 **Detective Challenge** - Student Assessment Task

Stanley Skeezeball has recently been a victim of a theft crime. He is accusing Johnny B. Good, his former business partner, of stealing company property and money from their office on the 11th floor of The Big Tall Towers Office Building.

The lead detective has obtained information. Inspect the Crime Report and use your knowledge of logic and reasoning to help the Edmonton Police Department. Answer the following questions and present your findings in the Intern Report.

* List the information given.
* Summarize how the crime was committed?
* Use inductive reasoning to prove who committed the crime
* Use inductive reasoning to prove if Johnny B. Good was involved.
* Is he guilty?
* Provide a counterexample to support your conclusions.
* Explain how your inductive reasoning may lead to a false conclusion.

Crime/Incident Report

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| C  R  I  M  E | Type of Incident:  **Break and Enter, Theft, Vandalism** | | | | | | Year  **2010** | | | Day of Week  **Wednesday** | | | | Time  **8:30 pm** | | | |
| Location of Incident (or address) City  **Private Office of Stan Skeezeball and Johnny B. Good Edmonton**  **Big Tall Towers Office Building – 11th floor** | | | | | | | | | | | | | | | | |
| W  I  T  N  E  S  S | Witness Name:  **Beefy "Bulldog" Jones (Security Guard)** | | | | | | | | | | | | | | | | |
| Witness Statement:  **The following witness statement is an account of the events according to Beefy ‘Bulldog’ Jones (Security Guard) from his kiosk in the front lobby.**   * **At 8:30 pm a key card was used to gain entry to the front lobby of The Big Tall Towers Office Building** * **Male 1 approximately 6’3” with short brown hair entered the mail lobby. As Mr. Jones returned from a nightly walk he witnessed the male enter the stairwell on the North side of the building at 8:31 pm. He only saw the male from behind** * **At 8:35 pm a different key card was used to gain entry to the front lobby of The Big Tall Towers Office Building.** * **Mr. Jones witnessed a second male enter the main lobby and proceed to the elevator at 8:36 pm. Male 2 was approximately 5’10” and wore a ball cap.** * **At 8:37 pm the security camera caught male 1 walking the corridors on the 11th floor.** * **At 8:38 pm male 2 exited the elevator on the 10th floor (security camera).** * **At 8:42 pm male 2 was seen walking down the corridor on the 11th floor (security camera).** * **At 8:45 pm Mr. Jones departed the kiosk to complete a nightly walk around the perimeter of the building.** * **Male 2 entered the elevator on the 10th floor at 8:52 pm.** * **Male 2 entered lobby and departed from the building at 8:54 pm.** * **Mr. Jones witnessed male 1 departing from the back entry of the building while on his nightly walk around the building. Male 1 departed at 8:58 pm.** | | | | | | | | | | | | | | | | |
| Witness Name:  **Mr. Sid Clean (Custodian)** | | | | | | | | | | | | | | | | |
| Witness Statement:  **Mr. Sid Clean (Custodian) provided the following witness statement.**   * **Mr. Clean began his shift at 6:00 pm; he was assigned to clean floors 10, 11 and 12.** * **Mr. Clean witnessed a male (6’3” with short brown hair) on the 12th floor just before his break.** * **Mr. Clean stated he normally takes his break at 8:45 pm. The break room is on the 11th floor.** * **During his break Mr. Clean heard banging from down the hall.** * **Mr. Clean received a text message from his girlfriend at 8:51 pm right before he went to the bathroom on the 10th floor.** * **On his way to the bathroom Mr. Clean stopped right outside the bathroom door and saw a male with a ball cap on walking towards the elevator.** | | | | | | | | | | | | | | | | |
| M  O  I  N  F  O  R  M  A  T  I  O  N | Total # of witnesses at crime: **2** | | | | | | | | | | | | | | | | |
| Place  of attack:  Business  Vehicle  Street/Alley  Lot/Park/Yard        Vessels  Other | | | | | | | | | | | | | | | | |
| Description of Surrounding area:  Residential Business  Industrial/Mftg.  Recreational  Institutional  Open Space  School  Marine/Water  Other | | | | | | | | | | | | | | | | |
| Force Tool Weapon | | Specify:  **Hammer** | | | | | | | | How Used:  **Broke Lock on door** | | | | | | |
| Type of Structure  N/A  **High Rise Office Building** | | Security Used **Security guard on duty.** | | | | | | | | Suspect Actions | | | | | | |
| Point of Entry **Key card used to enter lobby of office building** | |  | | | | | | | |  | | | | | | |
| P  R  O  P  E  R  T  Y | Item  No. Article Name | | Stolen | | Miscellaneous Description | | | | | | | | | | | Value | |
| Received | |
| 1 Laptop | | stolen | | MacBook Pro - neon pink, sticker on cover "I love Butterflies"  Includes personal information from clients and banking records and codes | | | | | | | | | | | $1200 | |
|  | |
| 2 Money | | stolen | | Taken from safe, $50 bills bundled in groups of 25, 2 bundles | | | | | | | | | | | $2500 | |
|  | |
| S  U  S  P  E  C  T  S | Arrested  Y  N | Suspect #1  **Johnny B. Good** | Sex  **Male** | Age  **38** | | DOB  **February 29, 1972** | | | Height  **5'10''** | | Weight  **195 lbs** | | Build  **Average** | Hair color  **brown** | | | Eye color  **brown** |
| Additional information/Further suspect description (i.e., glasses, tattoos, teeth, birthmarks, jewellery, scars, etc.  **None** | | | | | | | | | | | | | | | | |
| Suspect’s clothing  **Red New York Yankees Baseball Cap, Dark Grey Jacket, Black Pants** | | | | | | | | | | | | | | | | |
| Hair Length/Type  **Short, brown hair, slightly balding** | | | Hair Style  **Crew Cut** | | | | Facial Hair  **None** | | | | Complexion  **Normal** | | | General Appearance  **N/A** | | |
| N  A  R  R  A  T  I  V  E | Evidence:  **No fingerprints found**  **Hammer found near office door** | | | | | | | | | | | | | | | | |
| Officer’s statement/investigation  **Upon further investigation it was discovered that the security tapes were damaged beyond repair.** | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | |

**Intern Report**

List the information given:

Summarize the crime that was committed…

Write a proof statement about who committed the crime (male 1 or male 2?):

|  |  |
| --- | --- |
| Statement | Reason |
|  |  |

Write a proof statement about who Johnny B. Good is (male 1 or male 2?):

|  |  |
| --- | --- |
| Statement | Reason |
|  |  |

Johnny B. Good is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

(guilty/not guilty)

Counterexample (How could you prove that the other person is guilty/not guilty?):

False Conclusion (how could your inductive reasoning be incorrect? Where are the gaps in your logic?)

**Glossary**

**conjecture** - A generalization made through inductive reasoning

**deductive reasoning –** A type of reasoning by which generalizations are drawn from specific patterns in observed data

**inductive reasoning –** A type of reasoning by which generalizations are drawn from general patterns in observed data

[**pattern**](http://www.learnalberta.ca/content/memg/Division02/Pattern/index.html)– A repeated sequence or arrangement about which predictions can be made

*Glossary hyperlinks redirect you to the Learn Alberta Mathematics Glossary (*[*http://www.learnalberta.ca/content/memg/index.html*](http://www.learnalberta.ca/content/memg/index.html)*). Some terms can be found in more than one division. Some terms have animations to illustrate meanings.*

 **Assessment**

**Mathematics 20-2**

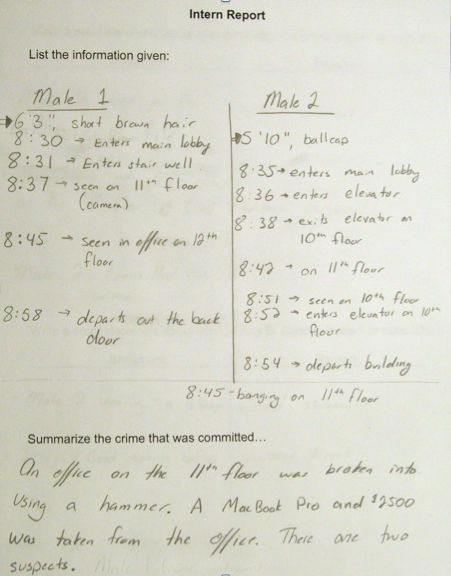
**Inductive and Deductive Reasoning**

**Rubric**

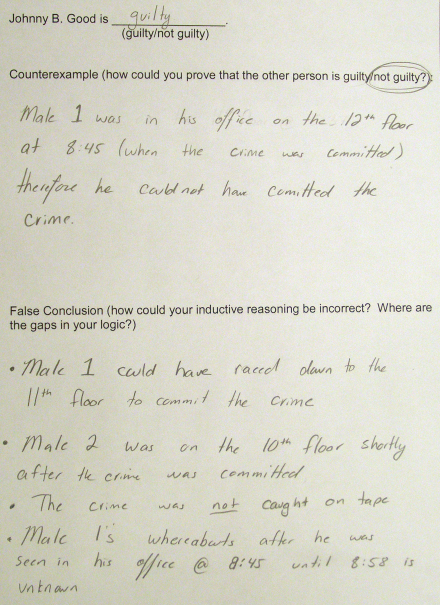
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Level**  **Criteria** | **4**  **Excellent** | **3**  **Proficient** | **2**  **Adequate** | **1**  **Limited** \* |
| **Explanations of proof** | Shows thorough  understanding;  explanations are  effective and thorough. | Shows understanding;  explanations are appropriate. | Shows partial  understanding;  explanations are  often incomplete or  somewhat confusing. | Shows very limited  understanding;  explanations  are omitted or  inappropriate. |
| **Explains Choice** | Shows a solution for the problem; provides a **logical and insightful** explanation. | Shows a solution for the problem; provides an **adequate** explanation. | Shows a solution for the problem; provides explanations that are **complete** but **vague**. | Shows a solution for the problem; provides explanations that are **incomplete** or **confusing**. |
| **Solves and explains the solution using appropriate terminology conjecture, deductive inductive reasoning).** | The student(s) has/have a good understanding of terminology and are able to correctly solve and explain the solution. | For the most part student(s) has/have an understanding of terminology and can solve and explain the solution. | Student(s) has/have a partial understanding of terminology and have errors in explaining the solution. | Student(s) has/have limited understanding of terminology and cannot correctly explain or solve the question. |
| **Communicates findings in a thoughtful and convincing manner. Student(s) show(s) clear understanding of inductive and deductive reasoning** | Communicates findings in a **thoughtful** and **convincing** manner, using **specific** mathematical vocabulary. | Communicates findings in an **interesting** and **coherent** manner, using **appropriate** mathematical vocabulary. | Communicates findings in a **predictable** and **simplistic** manner using **inconsistent** mathematical vocabulary. | Communicates findings in a **confusing** and **vague** manner using **inappropriate** mathematical vocabulary. |

When work is judged to be limited or insufficient, the teacher makes decisions about appropriate intervention to help the student improve.

**Possible Solution to Detective Challenge**

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