



The Quantum Laboratory Heist

Grade 7 math · Integers, Multi-step word problems, Percentages, Order of operations, Two-step equations · Reading level grades 5-6

Detective: _____ **Date:** _____

An unknown intruder tampered with the particle accelerator at Apex Facility and erased the main experiment log. The Head Physicist needs your math skills to analyze clues and uncover the saboteur.

1. Solve each math problem. The answer is a number, and the letter beside it is what that number stands for.
2. In the clue boxes, write that letter in every box showing the same number, then read the secret clue.
3. Use each clue to cross suspects off the list. The one suspect left at the end is the culprit!

My answer: the Quantum Saboteur is _____

Possible suspects

Cross off a row as each clue rules it out. The one left at the end is the culprit.

NAME	LAB GADGET	LAB GEAR	DOMINANT HAND	HAIRSTYLE	CHEMICAL AGENT
Ada Lovelace	Freeze Ray	Anti Gravity Belt	Left Handed	Spiky Green Cut	Citrus Acid
Chien Shiung Wu	Plasma Shield	Anti Gravity Belt	Left Handed	Spiky Green Cut	Citrus Acid
Richard Feynman	Laser Grid	Bio Sensor	Left Handed	Tight Bun	Baking Soda
Dorothy Hodgkin	Plasma Shield	Bio Sensor	Left Handed	Buzz Cut	Baking Soda
Isaac Newton	Sonic Cannon	Bio Sensor	Left Handed	Buzz Cut	Baking Soda
Rachel Carson	Drone Swarm	Magnetic Boots	Right Handed	Tight Bun	Baking Soda
Dmitri Mendeleev	Drone Swarm	Bio Sensor	Left Handed	Spiky Green Cut	Baking Soda
Rosalind Franklin	Sonic Cannon	Bio Sensor	Left Handed	Spiky Green Cut	Citrus Acid
Charles Darwin	Laser Grid	Anti Gravity Belt	Right Handed	Tight Bun	Baking Soda
Carl Sagan	Laser Grid	Glowing Beaker	Left Handed	Spiky Green Cut	Liquid Nitrogen
Alexander Fleming	Drone Swarm	Thermal Goggles	Right Handed	Spiky Green Cut	Citrus Acid
Galileo Galilei	Laser Grid	Magnetic Boots	Right Handed	Spiky Green Cut	Citrus Acid
Jane Goodall	Laser Grid	Magnetic Boots	Left Handed	Buzz Cut	Citrus Acid
Alan Turing	Sonic Cannon	Anti Gravity Belt	Left Handed	Tight Bun	Citrus Acid
Marie Curie	Laser Grid	Glowing Beaker	Right Handed	Buzz Cut	Liquid Nitrogen
Katherine Johnson	Sonic Cannon	Thermal Goggles	Left Handed	Buzz Cut	Baking Soda
Stephen Hawking	Laser Grid	Anti Gravity Belt	Left Handed	Buzz Cut	Baking Soda
Niels Bohr	Drone Swarm	Thermal Goggles	Left Handed	Buzz Cut	Baking Soda
Barbara McClintock	Freeze Ray	Glowing Beaker	Right Handed	Buzz Cut	Citrus Acid
Michael Faraday	Sonic Cannon	Glowing Beaker	Right Handed	Buzz Cut	Baking Soda
Louis Pasteur	Laser Grid	Thermal Goggles	Left Handed	Tight Bun	Baking Soda

CLUE 1 Integers

We recovered supply manifests tracking lab inventory across three containment bays.

Solve each problem, then write its letter in every clue box that shows the same number.

T																T	
20	6	13	11	2	27	27	21	2	18	8	24	13	9	18	24	20	
					T						T					T	
30	9	13	21	18	20	2	16	14	21	11	2	20	25	12	13	27	20

$$(-7) + 27 = \boxed{} \rightarrow \boxed{\text{T}}$$

$$(-12) + 14 = \boxed{} \rightarrow \boxed{\text{I}}$$

$$(-4) + 16 = \boxed{} \rightarrow \boxed{\text{B}}$$

$$24 - (-1) = \boxed{} \rightarrow \boxed{\text{Y}}$$

$$(-6) + 36 = \boxed{} \rightarrow \boxed{\text{U}}$$

$$(-7) + 13 = \boxed{} \rightarrow \boxed{\text{H}}$$

$$10 - (-4) = \boxed{} \rightarrow \boxed{\text{R}}$$

$$(-3) + 16 = \boxed{} \rightarrow \boxed{\text{E}}$$

$$19 - (-8) = \boxed{} \rightarrow \boxed{\text{L}}$$

$$5 - (-6) = \boxed{} \rightarrow \boxed{\text{V}}$$

$$16 - (-2) = \boxed{} \rightarrow \boxed{\text{N}}$$

$$7 - (-1) = \boxed{} \rightarrow \boxed{\text{D}}$$

$$(-12) + 21 = \boxed{} \rightarrow \boxed{\text{S}}$$

$$18 - (-3) = \boxed{} \rightarrow \boxed{\text{A}}$$

$$(-2) + 18 = \boxed{} \rightarrow \boxed{\text{G}}$$

$$23 - (-1) = \boxed{} \rightarrow \boxed{\text{O}}$$

Scratch space:

CLUE 2

Multi-step word problems

Thermal sensors recorded temperature gains and drops in the cryo chamber as the intruder moved.

Solve each problem, then write its letter in the boxes to fill in the missing word.

A witness saw the villain was L D D .

6 11 36 61 86 70 12 11

There were 105 microscopes in all. 3 research squad used 27 microscopes each. The other 4 research squad shared the rest equally. How many microscopes did each of the other research squad get?

Answer: → L

There were 190 pipettes in all. 1 research squad used 7 pipettes each. The other 3 research squad shared the rest equally. How many pipettes did each of the other research squad get?

Answer: → T

There were 58 petri dishes in all. 10 petri dishes were set aside. The rest were shared equally among 4 research squad. How many petri dishes did each get?

Answer: → N

Lab assistant filled 6 boxes with 8 beakers each, then found 22 more beakers. How many beakers are there in all?

Answer: → A

There were 224 pipettes in all. 2 research squad used 26 pipettes each. The other 2 research squad shared the rest equally. How many pipettes did each of the other research squad get?

Answer: → H

Lab assistant collected 19 microscopes in the morning and 3 microscopes in the afternoon, then split them equally among 2 research squad. How many microscopes did each get?

Answer: → E

Lab assistant collected 55 microscopes in the morning and 17 microscopes in the afternoon, then split them equally among 2 research squad. How many microscopes did each get?

Answer: → F

Scratch space:

CLUE 3
Percentages

The chemical scanner determined the concentration percentage of compound residue left on the door handle.

Solve each problem, then write its letter in every clue box that shows the same number.

T								T							
34	2	19	56	14	42	39	34	19	60	46	13	14	56		

			T													
38	19	60	34	46	14	47	53	17	19	4	42	59	42	14	10	53

56	39	4	14

$25\% \text{ of } 136 = \boxed{} \rightarrow \boxed{\text{T}}$

$50\% \text{ of } 38 = \boxed{} \rightarrow \boxed{\text{E}}$

$50\% \text{ of } 112 = \boxed{} \rightarrow \boxed{\text{S}}$

$50\% \text{ of } 94 = \boxed{} \rightarrow \boxed{\text{L}}$

$25\% \text{ of } 236 = \boxed{} \rightarrow \boxed{\text{Y}}$

$10\% \text{ of } 530 = \boxed{} \rightarrow \boxed{\text{I}}$

$20\% \text{ of } 210 = \boxed{} \rightarrow \boxed{\text{B}}$

$50\% \text{ of } 20 = \boxed{} \rightarrow \boxed{\text{K}}$

$60\% \text{ of } 65 = \boxed{} \rightarrow \boxed{\text{O}}$

$50\% \text{ of } 4 = \boxed{} \rightarrow \boxed{\text{H}}$

$10\% \text{ of } 380 = \boxed{} \rightarrow \boxed{\text{N}}$

$10\% \text{ of } 170 = \boxed{} \rightarrow \boxed{\text{Z}}$

$25\% \text{ of } 52 = \boxed{} \rightarrow \boxed{\text{W}}$

$20\% \text{ of } 230 = \boxed{} \rightarrow \boxed{\text{R}}$

$50\% \text{ of } 8 = \boxed{} \rightarrow \boxed{\text{D}}$

$40\% \text{ of } 35 = \boxed{} \rightarrow \boxed{\text{A}}$

$50\% \text{ of } 120 = \boxed{} \rightarrow \boxed{\text{U}}$

$20\% \text{ of } 175 = \boxed{} \rightarrow \boxed{\text{G}}$

Scratch space:

CLUE 4

Order of operations

To unlock the encrypted server file, solve the multi step order of operations passcode.

Solve each problem, then write its letter in every clue box that shows the same number.

S																		
92	34	62	25	71	34	78	90	25	68	25	62	101	78	70	13	72	72	
42	13	71	17	78	92	68	62	13	15	111	62	15	92	42	55	15	55	

$76 + 4 \times 4 = \square \rightarrow \text{S}$

$11 \times 2 - 5 = \square \rightarrow \text{W}$

$8 \times 10 - 10 = \square \rightarrow \text{B}$

$29 + 7 \times 7 = \square \rightarrow \text{A}$

$66 + 9 \times 5 = \square \rightarrow \text{D}$

$4 \times 12 - 14 = \square \rightarrow \text{H}$

$20 + 7 \times 6 = \square \rightarrow \text{O}$

$9 \times 7 - 8 = \square \rightarrow \text{E}$

$13 + 4 \times 3 = \square \rightarrow \text{R}$

$18 + 6 \times 4 = \square \rightarrow \text{C}$

$9 \times 9 - 9 = \square \rightarrow \text{Z}$

$65 + 6 \times 6 = \square \rightarrow \text{M}$

$7 + 3 \times 2 = \square \rightarrow \text{U}$

$12 \times 7 - 16 = \square \rightarrow \text{F}$

$9 \times 5 - 30 = \square \rightarrow \text{N}$

$18 + 8 \times 9 = \square \rightarrow \text{I}$

$41 + 5 \times 6 = \square \rightarrow \text{T}$

Scratch space:

CLUE 5**Two-step equations - the last clue**

The sensor calibration system requires solving a two step equation to reveal the suspect detail.

First solve each problem. Then find each answer in the numbered list below and cross that sentence out. One sentence will be left - that is exactly what the villain did!

Step 1 - solve these:

$6x + 12 = 54, x = \boxed{}$

$5x + 9 = 69, x = \boxed{}$

$5x + 1 = 51, x = \boxed{}$

$5x + 3 = 33, x = \boxed{}$

$2x + 5 = 27, x = \boxed{}$

$3x + 6 = 33, x = \boxed{}$

$6x + 5 = 35, x = \boxed{}$

$3x + 4 = 28, x = \boxed{}$

$4x + 5 = 21, x = \boxed{}$

$3x + 4 = 13, x = \boxed{}$

$2x + 8 = 10, x = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain blasted a freeze ray, then grabbed a glowing beaker.
2. The villain deployed a drone swarm, then put on thermal goggles.
3. The villain triggered a sonic cannon, then laced up magnetic boots.
4. The villain fired a laser grid, then checked a bio sensor.
5. The villain activated a plasma shield, then grabbed a glowing beaker.
6. The villain deployed a drone swarm, then laced up magnetic boots.
7. The villain activated a plasma shield, then checked a bio sensor.
8. The villain blasted a freeze ray, then laced up magnetic boots.
9. The villain triggered a sonic cannon, then turned on an anti gravity belt.
10. The villain triggered a sonic cannon, then checked a bio sensor.
11. The villain activated a plasma shield, then turned on an anti gravity belt.
12. The villain triggered a sonic cannon, then put on thermal goggles.

Answer Key

The Quantum Laboratory Heist

Culprit: Niels Bohr

Drone Swarm · Thermal Goggles · Left Handed · Buzz Cut · Baking Soda

Trail: Start 21 → Clue 1 16 → Clue 2 10 → Clue 3 7 → Clue 4 4 → Clue 5 1

Clue 1 (Integers): "THE VILLAIN DOES NOT USE ANTI GRAVITY BELT"

$(-7) + 27 = 20$ (T) · $(-12) + 14 = 2$ (I) · $(-4) + 16 = 12$ (B) · $24 - (-1) = 25$ (Y) · $(-6) + 36 = 30$ (U) · $(-7) + 13 = 6$ (H) · $10 - (-4) = 14$ (R) · $(-3) + 16 = 13$ (E) · $19 - (-8) = 27$ (L) · $5 - (-6) = 11$ (V) · $16 - (-2) = 18$ (N) · $7 - (-1) = 8$ (D) · $(-12) + 21 = 9$ (S) · $18 - (-3) = 21$ (A) · $(-2) + 18 = 16$ (G) · $23 - (-1) = 24$ (O)

Clue 2 (Multi-step word problems): "LEFT HANDED"

There were 105 microscopes in all. 3 research squad used 27 microscopes each. The other 4 research squad shared the rest equally. How many microscopes did each of the other research squad get? = 6 (L) · There were 190 pipettes in all. 1 research squad used 7 pipettes each. The other 3 research squad shared the rest equally. How many pipettes did each of the other research squad get? = 61 (T) · There were 58 petri dishes in all. 10 petri dishes were set aside. The rest were shared equally among 4 research squad. How many petri dishes did each get? = 12 (N) · Lab assistant filled 6 boxes with 8 beakers each, then found 22 more beakers. How many beakers are there in all? = 70 (A) · There were 224 pipettes in all. 2 research squad used 26 pipettes each. The other 2 research squad shared the rest equally. How many pipettes did each of the other research squad get? = 86 (H) · Lab assistant collected 19 microscopes in the morning and 3 microscopes in the afternoon, then split them equally among 2 research squad. How many microscopes did each get? = 11 (E) · Lab assistant collected 55 microscopes in the morning and 17 microscopes in the afternoon, then split them equally among 2 research squad. How many microscopes did each get? = 36 (F)

Clue 3 (Percentages): "THE SABOTEUR WAS NEUTRALIZED BY BAKING SODA"

25% of 136 = 34 (T) · 50% of 38 = 19 (E) · 50% of 112 = 56 (S) · 50% of 94 = 47 (L) · 25% of 236 = 59 (Y) · 10% of 530 = 53 (I) · 20% of 210 = 42 (B) · 50% of 20 = 10 (K) · 60% of 65 = 39 (O) · 50% of 4 = 2 (H) · 10% of 380 = 38 (N) · 10% of 170 = 17 (Z) · 25% of 52 = 13 (W) · 20% of 230 = 46 (R) · 50% of 8 = 4 (D) · 40% of 35 = 14 (A) · 50% of 120 = 60 (U) · 20% of 175 = 35 (G)

Clue 4 (Order of operations): "SHORT HAIR FROM A BUZZ CUT WAS FOUND ON SCENE"

$76 + 4 \times 4 = 92$ (S) · $11 \times 2 - 5 = 17$ (W) · $8 \times 10 - 10 = 70$ (B) · $29 + 7 \times 7 = 78$ (A) · $66 + 9 \times 5 = 111$ (D) · $4 \times 12 - 14 = 34$ (H) · $20 + 7 \times 6 = 62$ (O) · $9 \times 7 - 8 = 55$ (E) · $13 + 4 \times 3 = 25$ (R) · $18 + 6 \times 4 = 42$ (C) · $9 \times 9 - 9 = 72$ (Z) · $65 + 6 \times 6 = 101$ (M) · $7 + 3 \times 2 = 13$ (U) · $12 \times 7 - 16 = 68$ (F) · $9 \times 5 - 30 = 15$ (N) · $18 + 8 \times 9 = 90$ (I) · $41 + 5 \times 6 = 71$ (T)

Clue 5 (Two-step equations): surviving statement is box 2 → Niels Bohr

$6x + 12 = 54, x = 7$ · $5x + 9 = 69, x = 12$ · $5x + 1 = 51, x = 10$ · $5x + 3 = 33, x = 6$ · $2x + 5 = 27, x = 11$ · $3x + 6 = 33, x = 9$ · $6x + 5 = 35, x = 5$ · $3x + 4 = 28, x = 8$ · $4x + 5 = 21, x = 4$ · $3x + 4 = 13, x = 3$ · $2x + 8 = 10, x = 1$