

What Makes a Good Resource











Data Handling Murder Investigation

A Murder Investigation

A professional murder has taken place. It is believed that the victim was poisoned before being shot. The murderer is one of ten known villains as seen below.

You are to use the information provided to eliminate each suspect from your enquiry until the murderer is found.

All evidence (including calculations) must be clearly documented for presentation by the prosecution.

Suspect 1	Suspect 2	Suspect 3	Suspect 4	Suspect 5
				
Suspect 6	Suspect 7	Suspect 8	Suspect 9	Suspect 10
				

Good luck!

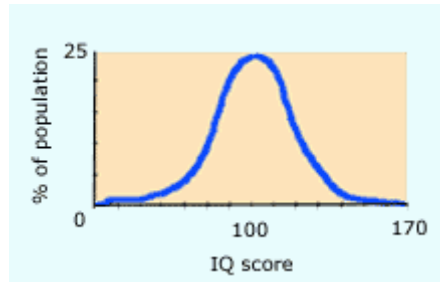
Prosecution Evidence 1: Intelligent

The police believe that the murderer was intelligent due to the complexity of the crime. In the past, many of the suspects had committed crimes together. The police have records allowing you to compare the IQ level of the suspects.

Your job is to eliminate the two suspects with the lowest IQ. Use the clues below to deduce who they are.

Info:

When graphed, IQ levels produce a curve in the classic 'bell' shape where most people are distributed around the average intelligence (or intelligence score) and few people are at the extreme ends of low and high intelligence.



Clues:

- Suspect 1: IQ level is 5% higher than that of Suspect 7
- Suspect 2: IQ level is 15% lower than that of Suspect 9
- Suspect 3: IQ level is 5% higher than that of Suspect 10
- Suspect 4: IQ level is 10% lower than that of Suspect 3
- Suspect 5: IQ level is 5% higher than that of Suspect 8
- Suspect 6: IQ level is 102
- Suspect 7: IQ level is 40% higher than that of Suspect 2
- Suspect 8: IQ level is 35% lower than that of Suspect 1
- Suspect 9: IQ level is 10% higher than that of Suspect 6
- Suspect 10: IQ level is 10% lower than that of Suspect 5

Record all evidence and calculations demonstrating how you eliminated your suspects

Prosecution Evidence 2: Speedy

It is known that the murderer drove away from the crime scene. The only roads for miles are narrow and winding (therefore speed would be limited).



The murder took place at **1.00pm**. Each of the suspects were found at home when first visited by the police for questioning. From the information given below, eliminate the two most unlikely suspects who could not possibly have made it home from the crime scene before the police arrived.

Suspect	Distance (miles)	Time suspect questioned at home
1	210	4.30pm
2	385	8.00pm
3	30	2.00pm
4	120	11.00pm
5	375	6.00pm
6	300	3.00pm
7	800	8.30pm
8	320	7.30pm
9	180	4.00pm
10	230	7.00pm

Record all evidence and calculations demonstrating how you eliminated your suspects

Prosecution Evidence 3: Well Proportioned

Witnesses described the murderer as 'well proportioned' indicating that their weight reflected their height (i.e. the taller you are, the heavier you are).

Below is the height and weight of the suspects. Use this to draw a scatter diagram and therefore eliminate two of the suspects from your enquiry.

Suspect	Height(cm)	Weight (Kg)
1	193	64
2	180	104
3	140	114
4	167	84
5	153	73
6	135	69
7	173	86
8	178	84
9	181	105
10	148	65

Record all evidence and calculations demonstrating how you eliminated your suspects



Prosecution Evidence 4: Poisonous

At the scene of the crime, the remains of a poison was found. After forensic tests, it was found to mostly consist of a harmless liquid of which 12% was arsenic (a deadly poison).

Similar poisons were found at each of the suspect's houses. The amount of arsenic within the liquids can vary by $\pm 5\%$ of that found at the murder scene. Use the data below to eliminate the two most unlikely suspects from your enquiry.

Suspect	Sample Size (ml)	Arsenic Detected (ml)
1	524	68
2	68	5
3	142	16
4	963	154
5	293	56
6	126	15
7	798	80
8	469	42
9	126	7
10	408	53

Record all evidence and calculations demonstrating how you eliminated your suspects



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Instructions and Suspect Elimination Table

- 1) Within your group, elect a chairperson to organise activities and coordinate the report and presentation.
- 2) Ensure that all evidence is carefully and accurately looked at.
- 3) Follow the instructions on each sheet, in terms of what needs doing.
- 4) Once the report is completed, the group must present their finding.

Suspect	Intelligent	Speedy	Well Proportioned	Poisonous	Well Aimed
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Place a X in the table when you eliminate a suspect

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Teacher's Notes:

The aim of the activity is for students to:

- Apply their mathematical knowledge, skills and understanding within a practical situation.
- To represent and interpret data within a context.
- To work collaboratively in order to present a reasoned argument from the analysis

Context:

A murder has taken place. Clues linking the murder to crime have been left and through careful analysis of the evidence, the prosecution is to present their case, eliminating those considered innocent. Ten known agents are under suspicion.

The task:

The task consists of five activities whereby groups of students are provided with statistical information for interpretation and presentation. The conclusions made as a result of their analysis will help eliminate suspects from a murder investigation. All evidence is to be presented within a 'prosecution file' using their analysis to form arguments for or against the involvement of each of the suspects in the crime. Students can present their case using a variety of methods.

Some students may require additional support for some of the tasks.

Calculators are required and although not essential, the use of ICT may be desirable.

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Answers

Suspect	Intelligent (IQ)	Speedy (mph)	Well Proportioned	Poisonous (%)	Well Aimed (%)
1	140	60		13	60
2	95	55		7	32
3	90	30		11	92
4	81	12		16	75
5	96	75		19	100
6	102	150		12	78
7	134	106		10	77
8	91	49		9	46
9	112	60		6	77
10	86	38		13	65

The Murderer

