

WAMC Lab Template

Math Concept(s): Employment Salaries

Source / Text: Financial Algebra

Developed by: Mark Taylor E-Mail: mtaylor@cheneysd.org Date: 6/26/18

Attach the following documents:

- Lab Instructions
- Student Handout(s)
- Rubric and/or Assessment Tool

Short Description (Be sure to include where in your instruction this lab takes place):

Lab Plan

Lab Title: How to find the best paying job

Prerequisite skills: multiplication, division, percentages, rounding up

Lab objective: Using algebra, find the best job salary-wise while taking doing also a cost analysis of benefits.

Standards: (Note SPECIFIC relationship to Science, Technology, and/or Engineering)

Mathematics K–12 Learning Standards:

A.SSE.A.1 Interpret expressions that represent a quantity in terms of its context.

1a Interpret part of an expression, such as terms, factors, and coefficients.

1b Interpret complicated expressions by viewing one or more of their parts as a single entity.

A.SSE.A.2 Use the structure of an expression to identify ways to rewrite it.

Cluster: Create equations that describe numbers or relationships.

A.CED.A.1 Create equations and inequalities in one variable and use them to solve problems.

A.CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

A.CED.A.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.

A.CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

Cluster: Solve equations and inequalities in one variable.

A.REI.B.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

Cluster: Understand the concept of a function and use function notation.

F.IF.A.2 Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

Cluster: Analyze functions using different representations.

F.IF.C.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.

7b Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.

Cluster: Construct and compare linear, quadratic, and exponential models and solve problems.

F.LE.A.1 Distinguish between situations that can be modeled with linear functions and with exponential functions.

1b Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.

Standards for Mathematical Practice:

- Practice 1: Make sense of problems and persevere in solving them.
- Practice 2: Reason abstractly and quantitatively.
- Practice 5: Use appropriate tools strategically.
- Practice 6: Attend to precision.

K-12 Learning Standards-ELA (Reading, Writing, Speaking & Listening):

- RST.9-10.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.
- RST.9-10.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
- RST.9-10.10 By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.

Technology

- 1.1.1 Generate ideas and create original works for personal and group expression using a variety of digital tools.
- 1.1.2 Use models and simulations to explore systems, identify trends and forecast possibilities.
- 1.3.4 Use multiple processes and diverse perspectives to explore alternative solutions.
- 2.2.1 Develop skills to use technology effectively.

Leadership/21st Century Skills:

<u>21st Century Interdisciplinary themes</u> (Check those that apply to the above activity.)			
<input checked="" type="checkbox"/> Global Awareness	<input checked="" type="checkbox"/> Financial/Economic/Business/Entrepreneurial Literacy	<input type="checkbox"/> Health/Safety Literacy	<input checked="" type="checkbox"/> Civic Literacy
<input type="checkbox"/>	<input type="checkbox"/> Environmental Literacy		
<u>21st Century Skills</u> (Check those that students will demonstrate in the above activity.)			
<p>LEARNING AND INNOVATION</p> <p><u>Creativity and Innovation</u></p> <input checked="" type="checkbox"/> Think Creatively <input checked="" type="checkbox"/> Work Creatively with Others <input checked="" type="checkbox"/> Implement Innovations <p><u>Critical Thinking and Problem Solving</u></p> <input checked="" type="checkbox"/> Reason Effectively <input checked="" type="checkbox"/> Use Systems Thinking <input checked="" type="checkbox"/> Make Judgments and Decisions <input checked="" type="checkbox"/> Solve Problems <p><u>Communication and Collaboration</u></p> <input checked="" type="checkbox"/> Communicate Clearly <input checked="" type="checkbox"/> Collaborate with Others	<p>INFORMATION, MEDIA & TECHNOLOGY SKILLS</p> <p><u>Information Literacy</u></p> <input checked="" type="checkbox"/> Access and Evaluate Information <input checked="" type="checkbox"/> Use and manage Information <p><u>Media Literacy</u></p> <input type="checkbox"/> Analyze Media <input type="checkbox"/> Create Media Products <p><u>Information, Communications and Technology (ICT Literacy)</u></p> <input checked="" type="checkbox"/> Apply Technology Effectively	<p>LIFE & CAREER SKILLS</p> <p><u>Flexibility and Adaptability</u></p> <input checked="" type="checkbox"/> Adapt to Change <input checked="" type="checkbox"/> Be Flexible <p><u>Initiative and Self-Direction</u></p> <input checked="" type="checkbox"/> Manage Goals and Time <input checked="" type="checkbox"/> Work Independently <input type="checkbox"/> Be Self-Directed Learners <p><u>Social and Cross-Cultural</u></p> <input checked="" type="checkbox"/> Interact Effectively with Others <input checked="" type="checkbox"/> Work Effectively in Diverse Teams	<p>Productivity and Accountability</p> <input checked="" type="checkbox"/> Manage Projects <input checked="" type="checkbox"/> Produce Results <p>Leadership and Responsibility</p> <input checked="" type="checkbox"/> Guide and Lead Others <input checked="" type="checkbox"/> Be Responsible to Others

Teacher Preparation: (What materials and set-up are required for this lab?)

Materials

- Computer or calculator

Set-Up Required:

- Start computer, open calculator

Lab Organization Strategies:

Leadership (Connect to 21st Century Skills selected):

- Assign someone to be the budgeter and the spokesperson of the group

Cooperative Learning:

- Make sure everyone corroborates about ideas of what to delete, what to move around in the budget.

Expectations:

- People will be able to agree on a budget and a car that will be affordable.
Move the budget around

Timeline:

- One class period

Post Lab Follow-Up/Conclusions:

Discuss real world application of learning from lab

- Discuss with the class the importance of math in budgeting for your daily life. Also, budgeting for business owners. Use math to budget to employees, what to charge

Career Applications

- Be able to determine which job would be the best to take (based on salary). Be able to take into account all aspects of the job offer: Salary (calculate monthly, annual), benefits, pension

Optional or Extension Activities

- Find 2 similar job offers and do a mathematical comparison of the two. Do mathematical formulas to show how you figured it out.

WAMC Lab Template

Math Concept(s): Section 6-1, building a resume

Source / Text: Financial Algebra (Gerver, Sgroi)

Developed by: Joseph Hua E-Mail: Josephchanhua@gmail.com

Date: Summer In-service 2014

Attach the following documents:

Lab Instructions

Student Handout(s)

Rubric and/or Assessment Tool

Short Description (Be sure to include where in your instruction this lab takes place):

This lab has students creating a resume (if they already have one, have them update it and show you). This will provide students with the opportunity to create a meaningful resume that will help them in their search for employment in their personal lives.

Lab Plan

Lab Title: creating a resume

Prerequisite skills: student knowledge of past work/education/activities

Lab objective: create a resume to apply for employment

Standards:

CCSS-M:

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Standards for Mathematical Practice:

•

State Standards addressed (2008 Washington State Mathematics Standards):

•

Reading:

- Reading 3.3.1 Apply appropriate reading strategies for interpreting technical and non-technical documents used in job-related settings.

Writing:

- Writing 1.3.1 Revises text, including changing words, sentences, paragraphs, and ideas.
- Writing 2.4.1 Produces documents used in a career setting.

<https://wa-appliedmath.org/>

Leadership/21st Century Skills:

21st Century Interdisciplinary themes (Check those that apply to the above activity.)

- Global Awareness Financial/Economic/Business/Entrepreneurial Literacy Civic Literacy
 Health/Safety Literacy Environmental Literacy

21st Century Skills (Check those that students will demonstrate in the above activity.)

LEARNING AND INNOVATION

Creativity and Innovation

- Think Creatively
 Work Creatively with Others
 Implement Innovations

Critical Thinking and Problem Solving

- Reason Effectively
 Use Systems Thinking
 Make Judgments and Decisions

Solve Problems

Communication and Collaboration

- Communicate Clearly
 Collaborate with Others

INFORMATION, MEDIA & TECHNOLOGY SKILLS

Information Literacy

- Access and Evaluate Information
 Use and manage Information

Media Literacy

- Analyze Media
 Create Media Products

Information, Communications and Technology (ICT Literacy)

- Apply Technology Effectively

LIFE & CAREER SKILLS

Flexibility and Adaptability

- Adapt to Change

- Be Flexible

Initiative and Self-Direction

- Manage Goals and Time

- Work Independently

- Be Self-Directed Learners

Social and Cross-Cultural

- Interact Effectively with Others

- Work Effectively in Diverse Teams

Productivity and

Accountability

- Manage Projects

- Produce Results

Leadership and

Responsibility

- Guide and Lead

- Others

- Be Responsible to Others

Teacher Preparation: (What materials and set-up are required for this lab?)

Materials

- Resume template
- Sheet of paper for students to answer 4 questions
- Something to write with

Set-Up Required:

- Students have a sheet of paper and something to write with to begin the lab

Lab Organization Strategies:

Grouping/Leadership/Presentation Opportunities:

- No grouping in this lab

Cooperative Learning:

- Students can utilize each other for help when completing their resume
- Students can help each other decide what to include and exclude

Expectations:

- Students will complete their resume to their best abilities
- Students will submit their completed resume to the teacher for grading

Timeline:

- 1-2 days for completion of resume
 - Another day or two for students to find their references

Post Lab Follow-Up/conclusions:

Discuss real world application of learning from lab

- Students learn how to effectively create their resume to apply for employment

Career Applications

- Use when applying for employment

Optional or Extension Activities

- Having students create a generic cover letter that can be adapted to various job opportunities

Creating a resume lab

1. Have students take out a sheet of paper and something to write with; inform students we will be doing a lab on professional skills
2. Verbally ask students four questions
 - a. What education background do you have?
 - b. What work experience do you have?
 - c. Any activities or awards?
 - d. Who are your references?
 - i. Reference must not be a family member, must have known for at least a year, can speak to your and MUST SAY SOMETHING GOOD ABOUT YOU
3. Ask students to look over these questions and think of what we're making
 - a. Answer is a resume
4. Give students the resume template that is attached (or your own)
5. Students will now take their answers to the 4 questions and put it into their own resume
6. Students will be graded on completion of the applicable parts of their resume, spelling, alignment, and overall conciseness.

<https://wa-appliedmath.org/>

Street Address
City, State Zip

Phone home
Phone Cell
E-mail email

Your name

Objective [Type Objective Here]

Education [Dates Attended] [Company/Institution Name] [City, State]
[**Degree/Major**]
▪ [Details of position, award, or achievement.]

Qualifications [Click here and enter information.]

Activities and awards [Click here and enter information.]

Languages [Click here and enter information.]

Work experience [Dates Attended] [Company/Institution Name] [City, State]
[**Job Title**]
▪ [Details of position, award, or achievement.]

Volunteer experience [Click here and enter information.]

Extracurricular activities [Click here and enter information.]

References

Name
Address
City
Phone

Name
Address
City
Phone

Name
Address
City
Phone

Name
Address
City
Phone

<https://wa-appliedmath.org/>

Resume lab grading rubric

Name:			Period:	
Task	0 points	_____ points	10 points	Total points
Applicable sections on resume	Student does not include applicable sections into resume		Student includes all applicable sections into resume	
Spelling	Student has 2 or more spelling errors		Student has no spelling errors	
Alignment	Items included are not aligned		Items included are aligned	
Conciseness	Resume is not legible, concise, and easy to read		Resume is legible, concise, and easy to read	

Total: _____/40

Math Council

<https://wa-appliedmath.org/>

WAMC Lesson Plan

Name(s): Joseph Hua

Lesson Title: 6-1 Look for Employment

Date: 6/24/2014

Text: Financial Algebra

Lesson Length: 50 Min

Domain: Interpreting functions, creating equations

Big Idea (Cluster): Looking for Employment

Common Core State Standards: A-CED2, F-IF2

Mathematical Practice(s): MP1: make sense of problems and persevere in solving them.
MP4. Model with mathematics

Content Objectives:

- compute periodic salary based on annual contract salary
- interpret abbreviations in job postings
- expressed copy prices as piecewise functions

Language Objectives: Correctly using vocabulary, describe, explain, the advantages or disadvantages of _____. The impact of _____.

Vocabulary: employment agency, resume, K, full-time, part-time, piecewise function, domain, integer

Connections Prior to Learning: Piecewise functions, basic mathematics (addition, multiplication, division, percentages)

Questions to Develop Mathematical Thinking:

- What are the advantages and disadvantages of salaries vs hourly pay?
- What's one advantage and disadvantage of buying a high number of resumes from a printer service?
- How does weekly, monthly, and annual payment impact you personally as you grow older?

Common Misconceptions:

- Incorrect usage of terminology
- Incorrectly using piecewise function

Assessment (Formative and Summative):

- Formative
 - Students taking notes on different abbreviations. Completion of sample problems pertaining to annual salaries and piecewise functions.
- Summative
 - Students given quiz over section 6-1

Materials:

- Student notebooks, 6-1 quiz, financial algebra textbook

Instruction Plan:

Launch: have discussion with students of who have current jobs, past jobs, etc. Discuss with students on how they got the jobs. How many of the jobs were hourly as compared to salaried. Why part-time vs full-time.

Explore: <https://wa-appliedmath.org/> when looking for jobs, what do you look for (the job expectations, pay, etc.), where do you look for jobs (employment agency, craigslist, classified ads, monster, linkedin, city work sites, etc.), go over basic abbreviations students might see when searching for jobs (email res,

WAMC Lesson Plan

eves, exp'd, F/T, P/T, K).

Ask students to identify how many weeks and months are in a year (52 and 12, respectively).

Go over sample salaries of jobs (you can use teacher salary as an example, say around \$41,000 or other jobs). Go over an example of computing monthly/weekly income from an annual salary (if you're paid \$41,000, what's the monthly income? What's the weekly income?) (also put the income in K, such as \$41K or \$54.6K). Work a few samples until students understand the concept.

Review piecewise functions and basic use of it (using $x=2, 3$, etc. as review). Incorporate piecewise functions into students creating a resume and having a print shop making copies using different amounts. Work multiple samples including sales tax to have students compute percentages as well as piecewise when students are ready.

When students are comfortable with piecewise, give quiz that will test students on abbreviations, computing monthly/weekly incomes from annual salaries, and piecewise functions. The second page of the quiz will contain a sample resume and will ask students to find the mistakes on the resume (there are 5).

When I observe students: when students are jotting down abbreviations, during samples that students are working the problems, and during quiz.

Questions to Develop Mathematical Thinking as you observe: What's one advantage and disadvantage of having a salary over hourly pay? Why do businesses tend to give discounts for paying for more at one time?

Answers: Answers will vary.

Summarize: Summarize the importance of salaries vs wages when looking for jobs. Summarize the pros and cons of making little or a lot of copies of resumes. Inform students they will be creating a resume in the coming lessons and learning how to get a job.

Career Application(s):

- Calculating monthly/weekly income. Finding prices of printing copies of resumes. Future lessons will have students create a resume.

21st Century Skills and Interdisciplinary Themes:

21st Century Interdisciplinary themes (Check those that apply to the above activity.)

- | | | |
|---|---|---|
| <input type="checkbox"/> Global Awareness | <input type="checkbox"/> Financial/Economic/Business/Entrepreneurial Literacy | <input type="checkbox"/> Civic Literacy |
| <input type="checkbox"/> Health/Safety Literacy | <input type="checkbox"/> Environmental Literacy | |

21st Century Skills (Check those that students will demonstrate in the above activity.)

LEARNING AND INNOVATION

Creativity and Innovation

- Think Creatively
- Work Creatively with Others
- Implement Innovations

Critical Thinking and Problem Solving

- Reason Effectively
- Use Systems Thinking
- Make Judgments and Decisions
- Solve Problems

Communication and Collaboration

- Communicate Clearly
- Collaborate with Others

INFORMATION, MEDIA & TECHNOLOGY SKILLS

Information Literacy

- Access and Evaluate Information
- Use and manage Information

Media Literacy

- Analyze Media
- Create Media Products
- Information, Communications and Technology (ICT Literacy)

Apply Technology Effectively

- Apply Technology Effectively

LIFE & CAREER SKILLS

Flexibility and Adaptability

- Adapt to Change
- Be Flexible

Initiative and Self-Direction

- Manage Goals and Time
- Work Independently
- Be Self-Directed Learners

Social and Cross-Cultural

- Interact Effectively with Others
- Work Effectively in Diverse Teams

Productivity and Accountability

- Manage Projects
- Produce Results

Leadership and Responsibility

- Guide and Lead Others
- Be Responsible to Others

Section 6-1 Quiz

1. Correctly interpret the following abbreviations:

Email res: _____

Eves: _____

Exp'd: _____

F/T: _____

P/T: _____

K: _____

Req: _____

2. How many weeks are in a year? _____

3. How many months are in a year? _____

4. Karen found a job with an annual salary of \$67.3K.

a. What is her annual salary in dollars? (without the K)

b. What is her monthly pay, rounded to the nearest dollar?

c. What is her weekly pay, rounded to the nearest dollar?

5. Tim wants to print out one-page resumes to apply for jobs. Joe's Printer Service charges \$39.95 to print 200 copies of one-page resumes. It will cost an additional \$10.00 for each set of 100 copies.

a. How much will a set of 300 copies cost with a sales tax of 6%?

b. If the number of sets of 100 resumes is represented by x copies, express the cost of resumes, $r(x)$, as a piecewise function of x

c. What's one advantage and one disadvantage of opting to print more resumes? Explain your choice.

Look at the following resume, *spot the mistakes*

Joseph Hua

4111 SW 325th ST
Federal Way, WA 98023

253.335.2605
Josephchanhua@gmail.com

Education

Eastern Washington University
Masters in Teaching
Focus: Business & Marketing Education
GPA of 3.88

Cheney, WA
Jan 2012-

university of washington
Bachelor of Arts in Business Administration
Focus: Marketing
GPA of 3.07

Seattle, Tacoma, WA
Sept 2006-March 2010

Teaching Experience

Mt. Spokane High School
Student teacher

Mead, WA
August 2013-Present

- Taught with Dave Whitehead & Joanie Pringle-Jones

Athletics Experience

Medical Lake Parks and Recreation Youth Sports
Assistant Soccer Coach

Medical Lake WA
August 2013-November 2013

- Assisted soccer teams ages 7/8 & 9/10

Work Experience

Frito-Lay Inc.
Detailer

Federal Way, WA
January 2012-Present

- Stock product and build displays
- Rotate older dated product to front of shelf and push newer dated product to the back of the shelf
- Restocking product from the backroom to the shelves/displays

St. Paul School

Extended School Care Services Assistant

Seattle, WA
November 1011-March 1013

- Facilitate students in after school activities
- Assist students in homework and other studies

Qualifications

Computer Skills- Adept at: Microsoft Word, PowerPoint, Excel, Publisher

Interpersonal Skills- Public speaking, small group management, works well in groups, basic Vietnamese

<https://wa-appliedmath.org/>

Section 6-1 Quiz Answer Key

1. Correctly interpret the following abbreviations:

Email res: email your resume
Eves: evenings
Exp'd: experienced
F/T: full time
P/T: part time
K: \$1,000
Req: required

2. How many weeks are in a year? 52

3. How many months are in a year? 12

4. Karen found a job with an annual salary of \$67.3K.

- a. What is her annual salary in dollars? (without the K)
\$67300
- b. What is her monthly pay, rounded to the nearest dollar?
\$5,608
- c. What is her weekly pay, rounded to the nearest dollar?
\$1,294

5. Tim wants to print out one-page resumes to apply for jobs. Joe's Printer Service charges \$39.95 to print 200 copies of one-page resumes. It will cost an additional \$10.00 for each set of 100 copies.

- a. How much will a set of 300 copies cost with a sales tax of 6%?
\$52.95
- b. If the number of sets of 100 resumes is represented by x copies, express the cost of resumes, $r(x)$, as a piecewise function of x .

$$r(x) = \begin{cases} 39.95 & \text{when } x \text{ is an integer and } x \text{ equal or less than } 2 \\ 39.95 + 10(x-2) & \text{when } x \text{ is an integer and } x \text{ is greater than } 2 \end{cases}$$

- c. Answers will vary.

Look at the following resume, *spot the mistakes (5 mistakes)*

Joseph Hua

4111 SW 325th ST
Federal Way, WA 98023

253.335.2605
Josephchanhua@gmail.com

Education

Eastern Washington University
Masters in Teaching
Focus: Business & Marketing Education
GPA of 3.88

Cheney, WA
Jan 2012-**Present**

University of Washington
Bachelor of Arts in Business Administration
Focus: Marketing
GPA of 3.07

Seattle, Tacoma, WA
Sept 2006-March 2010

Teaching Experience

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Student teacher

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Medical Lake, WA
August 2013-November 2013

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Detailer

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- Rotate older dated product to front of shelf and push newer dated product to the back of the shelf
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