. Yes
   b. No

8. In 2011, how many veterans were there?
   a. 30 million
   b. 3.4 million
   c. 2.4 million
   d. 22 million

9. In 2011, how many service-connected veterans on disability were there?
   a. 30 million
   b. 3.4 million
   c. 2.4 million
   d. 22 million

10. In 1991, what percent of veterans were service-connected disabled veterans?
    a. 10.9%
    b. 15.5%
    c. 8.0%
    d. 64.7%

11. From the **Percentage of New Compensation Beneficiaries, by Disability Rating and Fiscal Year** chart, what percent disability range held steady in the number of recipients from 1985 to 2011 at about 1,200,000?
    a. 0 – 20%
    b. 30 – 40%
    c. 50 – 60%
    d. 70 – 100%

12. From the **Total Number of Veterans with a Service Connected Disability, by Disability Rating and Fiscal Year** chart, what percent disability range increased the most from 1985 to 2011 in the number of recipients?
    a. 0 – 20%
    b. 30 – 40%
    c. 50 – 60%
    d. 70 – 100%

13. From the **Total Number of Veterans with a Service Connected Disability, by Disability Rating and Fiscal Year** chart, what percent disability range increased the least from 1985 to 2011 in the number of recipients?
    a. 0 – 20%
    b. 30 – 40%
    c. 50 – 60%
    d. 70 – 100%
Lab: Credit Cards for the Savvy Consumer

Objective(s):

- Using current media and data resources, interpret percentages given in tables, charts and graphs in terms of their bases; i.e. “percentage of what?”
- Judge the reasonableness of results using estimation, logical processes, and a proper understanding of quantity.
- Examine credit card terminology, perform basic credit card computations, and evaluate pay off options.
- Use online tools to determine payments on consumer loans.
- Ask appropriate questions about loan terms.

Materials Required: Handout, Internet Access

Time for completion: 2 hours plus prep before lab

Directions for Instructor: Give students the prep during the class period before the lab.

Scoring suggestions/Grading rubric: #1-28 are worth 3 points, #29 is worth 16 points.

Text/Unit Reference: Cruader section 4.4

Submitted by: Hilary Seagle, Southwestern Community College

Other:
Credit Cards for the Savvy Consumer Prep

Student Learning Outcomes

- Examine credit card terminology, perform basic credit card computations, and evaluate pay off options.
- Use online tools to determine payments on consumer loans.
- Create amortization tables using technology, exploring various scenarios, and communicate conclusions.
- Ask appropriate questions about loan terms.
- Explore and analyze a variety of consumer loans considering individual budget constraints and communicate findings.

Scoring suggestions/Grading rubric: #1-28 are worth 3 points, #29 is worth 16 points.

Preparation Directions:

View each video and answer the associated questions. It is not necessary to use complete sentences for this section. For the “bettermoneyhabits.com” videos, it may be easier to go to bettermoneyhabits.com and click on View All Videos and select the video by name. However, the specific link for each is listed.

View: What's the difference between "secured" and "unsecured" credit? @

1. What is collateral?

2. Is a student loan secured or unsecured?

3. As a general rule, how do interest rates compare for secured vs. unsecured loans?

View: How to Build Credit from Scratch @

4. What is the paradox of credit?
5. List at least 3 ways you can begin to establish credit:

View: Building Credit and Keeping Yours Healthy @

6. Why is it important to have a good credit score? List at least 3 reasons:

7. List the 5 factors that influence your credit score:

8. What is a credit reporting bureau? (You may need to some research for this one.)

9. List the 3 credit reporting bureaus:

10. List 2 key things one should do to maintain a good credit score:

View: Does Carrying a Balance on my Credit Card Hurt my Credit Score? @

11. How can using a credit card help your credit score?

12. How can it hurt your credit score?
Read the article: *The Best Credit Cards for College and High School Graduates in 2013*
from US News & World Report, May 15 2013

13. Why might you want to use an active school email account when applying for a credit card?

14. Why would the author recommend avoiding cards with an annual fee?

**Lab: Credit Cards for the Savvy Consumer**

**Directions:** Handout for the Discover Open Road card mentioned in the article:
See Terms and Conditions in handout to answer the following questions

15. This card has an introductory APR of 0%. Credit cards often do this to entice customers. What will the interest rate be after 14 months and why does it vary?

16. What is the yearly fee for the privilege of having this card?

17. Suppose you have another credit card with a balance of $700 and you want to transfer that balance to your new Discover Open Road card. What will the fee be?

18. What three things can happen if you make a late payment?

19. What is a ‘cash advance,’ and what is the APR for those?

20. The term and conditions mention the Prime Rate more than once. What is meant by “prime rate’’?

21. This card calculates your finance charge daily. What is this method called?

22. If your APR is 18.25%, how much daily interest would you pay on a balance of $ 5000? Think about what this would mean over a month or even a year’s time!
23. A more common method of calculating the finance charge uses the “average daily balance method.” Here is a simple example of this method using an APR of 15%.

You have a 30 day cycle.
Day 1 - You start with a balance of $100
Day 11 – You make a $200 purchase
Day 15 – A payment of $200 is credited to your account
Day 29 – You make a $50 purchase

For days 1-10, your balance is $100 → $100 * 10 = 1000
For days 11-14, your balance is $300 → $300 * 4 = 1200
For days 15-28, your balance is $100 → $100 * 14 = 1400
For days 29-30, your balance is $150 → $150 * 2 = 300

The AVERAGE balance is \( \frac{1000 + 1200 + 1400 + 300}{30} = \frac{3900}{30} = 130 \)

Interest is calculated on $130 for 30 days out of 365 @ 15%:

\[
Interest = 130 \times \frac{30}{365} \times .15 = 1.602 \rightarrow 1.61
\]

24. Some credit cards use yet another process to determine the balance. It is the “Unpaid Balance Method.” Calculating your balance and interest is complicated, so you want to look at the terms and conditions carefully!

For the Discover Open Road card, if you do owe interest and it is supposed to be $.16, how much will you actually be charged?
25. Now let’s use a free online Credit Card Calculator to look at the dangers of making the minimum payment on your credit card. A good one can be found at: http://www.bankrate.com/calculators/managing-debt/minimum-payment-calculator.aspx

Suppose you have $700 balance and an APR of 18%. If your minimum payment is $17.50 and future minimum payments are calculated based on the interest and 1% of your balance.

Enter these values into the calculator. How many months will it take to pay off your card if you make only the minimum payment? Note this assumes you make no further purchases!

26. Convert your answer for #25 into years and months.

27. Continuing from the previous question, how much interest would you pay?

28. Now suppose that you make no more purchases and commit to paying $70 each month. How long will it take to pay off the card? How much interest will you pay?

29. Write a well-constructed paragraph to detail the 3 most important things you have learned about credit/credit cards. Include an example or description of why each is important. (9 points for important concepts, 7 points for college-level writing)