WAMC Lab Template

Math Concept: Rate Comparison, averaging,
Source / Text: CORD Algebra 1 pg. 56 (after lesson 1.5)
Developed by: Adapted from CORD by Tami Mills E-Mail: tami.mills@colsd.org
Date: Summer 2022

Attach the following documents:

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

Compare your pulse rate to the average pulse rate of your classmates following three different states of physical activity.

Lab Plan

Lab Title: Comparing Pulse Rates in groups of 2 or 3.

Prerequisite skills: averaging, reading stopwatch, time conversions.

Lab objective: calculate average pulse rate. Use integers to show difference between your pulse and the average for each type of activity. Use integers to report the increase from resting pulse rate to exercising pulse rate (+/- 1,2,3 etc)

Locate your pulse. The two pulses you can find most easily are the radial pulse and the carotid pulse. The radial pulse is located on your wrist near the base of your thumb. The carotid pulse is on the side of your throat beside your jaw. Choose the location where your pulse is easiest for you to find. Find your pulse and count the number of beats in a 10-second period. Multiply this number by 6 to get the number of beats per minute for your heart .Write the number of beats per minute as your “resting pulse rate.” Run in place for one minute. Immediately count your pulse beats for a 10-second period. Multiply this number by 6 to get the beats per minute. Record the number of beats as your “exercising pulse rate.” Rest for five minutes. Then count beats for a 10-second period. Multiply this number by 6 to get the beats per minute. Record this number as your “recovery pulse rate.” Record all the data for each class member on the board in a table with headings for “resting pulse rate,” “exercising pulse rate,” and “recovery pulse rate.” Copy all the data to your record. Calculate the average pulse rate of your classmates for the data in each column. Use integers to report the difference between your pulse rate and the class average for each type of rate. Use integers to report the increase from resting pulse rate” to “exercising pulse rate” and the decrease from “exercising pulse rate” to “recovery pulse rate.” Report these changes for your own pulse rates and for the average pulse rates for the class.

Follow-up: Discuss the meanings of the negative and positive integers in the lab results.
Enrichment: Have students determine their personal target heart rate during exercise. Students can use the following formula to approximate the recommended average target heart

rate of 70% of their maximum heart rate: 220 - your age. Calculate the difference between the resting heart rate and the target heart rate.

Standards:

Mathematics K–12 Learning Standards:

- CCSS.MATH.CONTENT.HSN.RN.B.3

Standards for Mathematical Practice:

- CCSS.MATH.PRACTICE.MP4
- CCSS.MATH.PRACTICE.MP5
- CCSS.MATH.PRACTICE.MP6

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

- CCSS.ELA-LITERACY.CCRA.L.1

K-12 Science Standards

- HS-LS1-3.

Technology

-

Engineering

-

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

- Paper, pencils, calculator, space to run, stop watch

Set-Up Required:

-

Lab Organization Strategies:

Leadership (Connect to 21st Century Skills selected):

- Health/Safety Literacy, Problem Solving, Collaboration and Communication, IT literacy, Self-Direction, Social and Cross-Cultural, Responsibility

Cooperative Learning:

- Working in pairs, taking turns

Expectations:

- Participation, no excessive play

Timeline:

- 50 minutes

Post Lab Follow-Up/Conclusions:

Discuss real world application of learning from lab

- This is related to heart health and fitness. The harder you exert yourself, the faster your heart will beat until you're heart is stronger or you are in better shape. If you are healthy, your heart won't have to work so hard. One should pay attention to their heart rate. Don't work out too hard or you may pass out!

Career Applications

- Medical field, PE teacher or fitness instructor

Optional or Extension Activities

- If you were to graph these, it would not be linear forever.

WAMC Lesson Plan

Name: Tami Mills
Email Address:tami.mills@colsd.org
Lesson Title: 1.2 Sequences
Date:Summer 2022
Text: CORD Algebra 1 3rd edition STEM Correlation:Science Lesson Length: 2 days

Big Idea (Cluster):Arithmetic and Geometric Sequences	
Mathematics K–12 Learning Standards: CCSS.MATH.CONTENT.HSF.LE.A.2 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).	
Mathematical Practice(s): CCSS.MATH.PRACTICE.MP1 Make sense of problems and persevere in solving them. CCSS.MATH.PRACTICE.MP4 Model with mathematics. CCSS.MATH.PRACTICE.MP5 Use appropriate tools strategically. CCSS.MATH.PRACTICE.MP7 Look for and make use of structure.	
Content Objectives: Find patterns in sequences. Identify and continue arithmetic and geometric sequences. Continuing and Identifying a Pattern	Language Objectives (ELL): CCSS.ELA-LITERACY.CCRA.L.1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
Vocabulary: arithmetic sequences, geometric sequence, sequence, terms, figures	Connections to Prior Learning: Pattern recognition
Questions to Develop Mathematical Thinking: • Will her initial investment of $12k yield the needed $200k?	Common Misconceptions: •

Assessment (Formative and Summative):

- F=Ongoing assessment pg. 11 S=Lesson Assessment pg 11-12

Materials:

- Paper, pencils, calculator

Instruction Plan:

Introduction: Alicia wants to buy lakefront property and build a vacation home in 20 years. She decides to make a one-time investment of $12k in a mutual fund and let the investment grow. She found a bank where her investment will double every 5.5 years. Will her initial investment of $12k yield the $200k needed in 20 years?
Explore: Many problems can be solved by finding a pattern. A numerical pattern in which the numbers are arranged in a certain order is called a sequence. The numbers in a sequence are sometimes called terms. Some patterns contain figures instead of numbers. These patterns can often be described numerically.
When I observe students: Students creating a table to record their work. Students should learn that when they come across a difficult problem, they should look for one similar to and easier than the one that they are having problems with. Students complete table, recognize pattern, continue sequence in table.

Questions to Develop Mathematical Thinking as you observe: What is the pattern? Will she have enough money?
Answers: No, she will not have the $200k she needs
Summarize: An arithmetic sequence involves a common difference between each term and a geometric sequence involves a common quotient between terms.

Career Application(s):

- Banking, Financial advisor

Leadership/21st Century Skills:

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