



The Great Equation Heist

Grade 5 math · Fractions of a number, Order of operations, Multiplication, Rounding, Division · Reading level grades 5-6

Detective: _____ Date: _____

The Golden Ratio Core has been stolen from Hexagon City. Detective Digit of the Cipher Squad must analyze the digital footprints left behind to recover the core before the entire system crashes.

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 Glitch Saboteur is _____

Possible suspects

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

NAME	MAIN POWER	EXTRA GEAR	KEYBOARD STYLE	HAIR GLITCH COLOR	SYSTEM WEAKNESS
Claude Shannon	Prime Laser	Grid Gloves	Right-handed typing	Pixel Purple	Negative integer
Ada Lovelace	Factor Shield	Matrix Boots	Left-handed typing	Neon Blue	Negative integer
Mary Jackson	Percent Whip	Matrix Boots	Right-handed typing	Cyber Silver	Odd prime
Dorothy Vaughan	Factor Shield	Logarithm Lens	Left-handed typing	Cyber Silver	Negative integer
Charles Babbage	Percent Whip	Grid Gloves	Right-handed typing	Neon Blue	Negative integer
Sophie Germain	Decimal Cloak	Ratio Ring	Left-handed typing	Pixel Purple	Zero divisor
Euclid of Alexandria	Prime Laser	Matrix Boots	Right-handed typing	Pixel Purple	Zero divisor
Gladys West	Fraction Beam	Vector Visor	Left-handed typing	Neon Blue	Zero divisor
Katherine Johnson	Prime Laser	Vector Visor	Right-handed typing	Cyber Silver	Zero divisor
Leonhard Euler	Percent Whip	Grid Gloves	Left-handed typing	Pixel Purple	Odd prime
Blaise Pascal	Prime Laser	Grid Gloves	Right-handed typing	Neon Blue	Odd prime
Isaac Newton	Percent Whip	Matrix Boots	Left-handed typing	Cyber Silver	Zero divisor
Rene Descartes	Fraction Beam	Matrix Boots	Right-handed typing	Neon Blue	Odd prime
Grace Hopper	Prime Laser	Logarithm Lens	Right-handed typing	Neon Blue	Odd prime
Albert Einstein	Factor Shield	Grid Gloves	Right-handed typing	Pixel Purple	Odd prime
Sofia Kovalevskaya	Factor Shield	Ratio Ring	Right-handed typing	Neon Blue	Odd prime
Evelyn Granville	Fraction Beam	Vector Visor	Left-handed typing	Neon Blue	Odd prime
Margaret Hamilton	Factor Shield	Vector Visor	Left-handed typing	Pixel Purple	Negative integer
Carl Gauss	Decimal Cloak	Grid Gloves	Right-handed typing	Neon Blue	Zero divisor
John von Neumann	Decimal Cloak	Matrix Boots	Right-handed typing	Neon Blue	Odd prime
Alan Turing	Prime Laser	Matrix Boots	Right-handed typing	Cyber Silver	Odd prime

CLUE 1
Fractions of a number

To unlock the server room gate, Agent Decibel must calculate exactly two-thirds of the standby power generators to redirect their energy.

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

T								T											T
39	21	10		3	17	36	33	39	10	7	12	5	33	10	3	27	33	39	
24	10	17	12	17	22	33	6	17	12	26	39	21	16	22	10	27	3		

$1/4 \text{ of } 156 = \square \rightarrow \text{T}$

$2/4 \text{ of } 52 = \square \rightarrow \text{I}$

$4/8 \text{ of } 34 = \square \rightarrow \text{A}$

$4/8 \text{ of } 20 = \square \rightarrow \text{E}$

$1/5 \text{ of } 105 = \square \rightarrow \text{H}$

$4/10 \text{ of } 60 = \square \rightarrow \text{W}$

$3/6 \text{ of } 10 = \square \rightarrow \text{D}$

$1/4 \text{ of } 28 = \square \rightarrow \text{U}$

$2/3 \text{ of } 54 = \square \rightarrow \text{B}$

$3/5 \text{ of } 55 = \square \rightarrow \text{O}$

$1/2 \text{ of } 54 = \square \rightarrow \text{N}$

$4/6 \text{ of } 24 = \square \rightarrow \text{M}$

$2/6 \text{ of } 66 = \square \rightarrow \text{L}$

$8/10 \text{ of } 15 = \square \rightarrow \text{R}$

$1/4 \text{ of } 24 = \square \rightarrow \text{G}$

$6/8 \text{ of } 4 = \square \rightarrow \text{S}$

Scratch space:

CLUE 2
Order of operations

The backup firewall requires a specific sequence of codes. Detective Digit must solve the formula using the strict rules of operations to pass.

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

T							T												
12	69	61	34	16	34	12	61	72	22	35	49	34	34	69	35	63			
35	43	22	16	13	21	49	69	12	69	27	43	77	T						

$4 + 2 \times 4 = \square \rightarrow \boxed{\text{T}}$

$20 + 7 \times 7 = \square \rightarrow \boxed{\text{H}}$

$37 + 3 \times 8 = \square \rightarrow \boxed{\text{E}}$

$6 \times 12 - 29 = \square \rightarrow \boxed{\text{N}}$

$5 + 6 \times 5 = \square \rightarrow \boxed{\text{O}}$

$4 + 4 \times 3 = \square \rightarrow \boxed{\text{Y}}$

$1 + 4 \times 3 = \square \rightarrow \boxed{\text{R}}$

$9 \times 7 - 29 = \square \rightarrow \boxed{\text{S}}$

$62 + 5 \times 2 = \square \rightarrow \boxed{\text{M}}$

$6 \times 5 - 3 = \square \rightarrow \boxed{\text{A}}$

$12 \times 2 - 2 = \square \rightarrow \boxed{\text{L}}$

$5 + 4 \times 4 = \square \rightarrow \boxed{\text{I}}$

$27 + 9 \times 4 = \square \rightarrow \boxed{\text{W}}$

$67 + 5 \times 2 = \square \rightarrow \boxed{\text{D}}$

$41 + 2 \times 4 = \square \rightarrow \boxed{\text{G}}$

$26 + 6 \times 8 = \square \rightarrow \boxed{\text{P}}$

Scratch space:

CLUE 3
Multiplication facts (1-12)

To map the hacker escape path, the Cipher Squad must multiply the grid sectors by the number of active data ports.

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

T							T									
20	64	12	22	110	2	20	33	64	96	100	2	110	121			
						T										
100	22	100	2	1	121	20	100	1	21	40	40	16	77	2	4	12

$5 \times 4 = \square \rightarrow \boxed{\text{T}}$

$4 \times 4 = \square \rightarrow \boxed{\text{P}}$

$12 \times 1 = \square \rightarrow \boxed{\text{E}}$

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

$3 \times 7 = \square \rightarrow \boxed{\text{O}}$

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

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

$11 \times 2 = \square \rightarrow \boxed{\text{G}}$

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

$1 \times 2 = \square \rightarrow \boxed{\text{I}}$

$11 \times 3 = \square \rightarrow \boxed{\text{C}}$

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

$7 \times 11 = \square \rightarrow \boxed{\text{R}}$

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

$4 \times 1 = \square \rightarrow \boxed{\text{M}}$

$11 \times 11 = \square \rightarrow \boxed{\text{S}}$

Scratch space:

CLUE 4 Rounding

The tracking radar is fuzzy and can only display coordinates rounded to the nearest thousand to target the rogue signal.

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

N			N																	
30	900	1300	30	110	20	50	900	3700	300	110	900	500	2300	1700	900	500	900			
					N															
20	900	3700	2900	1300	30	2900	5000	900	370	900	7000	110	1300	200	500	2000				

Round 33 to the nearest ten → **N**

Round 3,659 to the nearest hundred → **F**

Round 539 to the nearest hundred → **R**

Round 371 to the nearest ten → **K**

Round 2,860 to the nearest hundred → **T**

Round 331 to the nearest hundred → **I**

Round 23 to the nearest ten → **L**

Round 1,707 to the nearest hundred → **W**

Round 51 to the nearest ten → **U**

Round 2,356 to the nearest thousand → **D**

Round 874 to the nearest hundred → **E**

Round 2,285 to the nearest hundred → **S**

Round 6,818 to the nearest thousand → **Y**

Round 200 to the nearest hundred → **A**

Round 1,275 to the nearest hundred → **O**

Round 5,184 to the nearest thousand → **H**

Round 106 to the nearest ten → **B**

Scratch space:

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

The captured data chips must be divided equally among the local server nodes to decode the final lock coordinate.

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:

$110 \div 11 = \boxed{}$

$12 \div 3 = \boxed{}$

$72 \div 8 = \boxed{}$

$55 \div 5 = \boxed{}$

$56 \div 7 = \boxed{}$

$24 \div 12 = \boxed{}$

$18 \div 6 = \boxed{}$

$120 \div 10 = \boxed{}$

$28 \div 4 = \boxed{}$

$40 \div 8 = \boxed{}$

$30 \div 5 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain activates a factor shield, then escapes through a ratio ring.
2. The villain cracks a percent whip, then escapes through a ratio ring.
3. The villain fires a fraction beam, then scans the area with a vector visor.
4. The villain fires a fraction beam, then leaps away in matrix boots.
5. The villain cracks a percent whip, then scans the area with a vector visor.
6. The villain charges a prime laser, then leaps away in matrix boots.
7. The villain activates a factor shield, then scans the area with a vector visor.
8. The villain engages a decimal cloak, then types rapidly with grid gloves.
9. The villain engages a decimal cloak, then leaps away in matrix boots.
10. The villain charges a prime laser, then types rapidly with grid gloves.
11. The villain engages a decimal cloak, then escapes through a ratio ring.
12. The villain engages a decimal cloak, then zooms in using a logarithm lens.

Answer Key

The Great Equation Heist

Culprit: Sofia Kovalevskaya

Factor Shield · Ratio Ring · Right-handed typing · Neon Blue · Odd prime

Trail: Start 21 → Clue 1 19 → Clue 2 12 → Clue 3 7 → Clue 4 4 → Clue 5 1

Clue 1 (Fractions of a number): "THE SABOTEUR DOES NOT WEAR A LOGARITHM LENS"

$\frac{1}{4}$ of 156 = 39 (T) · $\frac{2}{4}$ of 52 = 26 (I) · $\frac{4}{8}$ of 34 = 17 (A) · $\frac{4}{8}$ of 20 = 10 (E) · $\frac{1}{5}$ of 105 = 21 (H) · $\frac{4}{10}$ of 60 = 24 (W) · $\frac{3}{6}$ of 10 = 5 (D) · $\frac{1}{4}$ of 28 = 7 (U) · $\frac{2}{3}$ of 54 = 36 (B) · $\frac{3}{5}$ of 55 = 33 (O) · $\frac{1}{2}$ of 54 = 27 (N) · $\frac{4}{6}$ of 24 = 16 (M) · $\frac{2}{6}$ of 66 = 22 (L) · $\frac{8}{10}$ of 15 = 12 (R) · $\frac{1}{4}$ of 24 = 6 (G) · $\frac{6}{8}$ of 4 = 3 (S)

Clue 2 (Order of operations): "THE SYSTEM LOGS SHOW ONLY RIGHT HAND TYPING"

$4 + 2 \times 4 = 12$ (T) · $20 + 7 \times 7 = 69$ (H) · $37 + 3 \times 8 = 61$ (E) · $6 \times 12 - 29 = 43$ (N) · $5 + 6 \times 5 = 35$ (O) · $4 + 4 \times 3 = 16$ (Y) · $1 + 4 \times 3 = 13$ (R) · $9 \times 7 - 29 = 34$ (S) · $62 + 5 \times 2 = 72$ (M) · $6 \times 5 - 3 = 27$ (A) · $12 \times 2 - 2 = 22$ (L) · $5 + 4 \times 4 = 21$ (I) · $27 + 9 \times 4 = 63$ (W) · $67 + 5 \times 2 = 77$ (D) · $41 + 2 \times 4 = 49$ (G) · $26 + 6 \times 8 = 74$ (P)

Clue 3 (Multiplication facts (1-12)): "THE GLITCH FAILS AGAINST AN ODD PRIME"

$5 \times 4 = 20$ (T) · $4 \times 4 = 16$ (P) · $12 \times 1 = 12$ (E) · $5 \times 8 = 40$ (D) · $3 \times 7 = 21$ (O) · $1 \times 1 = 1$ (N) · $10 \times 10 = 100$ (A) · $11 \times 2 = 22$ (G) · $8 \times 8 = 64$ (H) · $1 \times 2 = 2$ (I) · $11 \times 3 = 33$ (C) · $8 \times 12 = 96$ (F) · $7 \times 11 = 77$ (R) · $10 \times 11 = 110$ (L) · $4 \times 1 = 4$ (M) · $11 \times 11 = 121$ (S)

Clue 4 (Rounding): "NEON BLUE FIBERS WERE LEFT ON THE KEYBOARD"

Round 33 to the nearest ten = 30 (N) · Round 3,659 to the nearest hundred = 3700 (F) · Round 539 to the nearest hundred = 500 (R) · Round 371 to the nearest ten = 370 (K) · Round 2,860 to the nearest hundred = 2900 (T) · Round 331 to the nearest hundred = 300 (I) · Round 23 to the nearest ten = 20 (L) · Round 1,707 to the nearest hundred = 1700 (W) · Round 51 to the nearest ten = 50 (U) · Round 2,356 to the nearest thousand = 2000 (D) · Round 874 to the nearest hundred = 900 (E) · Round 2,285 to the nearest hundred = 2300 (S) · Round 6,818 to the nearest thousand = 7000 (Y) · Round 200 to the nearest hundred = 200 (A) · Round 1,275 to the nearest hundred = 1300 (O) · Round 5,184 to the nearest thousand = 5000 (H) · Round 106 to the nearest ten = 110 (B)

Clue 5 (Division facts (1-12)): surviving statement is box 1 → Sofia Kovalevskaya

$110 \div 11 = 10$ · $12 \div 3 = 4$ · $72 \div 8 = 9$ · $55 \div 5 = 11$ · $56 \div 7 = 8$ · $24 \div 12 = 2$ · $18 \div 6 = 3$ · $120 \div 10 = 12$ · $28 \div 4 = 7$ · $40 \div 8 = 5$ · $30 \div 5 = 6$