**Pythagorean Theorem Murder Mystery Project**

**OBJECTIVE** I can use the Pythagorean Theorem to solve a real-world problem.

**Mission**:

Detectives, Mr. Johnny Bassett, one of Ms. Garrett’s good friends, was found murdered yesterday evening in a park in New York City. The cause of death was a single gunshot wound to the buttocks. There were no eyewitnesses to the murder, however, people did identify 3 possible suspects fleeing from the scene. Thanks to technology and your keen math skills, we have ability to figure out exactly who committed this crime. Please help the crime lab in discovering who killed Mr. Bassett.

**Details**:

According to the crime lab, the buildings that each possible suspect was standing on is exactly 546 feet from where Mr. Bassett was standing. In order for the shot to be pulled off correctly, the bullet must have traveled about 847 feet from the roof to Mr. Bassett’s body. Each one of the suspects was seen on the top of one of the 3 surrounding buildings. By calculating the required height of the building to pull off the shot (using the Pythagorean Theorem) you can figure out which suspect committed the crime. Use your math knowledge to solve the crime!

**Possible Suspects**:

1. Jaden Smith: 24 years old, criminal record (petty theft, and aggravated assault). Brown eyes, black hair 6 feet, 2 inches tall. Was seen on top of the MetLife Building (756 feet tall) at the time of the crime.

2. North West: 7 years old, criminal record (grand theft auto). Brown eyes, black hair 3 feet tall. Was seen on top of the Sony Records Building (647 feet tall) at the time of the crime.

3. Hailey Mathers: 23 years old, criminal record (aggravated assault, drug trafficking). Blue eyes, blonde hair 5 feet, 6 inches tall. Was seen on top of the Trump Towers (664 feet tall) at the time of the crime.

**Part A**:

Create a poster on an 8 ½ in. x 11 in. piece of paper, showing the killer and their trajectory to Mr. Johnny Bassett, and then write a police report stating what you found (both the poster & the report will be used as evidence at the suspect’s trial). Review the rubric for expectations.

**Part B**

On the back side of Part A, create your own mystery situation that needs the Pythagorean Theorem in order to be solved (it does not need to be a murder). You must have 3 suspects, and the content needs to be school appropriate. Show how the Pythagorean Theorem can be used to solve your new mystery.

**HINT** I suggest creating a draft before making a final copy!

Scoring Guide

21-24 Dist. A

17-20 Prof. B

12-16 App. C

6-11 Nov. D

0-5 Nov. U

**Part A**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Distinguished (4) | Proficient (3) | Apprentice (2) | Novice (1) |
| Content Accuracy  (x 2) | Correct work is shown, step-by-step, for each building  (all 3 buildings are accurate) | Mostly correct work is shown, step-by-step for each building  (all 3 buildings are accurate) | Some correct work is shown, or steps are not clear from work  (at least 2 buildings are accurate) | Little correct work is shown, or steps are missing (0-1 buildings are accurate) |
| Police Report  (x 2) | A detailed and strong case is made against the suspect, supported by the math and motive  (Guaranteed guilty) | A strong case is made against the suspect, supported by the math  (Probably guilty) | An acceptable case is made against the suspect, support by math is attempted  (Might be innocent) | A weak case is made against the suspect, or support by math is not attempted  (Definitely innocent) |
| Grammar  (x 1) | Capitalization, punctuation, and grammar are all correct throughout | Capitalization, punctuation, and grammar are mostly correct (may contain a mistake or two that don’t detract from message) | Several grammar mistakes that make the explanation difficult to read | Many grammar and punctuation mistakes that make the explanation nearly impossible to read |
| Attractiveness  (x 1) | The poster is exceptionally attractive in terms of design, layout, and neatness | The poster is attractive in terms of design, layout, and neatness | The poster is acceptably attractive in terms of design, layout, and neatness; may be a bit messy | The poster is messy or poorly designed. It is not very attractive |

Score: \_\_\_\_\_/24\_=\_\_\_\_\_%

**Part B**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Distinguished (4) | Proficient (3) | Apprentice (2) | Novice (1) |
| Content Accuracy  (x 2) | All necessary work is clearly shown and correct | All necessary work is shown and correct | Most work is shown and correct | Some work is shown and correct |
| Math Information  (Details & Suspects)  (x 2) | All information necessary to solve the problem is clearly included, and there are 3 suspects | All information necessary to solve the problem is included, and there are 3 suspects | Most information necessary to solve the problem is included (may be missing 1 or 2 small parts – including suspects) | Important information is missing/not enough information is included – problem cannot be solved as told |
| Story line  (Mission)  (x 1) | Background information is interesting, full of details, and original | Background information is interesting and original | Background information is interesting or original | Background information is unclear or incomplete |
| Grammar  (x 1) | Capitalization, punctuation, and grammar are all correct throughout | Capitalization, punctuation, and grammar are mostly correct (may contain a mistake or two that don’t detract from understanding) | Several grammar mistakes that make the problem difficult to understand | Many grammar and punctuation mistakes that make the problem nearly impossible to understand |

Score: \_\_\_\_\_\_\_\_/24\_=\_\_\_\_\_\_%