



The Quantum Lab Mystery

Grade 6 math · Multiplication, Multi-step word problems, Percentages, Exponents, Division · Reading level grades 5-6

Detective: _____ **Date:** _____

Someone sabotaged the central particle accelerator at the Quantum Discovery Lab! Review the experiment logs and clear innocent researchers to identify the culprit.

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 rogue experimenter is _____

Possible suspects

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

NAME	GADGET	SPECIAL GEAR	LAB HABIT	HAIR COLOR	CHEMICAL COUNTER
Isaac Newton	Magnet Ray	Thermal Visor	Right Handed	Purple Hair	Vinegar Spray
Nikola Tesla	Sonic Pulser	Energy Shield	Right Handed	Green Hair	Baking Soda
Rosalind Franklin	Laser Pointer	Hologram Watch	Left Handed	Green Hair	Baking Soda
Marie Curie	Freezer Beam	Rocket Pack	Left Handed	Green Hair	Salt Solution
Niels Bohr	Freezer Beam	Rocket Pack	Left Handed	Purple Hair	Vinegar Spray
Dmitri Mendeleev	Freezer Beam	Plasma Torch	Left Handed	Green Hair	Salt Solution
Albert Einstein	Sonic Pulser	Energy Shield	Left Handed	Green Hair	Salt Solution
Louis Pasteur	Sonic Pulser	Plasma Torch	Left Handed	Blue Hair	Baking Soda
Gregor Mendel	Laser Pointer	Hologram Watch	Left Handed	Green Hair	Salt Solution
Max Planck	Sonic Pulser	Energy Shield	Left Handed	Blue Hair	Salt Solution
Carl Sagan	Laser Pointer	Plasma Torch	Left Handed	Green Hair	Salt Solution
Sally Ride	Gravity Boots	Energy Shield	Left Handed	Purple Hair	Salt Solution
Jane Goodall	Gravity Boots	Rocket Pack	Right Handed	Blue Hair	Vinegar Spray
Barbara McClintock	Magnet Ray	Hologram Watch	Left Handed	Blue Hair	Vinegar Spray
Katherine Johnson	Magnet Ray	Thermal Visor	Left Handed	Blue Hair	Vinegar Spray
George Carver	Gravity Boots	Hologram Watch	Left Handed	Blue Hair	Salt Solution
Chien Wu	Magnet Ray	Thermal Visor	Left Handed	Blue Hair	Salt Solution
Galileo Galilei	Gravity Boots	Hologram Watch	Right Handed	Green Hair	Baking Soda
Alan Turing	Laser Pointer	Hologram Watch	Left Handed	Purple Hair	Vinegar Spray
Rachel Carson	Gravity Boots	Energy Shield	Right Handed	Green Hair	Vinegar Spray
Stephen Hawking	Freezer Beam	Thermal Visor	Right Handed	Green Hair	Salt Solution

CLUE 1
Multiplication facts (1-12)

To audit the supply room order history, you must complete multi-step lab calculations.

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

T																	
33	32	3	99	64	99	1	3	20	33	54	55	3	99	8	55	33	
64	99	3	30	100	55	20	96	3	33	1	30	20	96				

$3 \times 11 = \square \rightarrow \text{T}$	$1 \times 8 = \square \rightarrow \text{N}$	$8 \times 12 = \square \rightarrow \text{K}$	
$10 \times 2 = \square \rightarrow \text{C}$	$10 \times 3 = \square \rightarrow \text{A}$	$5 \times 11 = \square \rightarrow \text{O}$	
$9 \times 11 = \square \rightarrow \text{S}$	$8 \times 8 = \square \rightarrow \text{U}$	$1 \times 1 = \square \rightarrow \text{P}$	$3 \times 1 = \square \rightarrow \text{E}$
$9 \times 6 = \square \rightarrow \text{D}$	$8 \times 4 = \square \rightarrow \text{H}$	$10 \times 10 = \square \rightarrow \text{R}$	

Scratch space:

CLUE 2

Multi-step word problems

Counting the total culture samples stored in grid trays requires fast multiplication.

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 .

53 58 89 79 63 36 32 58

There were 433 petri dishes in all. 9 petri dishes were set aside. The rest were shared equally among 8 research lab. How many petri dishes did each get?

Answer: → L

Lab assistant earned 3 microscopes in each of 6 rounds, plus 48 bonus microscopes. Then 8 microscopes were lost. How many microscopes are left?

Answer: → E

Lab assistant filled 2 boxes with 8 microscopes each, then found 73 more microscopes. How many microscopes are there in all?

Answer: → F

Lab assistant collected 41 test tubes in the morning and 23 test tubes in the afternoon, then split them equally among 2 research lab. How many test tubes did each get?

Answer: → N

There were 378 pipettes in all. 3 research lab used 21 pipettes each. The other 5 research lab shared the rest equally. How many pipettes did each of the other research lab get?

Answer: → H

Lab assistant earned 2 beakers in each of 6 rounds, plus 75 bonus beakers. Then 8 beakers were lost. How many beakers are left?

Answer: → T

There were 284 pipettes in all. 2 research lab used 34 pipettes each. The other 6 research lab shared the rest equally. How many pipettes did each of the other research lab get?

Answer: → A

Scratch space:

CLUE 3

Calculating the remaining battery percentage on damaged sensors reveals key energy logs.

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

4 17 42 31 4 29 42 44 31 14 29 28

28 40 44 31 6 17 42 14 45 40 9 31 7 40 9 40 1 14 33 40

10% of 40 = $\rightarrow$ **S**

20% of 165 = → **C**

40% of 105 = $\rightarrow$ **L**

75% of 12 = $\rightarrow$ **D**

5% of 800 = → **E**

5% of 120 = → **R**

10% of 290 = $\rightarrow$

20% of 225 = $\rightarrow$ **Z**

5% of 620 = → **T**

10% of 440 = → **U**

10% of 280 = → **N**

10% of 140 = $\rightarrow$

25% of 28 = $\rightarrow$ **H**

50% of 34 = → **A**

20% of 5 = $\rightarrow$ **V**

Scratch space:

CLUE 4 Exponents

Determining exponential bacterial growth rates on the slides unlocks the security door code.

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

G																		
125	8	36	36	343	400	225	361	8	64	225	243	16	25	4	343	27	25	343

9	400	36	49	361	121	8	25	243	121	25	32	36

$5^3 = \square \rightarrow \mathbf{G}$	$11^2 = \square \rightarrow \mathbf{C}$	$4^2 = \square \rightarrow \mathbf{F}$	$3^3 = \square \rightarrow \mathbf{D}$
$19^2 = \square \rightarrow \mathbf{I}$	$3^5 = \square \rightarrow \mathbf{S}$	$6^2 = \square \rightarrow \mathbf{E}$	$15^2 = \square \rightarrow \mathbf{A}$
$20^2 = \square \rightarrow \mathbf{H}$	$3^2 = \square \rightarrow \mathbf{T}$	$5^2 = \square \rightarrow \mathbf{O}$	$7^3 = \square \rightarrow \mathbf{N}$
$7^2 = \square \rightarrow \mathbf{M}$	$4^3 = \square \rightarrow \mathbf{W}$	$2^3 = \square \rightarrow \mathbf{R}$	$2^2 = \square \rightarrow \mathbf{U}$
$2^5 = \square \rightarrow \mathbf{P}$			

Scratch space:

CLUE 5**Division facts (1-12) - the last clue**

Dividing liquid chemical samples evenly among remaining test stations gives the final clue.

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:

$77 \div 11 = \boxed{}$

$77 \div 7 = \boxed{}$

$80 \div 10 = \boxed{}$

$36 \div 4 = \boxed{}$

$36 \div 6 = \boxed{}$

$35 \div 7 = \boxed{}$

$6 \div 3 = \boxed{}$

$3 \div 3 = \boxed{}$

$24 \div 6 = \boxed{}$

$12 \div 1 = \boxed{}$

$110 \div 11 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain disrupted the sonic frequency, then projected a hologram clone.
2. The villain reversed the gravity field, then fled using rocket boosters.
3. The villain zapped the particle core, then projected a hologram clone.
4. The villain zapped the particle core, then scanned for high temperatures.
5. The villain magnetized the hard drives, then scanned for high temperatures.
6. The villain disrupted the sonic frequency, then melted through the steel lock.
7. The villain zapped the particle core, then melted through the steel lock.
8. The villain disrupted the sonic frequency, then deflected the security laser.
9. The villain magnetized the hard drives, then fled using rocket boosters.
10. The villain reversed the gravity field, then melted through the steel lock.
11. The villain froze the cooling tanks, then melted through the steel lock.
12. The villain zapped the particle core, then deflected the security laser.

Answer Key

The Quantum Lab Mystery

Culprit: Gregor Mendel

Laser Pointer · Hologram Watch · Left Handed · Green Hair · Salt Solution

Trail: Start 21 → Clue 1 18 → Clue 2 13 → Clue 3 8 → Clue 4 4 → Clue 5 1

Clue 1 (Multiplication facts (1-12)): "THE SUSPECT DOES NOT USE A ROCKET PACK"

$3 \times 11 = 33$ (T) · $1 \times 8 = 8$ (N) · $8 \times 12 = 96$ (K) · $10 \times 2 = 20$ (C) · $10 \times 3 = 30$ (A) · $5 \times 11 = 55$ (O) · $9 \times 11 = 99$ (S) · $8 \times 8 = 64$ (U) · $1 \times 1 = 1$ (P) · $3 \times 1 = 3$ (E) · $9 \times 6 = 54$ (D) · $8 \times 4 = 32$ (H) · $10 \times 10 = 100$ (R)

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

There were 433 petri dishes in all. 9 petri dishes were set aside. The rest were shared equally among 8 research lab. How many petri dishes did each get? = 53 (L) · Lab assistant earned 3 microscopes in each of 6 rounds, plus 48 bonus microscopes. Then 8 microscopes were lost. How many microscopes are left? = 58 (E) · Lab assistant filled 2 boxes with 8 microscopes each, then found 73 more microscopes. How many microscopes are there in all? = 89 (F) · Lab assistant collected 41 test tubes in the morning and 23 test tubes in the afternoon, then split them equally among 2 research lab. How many test tubes did each get? = 32 (N) · There were 378 pipettes in all. 3 research lab used 21 pipettes each. The other 5 research lab shared the rest equally. How many pipettes did each of the other research lab get? = 63 (H) · Lab assistant earned 2 beakers in each of 6 rounds, plus 75 bonus beakers. Then 8 beakers were lost. How many beakers are left? = 79 (T) · There were 284 pipettes in all. 2 research lab used 34 pipettes each. The other 6 research lab shared the rest equally. How many pipettes did each of the other research lab get? = 36 (A)

Clue 3 (Percentages): "SALT SOLUTION NEUTRALIZED THE DEVICE"

10% of 40 = 4 (S) · 20% of 165 = 33 (C) · 40% of 105 = 42 (L) · 75% of 12 = 9 (D) · 5% of 800 = 40 (E) · 5% of 120 = 6 (R) · 10% of 290 = 29 (O) · 20% of 225 = 45 (Z) · 5% of 620 = 31 (T) · 10% of 440 = 44 (U) · 10% of 280 = 28 (N) · 10% of 140 = 14 (I) · 25% of 28 = 7 (H) · 50% of 34 = 17 (A) · 20% of 5 = 1 (V)

Clue 4 (Exponents): "GREEN HAIR WAS FOUND ON THE MICROSCOPE"

$5^3 = 125$ (G) · $11^2 = 121$ (C) · $4^2 = 16$ (F) · $3^3 = 27$ (D) · $19^2 = 361$ (I) · $3^5 = 243$ (S) · $6^2 = 36$ (E) · $15^2 = 225$ (A) · $20^2 = 400$ (H) · $3^2 = 9$ (T) · $5^2 = 25$ (O) · $7^3 = 343$ (N) · $7^2 = 49$ (M) · $4^3 = 64$ (W) · $2^3 = 8$ (R) · $2^2 = 4$ (U) · $2^5 = 32$ (P)

Clue 5 (Division facts (1-12)): surviving statement is box 3 → Gregor Mendel

$77 \div 11 = 7$ · $77 \div 7 = 11$ · $80 \div 10 = 8$ · $36 \div 4 = 9$ · $36 \div 6 = 6$ · $35 \div 7 = 5$ · $6 \div 3 = 2$ · $3 \div 3 = 1$ · $24 \div 6 = 4$ · $12 \div 1 = 12$ · $110 \div 11 = 10$