WAMC Lab

Math Concept(s): Pythagorean Theorem
Source / Text: NA   Developed by: Matthew Chase
E-Mail: matthew.chase@camas.wednet.edu   Date: Summer Conference 2016

Attach the following documents:
Student Handout: Pythagoras's Walkabout.

Indicate "*SPECIFIC*" relationship to Science, Technology, or Engineering
This technique is used in about every science and engineering field

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

Lab Plan
Lab Title: Pythagoras's Walkabout

Prerequisite skills: Converse of the Pythagorean Theorem, acute angles and obtuse angles

Lab objective: reinforce the Pythagorean Theorem, use measurement and precision.

Standards:
Mathematics K–12 Learning Standards:
- G.SRT.4, G.SRT.5, G.SRT.8

Standards for Mathematical Practice:
- All

K-12 Learning Standards-ELA (Reading, Writing, Speaking & Listening):
- L.11-12.3

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
- Metric tape measure (makes it easier)
- Lab worksheet
- Calculator
- pencil

Set-Up Required:
- Permission to leave classroom??

Lab Organization Strategies:
Leadership (Connect to 21st Century Skills selected):
- See above

Cooperative Learning:
- The students will work in groups and will have to use teamwork to finish the lab in a timely manner. They will have to delegate task for each person to do using our classroom norms for group work.

Expectations:
- The students will collect the data of the lab before doing any of the mathematical calculations.
- The students will abide by all lab procedures.
- The students will follow the rules of the classroom for the lab time (expectations and norms are explained and a the beginning of the year for labs and instructional time)

Timeline:
- Day one - immediately begin the Lab portion of this lesson. It takes approximately 25 minutes. Calculation portion takes 5-10 minutes. Follow up discussion lasts 10-15 minutes. Students will finish follow up questions in class or at home.
- Day two – collect finished lab write-up.

Post Lab Follow-Up/Conclusions:
Discuss real world application of learning from lab
- This method is used to square up corners in buildings, engineering and physics
- This lab helps reinforce the measurement techniques used in the students science and technology classes and shows uses outside of these classroom settings.

Career Applications
- All aspects of this lab are used everyday by machinists, engineers and physicists as a very accurate measurement tool for length.

Optional or Extension Activities
- Students can go home and see if their house has square corners and such.

Geometry
Pathagoras's Walk-About

Name_____
Date_____
Period_____

You are going to walk around the 700 wing and find if these items have a right angle for a corner. Use your knowledge of the converse of the Pythagorean Theorem to do the work.

Fill in the blanks. **Show all of your work on a different sheet of paper according to the method used in class.** All length units must be labeled. They can be in feet, inches or cm.

Please label the largest angle as a(n) acute, right or obtuse angle in last column

Item	Length a	Length b	Length c	angle type
Window sill				
Wall to floor				
Door way				
Classroom corners				
Lockers				
Drinking fountain				
Stair well corner				
Wall panels				
Door				

Remember all length units must be labeled. They can be in feet, inches or centimeters.