Geometry Project

"What's Your Angle, Pythagoras?"

Option 1: (Problem Solving)

Each group will consist of six students. Each student within the group will have a group role (see group roles below). The group will decide which Option 1 problem to solve and present their problem to the class.

Math Translator/Word Wizard

➢ As mathematics concepts and vocabulary are found in the literature reading, this person's job is to translate the concepts and vocabulary into everyday language (layman's terms) easy enough for the grade-level math class to understand.

The Scribe

➢ This person is responsible for:
- ∞ Properly labeling the map according to the problem and
- ∞ Accurately completing the Pythagorean Theorem Problem Guide according to the discussion within the group.

The Illustrator

➢ This person is responsible for:
- ∞ Determining what diagrams, pictures, charts or organizers could be used to better organize the information to help the group visualize the problem and solve the answer; and
- ∞ Determining what visuals will be used by the Explainer during presentation.

Fact Finder

➢ This person is responsible for:
- ∞ Determining the facts of the problem and
- ∞ Determining what formula(s) may need to be applied to solve the problem.

The Human Calculator

➢ Based on the facts and formulas determined by the Fact Finder, this person is responsible for:
  - ➢ Performing all calculations,
  - ➢ Making sure all calculations are labeled, and
  - ➢ Advising the group of the best calculations to use in order to solve the problem

The Explainer
  ➢ This individual is responsible for explaining the group's rationale. This person explains why or why not the group's solution to the problem is working.
  ➢ This person explains where the group is having/had problems.
  ➢ This person also explains whether the group's solution is correct. Why or why not?
  ➢ The person is also responsible for verifying the answer.

Option 1 Problems (Choose one):
*Be sure to complete the Pythagorean Theorem Problem Guide and show all work when answering questions.

1. While visiting and relaxing in Mycenae of Greece, Pythagoras decided to visit his "homeboy" on the island of Lesbos. Instead to going directly to Lesbos from Mycenae, Pythagoras decides to take the scenic route and stop at Iolkos and then on to Lesbos. From Mycenae to Iolkos is 8 miles. From Iolkos to Lesbos is 15 miles.

    a. How many miles is the trip from Mycenae to Lesbos?
    b. How many more miles did Pythagoras travel going through Iolkos to get to Lesbos?
    c. It takes Pythagoras 30 minutes to travel 1 mile. How long did it take Pythagoras to travel from Mycenae to Iolkos and then on to Lesbos? (Specify in hours and minutes)
        i. How long would it have taken Pythagoras to travel directly from Mycenae to Lesbos?

2. Pythagoras travels all over Greece. However, he travels from Thebes to Gla during the early spring months looking for those extra special Fourth of July fireworks. While in Gla, he will normally take in some of the local sights, and then travel to Ephesus and back to Thebes all within the same day. Needless to say, his fireworks are definitely unique! His assistant charges by the mile. The trip from Gla to Ephesus is 25 miles. The trip from Ephesus to Thebes is 24 miles.

    a. How many miles is the trip from Thebes to Gla?
    b. What is the total number of miles traveled from Thebes to Gla, then to Ephesus and back to Thebes? (You will be looking for the _____)
    c. Pythagoras' assistant charges $2.25 per mile.
        i.   How much will Pythagoras' assistant charge for the total trip?
        ii. How much would Pythagorean's assistant charge if Pythagoras simply traveled from Thebes to Ephesus?

Option 2: (Creative Group Demonstration)

∞ You may present a creative demonstration related to the Pythagorean Theorem (jingle, rap, poem, skit, commercial) using your map of ancient Greece and your knowledge of the Pythagorean Theorem.

∞ The presentation needs to be 2-3 mins. long.

∞ Every group member MUST participate.

∞ The group will be graded on creativity and how well you describe the Pythagorean Theorem in your presentation. In describing the Pythagorean Theorem, be sure to reference the book, "What's Your Angle, Pythagoras?" as well as use your own knowledge of how the theorem is applied.

Michelle Foy and Nancy Rodriguez

Pythagorean Theorem Problem Guide (Problem #1)

While visiting and relaxing in Mycenae of Greece, Pythagoras decided to visit his "homeboy" on the island of Lesbos. Instead to going directly to Lesbos from Mycenae, Pythagoras decides to take the scenic route and stop at Iolkos and then on to Lesbos. From Mycenae to Iolkos is 8 miles. From Iolkos to Lesbos is 15 miles.

    a. How many miles is the trip from Mycenae to Lesbos?

    b. How many more miles did Pythagoras travel going through Iolkos to get to Lesbos?

    c. It takes Pythagoras 30 minutes to travel 1 mile.

        i. How long did it take Pythagoras to travel from Mycenae to Iolkos and then on to Lesbos? (Specify in hours and minutes)

        ii. How long would it have taken Pythagoras to travel directly from Mycenae to Lesbos? (Specify in hours and minutes)

What is the question asking me for?
What do I know?
What strategy will I use?
Here is my work..
My answer is…
Let me tell you about my thinking…

Pythagorean Theorem Problem Guide (Problem #2)

Pythagoras travels all over Greece. However, he travels from Thebes to Gla during the early spring months looking for those extra special Fourth of July fireworks. While in Gla, he will normally take in some of the local sights, and then travel to Ephesus and back to Thebes all within the same day. Needless to say, his fireworks are definitely unique! His assistant charges by the mile. The trip from Gla to Ephesus is 25 miles. The trip from Ephesus to Thebes is 24 miles.

      d. How many miles is the trip from Thebes to Gla?

      e. What is the total number of miles traveled from Thebes to Gla, then to Ephesus and back to Thebes? (You will be looking for the _____)

      f. Pythagoras' assistant charges $2.25 per mile.

          i. How much will Pythagoras' assistant charge for the total trip?

          ii. How much would Pythagorean's assistant charge if Pythagoras simply traveled from Thebes to Ephesus?

What is the question asking me for?
What do I know?
What strategy will I use?
Here is my work..
My answer is…
Let me tell you about my thinking…

Name:_____   Date:_____   Period:_____

Pythagorean Theorem Project Rubric

Category	0	1	2	3
Completion of Lesson Questions	Does not answer the questions in lesson	Answers some of the questions in lesson	Answers most of the questions in lesson	Answers all the questions in lesson
Additional Facts from book: **"What is Your Angle, Pythagoras?"**	Provides no additional facts from book	Provides 1 additional fact from book	Provides 2 additional facts from book	Provides 3 or more additional facts from book
Condition Checker (Knows under what condition theorem is applied)	Does not accurately state the theorem; does not know under what condition theorem is applied	States theorem but with some error; has a basic knowledge about under what conditions theorem is applied	States theorem accurately; has some problems understanding under what conditions theorem is applied	Accurately states theorem; understands under what conditions theorem is applied
Proof of Theorem	Does not provide a proof or provide a visual	Identifies a geometric proof to demonstrate understanding	Identifies a geometric proof and explains in own words	Identifies a geometric proof and explains in own words; provides a visual diagram or picture
Real-Life Application	Does not attempt real-life application problems; attempts real-life application problems with 25% accuracy	Attempts real-life application problems with 50% accuracy	Attempts real-life application problems with 75% accuracy	Attempts real-life application problems with 100% accuracy
Creativity	Does not attempt to creatively add to project in any fashion	Adds very little creativity to project	Adds some creativity to project	Puts forth great effort in adding creativity to project
Participation Points	1	3	5	7
Score				**/ 25**