

WAMC Lab Template

Math Concept(s): Understanding the relationship between diameter and circumference

Source / Text: N/A

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Date: Summer Conference 2016

Attach the following documents:

Lab Instructions

Student Handout(s)

Rubric and/or Assessment Tool

Indicate “SPECIFIC” relationship to Science, Technology, or Engineering

The relationship between a circle’s diameter and its circumference can be used in engineering

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

Lab Plan

Lab Title: Run Around!

Prerequisite skills: Knowledge of perimeters of polygons, and diameters and circumference of circles. Students should also be familiar with calculating a runner’s speed.

Lab objective: Students will understand the relationship between a circle’s diameter and its circumference.

Standards:

Mathematics K–12 Learning Standards:

- 7.G.B.4: Solve real-world and mathematical problems involving angle measures, area, surface area, and volume

Standards for Mathematical Practice:

- MP1- Make sense of problems and persevere in solving them
- MP4- Model with mathematics
- MP6- Attend to precision

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

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Leadership/21st Century Skills:

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 checked="" 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 INNOVATIONCreativity 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 SKILLSInformation 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 SKILLSFlexibility 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 andResponsibility

- Guide and Lead Others
- Be Responsible to Others

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

Materials

- Shoes that can be used for running
- Casual clothing
- Tape measures
- Timer
- Writing utensils
- Calculators

Set-Up Required:

- Make sure the track is accessible

Lab Organization Strategies:

Leadership (Connect to 21st Century Skills selected):

- Students will listen to the directions cooperatively
- Students will apply their previous knowledge in solving the problem
- Students will gather and evaluate their information both independently and in groups

Cooperative Learning:

- Students will work together to gather and use the information properly
- Students will help each other in solving the problems

Expectations:

- Students will follow directions and stay on task
- Students will make sense of the problem and persevere in solving it
- Students will attend to precision

Timeline:

- The lesson should be completed in a 90 minute period

Post Lab Follow-Up/Conclusions:

Discuss real world application of learning from lab

- Discuss how much a change in a circle's diameter affects its circumference

Career Applications

- Track and Field occupations, Engineering, Construction, Masonry, Landscaping

Optional or Extension Activities

- Students can calculate how much further ahead a runner should start in order to make the race fair

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