

Lab Framework

Text: CORD

Unit number and title: 15 – Using Formulas to Solve Problems

Short Description: Using rule-of-thumb formulas and re-writing to determine medicine dosage.

Developed by: Amy Miller

Contact Information: Pomoery Jr/Sr High School

Date: 6/25/10

Lab Title What is the Dosage?

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**

Students will be able to use a rule-of-thumb formula to solve a medicine dosage issue

Students will be able to solve for a different exponent by re-writing the equation.

Students will check their answers by comparing the dosage amounts.

- **Statement of pre-requisite skills needed** (i.e., vocabulary, measurement techniques, formulas, etc.)

Basic Math Computations

Re-writing Equations

Measuring liquid

Reading medicine bottles

- **Vocabulary**

Dosage – amount of medicine to be taken

- **Materials List**

Grape Juice (to be used instead of medicine)*

Medicine Droppers

Medicine Cups

Laminated Age Cards

Pre-printed Dosage labels

Bottles

Plastic Cups

Small White Boards

White Board Markers

- **State Standards addressed**

Math: M1.1A, 7.2.B, A1.2.B

Reading: 2.1, 3.1

Writing: 2.2

- **Leadership Skills**

1.3, 1.4, 1.6, 2.1, 2.4, 2.6

- **SCAN Skills/Workplace Skills**

1.2, 1.3,

- **Set-up information**

Divide students into groups of 2 or 4 and then give them the roles that are available at each station.

Stations – have 2 stations available per group

Rule-of-Thumb equation written on White Board: $c = (a+3)/(30xD)$

- **Lab organization** (-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required**)

Station #1 – Students will be using the formula to find the dosage for a child who age they are given on a laminated 3x5 note card. They will have the dosage information as written on a medicine bottle for an adult. They will use the formula to solve, writing down the steps to solve the problem on the small white board. Then they will use the medicine dropper/cup to measure out the adult dosage and put in the cup labeled “ADULT” and then measure out the child dosage and put in the cup labeled “CHILD.” The idea is that after they compute the problem they can see if the answer is correct based upon the amount in each cup.*

Station #2 – Students will be given the child’s age, but this time the medicine bottle will be in children dosage. They will need to re-write the equation to solve for the Adult dosage, and then when done again measure out to check for correctness.*

Reporting to Class – after all students have completed the station they will then report the information back to the class – (Note – each station needs to have different ages for the children so that groups aren’t reporting on the same information)

*When done the students can drink the juice if they want to.

Roles – Reader, Writer, Measurer, Reporter – students can’t have the same role at each station.

Reader – they are the person that reads the card and medicine bottle

Writer – this person is who writes down the steps to the problem on the small white board

Measurer – this person will be the one who measures out the medicine

Reporter – the person who will report back to the class their findings.

The Reporter and Writer can not be the same person.

Time Line – 1-50 minute class period. Be sure that they have been introduced to the material before they are given the lab.

- **Teacher Assessment of student learning** (scoring guide, rubric)

Rubric – see last page of this document for a printable rubric.

- **Summary of learning** (to be finished after student completes lab)

-discuss real world application of learning from lab

-opportunity for students to share/present learning

Student will present their information to the class and show how they worked the steps using the white boards.

They will also discuss how this will be used in the lives now and in the future.

- **Optional activities**

Have students go home and find a children's medicine bottle to do the math for Station #2 and an adult medicine bottle to do the math for Station #3 – bring back their work to share with others.

- **Career Applications**

To be used as a mother/father in the future, but also a babysitter, nurse, or any other occupation that has to dispense medication to different groups of people.

Rubric:

Pomeroy Jr/Sr High School
Medicine Dosage Lab



Name: _____

Teacher: Miller

Date Submitted: _____

Title of Work: _____

	Criteria				Points
	4	3	2	1	
Explanation	A complete response with a detailed explanation.	Good solid response with clear explanation.	Explanation is unclear.	Misses key points.	___
Use Of Visuals	Clear diagram or sketch with some detail.	Clear diagram or sketch.	Inappropriate or unclear diagram.	No diagram or sketch.	___
Mechanics	No math errors.	No major math errors or serious flaws in reasoning.	May be some serious math errors or flaws in reasoning.	Major math errors or serious flaws in reasoning.	___
Demonstrated Knowledge	Shows complete understanding of the questions, mathematical ideas, and processes.	Shows substantial understanding of the problem, ideas, and processes.	Response shows some understanding of the problem.	Response shows a complete lack of understanding for the problem.	___
Requirements	Goes beyond the requirements of the problem.	Meets the requirements of the problem.	Hardly meets the requirements of the problem.	Does not meet the requirements of the problem.	___
Counter Examples	Includes counter examples.		Does not include counter examples.		___
				Total---->	___

Teacher Comments:

LAB TITLE: What is the Dosage?

STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**
 - Students will be able to use a rule-of-thumb formula to solve a medicine dosage issue
 - Students will be able to solve for a different exponent by re-writing the equation.
 - Students will check their answers by comparing the dosage amounts.
- **Grouping instructions and roles**
 - Roles – Reader, Writer, Measurer, Reporter – students can't have the same role at each station.
 - Reader – they are the person that reads the card and medicine bottle
 - Writer – this person is who writes down the steps to the problem on the small white board
 - Measurer – this person will be the one who measures out the medicine
 - Reporter – the person who will report back to the class their findings.
 - The Reporter and Writer can not be the same person.
- **Procedures – steps to follow/instructions**
 - 1 – determine the role you will play at each station
 - 2 – go to Station #1 – complete the following:

Use the formula on the white board to find the dosage for a child who age given on a laminated 3x5 note card. Read the dosage information as written on a medicine bottle for an adult. Use the formula to solve, writing down the steps to solve the problem on the small white board. Use the medicine dropper/cup to measure out the adult dosage and put in the cup labeled “ADULT” and then measure out the child dosage and put in the cup labeled “CHILD.” The idea is that after you compute the problem you can see if the answer is correct based upon the amount in each cup.
 - 3- go to Station #2 – complete the following:

Do all the above, but re-write the equation to solve for the Adult dosage, and then when done again measure out to check for correctness.
 - 4 – When everyone is done with their stations we will do class presentations.
- **Outcome instructions**

Present to the class all your information and then demonstrate how you solved the problem, and then show the examples of the medicine given to each person – at this point you can drink your juices.
- **Assessment instructions (peer-teacher)**

Give a copy of the Rubric that will be used to grade while they work and present.

Lab Data Collection

Student: _____ Date: _____

Unit: _____

Lab Title:

Criteria: Write the problem/objective in statement form

Data Collection: Record the collected/given data

Calculations: Complete the given calculations to solve for an answer(s)

Summary Statement:

Other Assessment(s)

Washington
Applied
Math
Council

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