



The Quantum Fusion Caper

Grade 5 math · Multiplication, Place value, Word problems, Multi-step word problems, Division · Reading level grades 5-6

Detective: _____ Date: _____

An unknown rogue inventor has stolen the experimental fusion core right from the heart of the Quantum Physics Lab! Our chief researcher was locked in the storage closet. We must analyze the laboratory clues to deduce which scientist went rogue before they activate the core.

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 Inventor is _____

Possible suspects

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

NAME	PRIMARY INVENTION	SECONDARY TECH	OBSERVABLE TELL	HAIR STYLE	MATERIAL WEAKNESS
Carl Sagan	Magnetic Boots	Teleport Disk	Left-handed	Green Mohawk	Rusting Iron
Gregor Mendel	Acid Bubbles	Hologram Wand	Left-handed	Spiky Neon	Copper Wire
Rachel Carson	Sonic Waves	Jet Pack	Left-handed	Spiky Neon	Copper Wire
Niels Bohr	Acid Bubbles	Teleport Disk	Right-handed	Silver Streak	Salt Water
Jane Goodall	Gravity Glove	Nano Suit	Right-handed	Green Mohawk	Salt Water
Ada Lovelace	Acid Bubbles	Plasma Shield	Right-handed	Silver Streak	Salt Water
Sally Ride	Laser Beams	Hologram Wand	Right-handed	Green Mohawk	Salt Water
Mae Jemison	Sonic Waves	Teleport Disk	Left-handed	Silver Streak	Rusting Iron
Marie Curie	Sonic Waves	Plasma Shield	Left-handed	Spiky Neon	Rusting Iron
Nikola Tesla	Magnetic Boots	Plasma Shield	Right-handed	Green Mohawk	Rusting Iron
Katherine Johnson	Gravity Glove	Nano Suit	Right-handed	Silver Streak	Salt Water
Alan Turing	Acid Bubbles	Nano Suit	Right-handed	Green Mohawk	Salt Water
Charles Darwin	Gravity Glove	Hologram Wand	Right-handed	Spiky Neon	Salt Water
Dmitry Mendeleev	Magnetic Boots	Hologram Wand	Right-handed	Silver Streak	Salt Water
Rosalind Franklin	Acid Bubbles	Teleport Disk	Left-handed	Silver Streak	Salt Water
Jonas Salk	Laser Beams	Teleport Disk	Left-handed	Green Mohawk	Rusting Iron
Grace Hopper	Gravity Glove	Teleport Disk	Right-handed	Silver Streak	Salt Water
Richard Feynman	Gravity Glove	Nano Suit	Left-handed	Silver Streak	Rusting Iron
Louis Pasteur	Gravity Glove	Teleport Disk	Right-handed	Silver Streak	Copper Wire
Albert Einstein	Laser Beams	Jet Pack	Left-handed	Green Mohawk	Rusting Iron
Galileo Galilei	Gravity Glove	Hologram Wand	Left-handed	Silver Streak	Salt Water

CLUE 1

Multiplication facts (1-12)

The security system is locked behind a grid of power cells arranged in equal rows and columns. We must calculate the total energy output of these grid cells to decode the first clue.

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

T																T
99	96	36	120	64	144	144	108	64	15	70	110	36	1	15	110	99
													T			
100	36	108	14	108	15	108	15	110	1	40	64	99				

$9 \times 11 = \square \rightarrow \boxed{\text{T}}$

$7 \times 2 = \square \rightarrow \boxed{\text{R}}$

$1 \times 1 = \square \rightarrow \boxed{\text{S}}$

$10 \times 10 = \square \rightarrow \boxed{\text{W}}$

$3 \times 5 = \square \rightarrow \boxed{\text{N}}$

$12 \times 9 = \square \rightarrow \boxed{\text{A}}$

$12 \times 3 = \square \rightarrow \boxed{\text{E}}$

$8 \times 12 = \square \rightarrow \boxed{\text{H}}$

$11 \times 10 = \square \rightarrow \boxed{\text{O}}$

$12 \times 12 = \square \rightarrow \boxed{\text{L}}$

$7 \times 10 = \square \rightarrow \boxed{\text{D}}$

$8 \times 8 = \square \rightarrow \boxed{\text{I}}$

$10 \times 12 = \square \rightarrow \boxed{\text{V}}$

$8 \times 5 = \square \rightarrow \boxed{\text{U}}$

Scratch space:

CLUE 2 Place value

The mainframe terminal requires a numeric passcode. Each digit represents a specific chemical mass, and the value depends entirely on the column it sits in. Let us analyze the decimal places to unlock the screen.

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

R																			
90	3000	40	4000	500	4000	6000	80	30	600	30	3000	80	900						
									R										
200	2000	9000	30	40	600	200	700	600	90	600	5000	80	500	4000	600				
50	600	6000	900	600	90														

What is the value of the 9 in 808,196? → **R**

What is the value of the 7 in 315,744? → **W**

What is the value of the 2 in 402,680? → **M**

What is the value of the 5 in 282,857? → **B**

What is the value of the 3 in 60,635? → **D**

What is the value of the 2 in 459,271? → **S**

What is the value of the 6 in 56,535? → **A**

What is the value of the 5 in 69,597? → **T**

What is the value of the 8 in 23,189? → **N**

What is the value of the 4 in 104,156? → **H**

What is the value of the 3 in 463,628? → **I**

What is the value of the 9 in 501,950? → **K**

What is the value of the 9 in 69,443? → **U**

What is the value of the 4 in 337,641? → **G**

What is the value of the 5 in 75,068? → **O**

What is the value of the 6 in 801,659? → **E**

Scratch space:

CLUE 3

Word problems

Our lab assistant found some scattered logbook entries detailing missing equipment. Solving these word problems about chemical mixtures will point us to the next lead.

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

Someone scared the villain off with S .

47 64 81 66 77 64 66 87 91

There were 64 test tubes. 17 were used up. How many test tubes are left?

Answer: → S

Lab Assistant found 47 test tubes yesterday and 40 more today. How many test tubes in all?

Answer: → E

Lab Assistant found 29 petri dishes yesterday and 62 more today. How many petri dishes in all?

Answer: → R

Lab Assistant found 36 petri dishes yesterday and 45 more today. How many petri dishes in all?

Answer: → L

Lab Assistant lined up 11 rows of 6 petri dishes. How many petri dishes in all?

Answer: → T

Lab Assistant found 47 microscopes yesterday and 17 more today. How many microscopes in all?

Answer: → A

Lab Assistant lined up 7 rows of 11 test tubes. How many test tubes in all?

Answer: → W

Scratch space:

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

We have a pile of recovered element samples that need to be distributed equally among our test tubes. Dividing them evenly will reveal 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:

$84 \div 12 = \boxed{}$

$12 \div 1 = \boxed{}$

$6 \div 3 = \boxed{}$

$35 \div 7 = \boxed{}$

$32 \div 4 = \boxed{}$

$48 \div 8 = \boxed{}$

$121 \div 11 = \boxed{}$

$18 \div 6 = \boxed{}$

$16 \div 4 = \boxed{}$

$63 \div 7 = \boxed{}$

$3 \div 3 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain fires blinding laser beams, then shrinks down using a nano suit.
2. The villain melts the locks with acid bubbles, then deflects security darts with a plasma shield.
3. The villain blasts high frequency sonic waves, then shrinks down using a nano suit.
4. The villain lifts heavy tables with a gravity glove, then escapes out the skylight using a jet pack.
5. The villain fires blinding laser beams, then vanishes instantly using a teleport disk.
6. The villain stomps around in magnetic boots, then shrinks down using a nano suit.
7. The villain stomps around in magnetic boots, then distracts the guards with a hologram wand.
8. The villain melts the locks with acid bubbles, then distracts the guards with a hologram wand.
9. The villain stomps around in magnetic boots, then deflects security darts with a plasma shield.
10. The villain melts the locks with acid bubbles, then vanishes instantly using a teleport disk.
11. The villain lifts heavy tables with a gravity glove, then deflects security darts with a plasma shield.
12. The villain lifts heavy tables with a gravity glove, then vanishes instantly using a teleport disk.

Answer Key

The Quantum Fusion Caper

Culprit: Niels Bohr

Acid Bubbles · Teleport Disk · Right-handed · Silver Streak · Salt Water

Trail: Start 21 → Clue 1 17 → Clue 2 8 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Multiplication facts (1-12)): "THE VILLAIN DOES NOT WEAR A NANO SUIT"

$9 \times 11 = 99$ (T) · $7 \times 2 = 14$ (R) · $1 \times 1 = 1$ (S) · $10 \times 10 = 100$ (W) · $3 \times 5 = 15$ (N) · $12 \times 9 = 108$ (A) · $12 \times 3 = 36$ (E) · $8 \times 12 = 96$ (H) · $11 \times 10 = 110$ (O) · $12 \times 12 = 144$ (L) · $7 \times 10 = 70$ (D) · $8 \times 8 = 64$ (I) · $10 \times 12 = 120$ (V) · $8 \times 5 = 40$ (U)

Clue 2 (Place value): "RIGHT HANDED INK SMUDGES WERE ON THE BEAKER"

What is the value of the 9 in 808,196? = 90 (R) · What is the value of the 7 in 315,744? = 700 (W) · What is the value of the 2 in 402,680? = 2000 (M) · What is the value of the 5 in 282,857? = 50 (B) · What is the value of the 3 in 60,635? = 30 (D) · What is the value of the 2 in 459,271? = 200 (S) · What is the value of the 6 in 56,535? = 6000 (A) · What is the value of the 5 in 69,597? = 500 (T) · What is the value of the 8 in 23,189? = 80 (N) · What is the value of the 4 in 104,156? = 4000 (H) · What is the value of the 3 in 463,628? = 3000 (I) · What is the value of the 9 in 501,950? = 900 (K) · What is the value of the 9 in 69,443? = 9000 (U) · What is the value of the 4 in 337,641? = 40 (G) · What is the value of the 5 in 75,068? = 5000 (O) · What is the value of the 6 in 801,659? = 600 (E)

Clue 3 (Word problems): "SALT WATER"

There were 64 test tubes. 17 were used up. How many test tubes are left? = 47 (S) · Lab Assistant found 47 test tubes yesterday and 40 more today. How many test tubes in all? = 87 (E) · Lab Assistant found 29 petri dishes yesterday and 62 more today. How many petri dishes in all? = 91 (R) · Lab Assistant found 36 petri dishes yesterday and 45 more today. How many petri dishes in all? = 81 (L) · Lab Assistant lined up 11 rows of 6 petri dishes. How many petri dishes in all? = 66 (T) · Lab Assistant found 47 microscopes yesterday and 17 more today. How many microscopes in all? = 64 (A) · Lab Assistant lined up 7 rows of 11 test tubes. How many test tubes in all? = 77 (W)

Clue 4 (Multi-step word problems): "SILVER STREAK"

There were 403 microscopes in all. 37 microscopes were set aside. The rest were shared equally among 6 Science Academy. How many microscopes did each get? = 61 (S) · There were 445 beakers in all. 3 Science Academy used 20 beakers each. The other 5 Science Academy shared the rest equally. How many beakers did each of the other Science Academy get? = 77 (I) · There were 316 petri dishes in all. 3 Science Academy used 28 petri dishes each. The other 4 Science Academy shared the rest equally. How many petri dishes did each of the other Science Academy get? = 58 (V) · There were 438 microscopes in all. 4 Science Academy used 6 microscopes each. The other 6 Science Academy shared the rest equally. How many microscopes did each of the other Science Academy get? = 69 (L) · There were 252 magnets in all. 22 magnets were set aside. The rest were shared equally among 10 Science Academy. How many magnets did each get? = 23 (E) · Lab Assistant earned 7 magnets in each of 5 rounds, plus 53 bonus magnets. Then 13 magnets were lost. How many magnets are left? = 75 (T) · There were 243 petri dishes in all. 9 petri dishes were set aside. The rest were shared equally among 9 Science Academy. How many petri dishes did each get? = 26 (R)

Clue 5 (Division facts (1-12)): surviving statement is box 10 → Niels Bohr

$84 \div 12 = 7$ · $12 \div 1 = 12$ · $6 \div 3 = 2$ · $35 \div 7 = 5$ · $32 \div 4 = 8$ · $48 \div 8 = 6$ · $121 \div 11 = 11$ · $18 \div 6 = 3$ · $16 \div 4 = 4$ · $63 \div 7 = 9$ · $3 \div 3 = 1$