



The Lunar Base Heist

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

Detective: _____ **Date:** _____

Emergency klaxons sound across the Ares Outpost! A rogue figure snuck into the command module and disabled the main satellite array. Detective astronaut, gather data from station logs and eliminate suspects to catch 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 Cosmic Saboteur is _____

Possible suspects

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

NAME	PRIMARY GEAR	SUIT GADGET	DOMINANT HAND	HELMET STRIPE	DEFENSE SYSTEM
Christina Koch	ROBOT ARM	HYPERDRIVE CORE	LEFT HANDED	NEON BLUE STRIPE	ULTRAVIOLET FLASH
John Glenn	GRAVITY BOOTS	RADAR DISH	RIGHT HANDED	NEON BLUE STRIPE	MAGNETIC FIELD
Bernard Harris	GRAVITY BOOTS	OXYGEN REBREATHER	RIGHT HANDED	NEON BLUE STRIPE	ULTRAVIOLET FLASH
Valentina Tereshkova	PLASMA TORCH	OXYGEN REBREATHER	LEFT HANDED	NEON BLUE STRIPE	MAGNETIC FIELD
Sunita Williams	GRAVITY BOOTS	BEAM SCANNER	LEFT HANDED	NEON BLUE STRIPE	SONIC PULSE
Michael Collins	GRAVITY BOOTS	OXYGEN REBREATHER	LEFT HANDED	SOLAR GOLD STRIPE	ULTRAVIOLET FLASH
Neil Armstrong	JETPACK BOOST	RADAR DISH	LEFT HANDED	NEON BLUE STRIPE	ULTRAVIOLET FLASH
Sally Ride	LASER CUTTER	SOLAR SHIELD	RIGHT HANDED	NEON BLUE STRIPE	SONIC PULSE
Robert Crippen	ROBOT ARM	BEAM SCANNER	LEFT HANDED	NEON BLUE STRIPE	MAGNETIC FIELD
Tim Peake	JETPACK BOOST	OXYGEN REBREATHER	LEFT HANDED	NEON BLUE STRIPE	MAGNETIC FIELD
Yuri Gagarin	PLASMA TORCH	OXYGEN REBREATHER	LEFT HANDED	COSMIC SILVER STRIPE	ULTRAVIOLET FLASH
Chris Hadfield	GRAVITY BOOTS	SOLAR SHIELD	RIGHT HANDED	SOLAR GOLD STRIPE	SONIC PULSE
Peggy Whitson	JETPACK BOOST	BEAM SCANNER	LEFT HANDED	NEON BLUE STRIPE	SONIC PULSE
Story Musgrave	GRAVITY BOOTS	HYPERDRIVE CORE	LEFT HANDED	NEON BLUE STRIPE	MAGNETIC FIELD
Buzz Aldrin	ROBOT ARM	BEAM SCANNER	RIGHT HANDED	SOLAR GOLD STRIPE	ULTRAVIOLET FLASH
Kalpana Chawla	JETPACK BOOST	OXYGEN REBREATHER	RIGHT HANDED	COSMIC SILVER STRIPE	ULTRAVIOLET FLASH
Guion Bluford	LASER CUTTER	SOLAR SHIELD	LEFT HANDED	NEON BLUE STRIPE	MAGNETIC FIELD
Jessica Meir	PLASMA TORCH	HYPERDRIVE CORE	RIGHT HANDED	NEON BLUE STRIPE	ULTRAVIOLET FLASH
Alan Shepard	LASER CUTTER	RADAR DISH	RIGHT HANDED	NEON BLUE STRIPE	MAGNETIC FIELD
Leland Melvin	LASER CUTTER	OXYGEN REBREATHER	LEFT HANDED	COSMIC SILVER STRIPE	SONIC PULSE
Scott Kelly	ROBOT ARM	BEAM SCANNER	LEFT HANDED	COSMIC SILVER STRIPE	MAGNETIC FIELD

CLUE 1
Fractions of a number

You inspect the fuel logs and calculate the exact fraction of liquid hydrogen remaining in the auxiliary tanks.

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

T																			
39	18	5	12	17	4	4	34	17	30	7	7	16	17	39	18	34	35		
30	21	18	14	27	5	22	35	22	17	12	5	37	21	22	5				

$2/10 \text{ of } 195 = \square \rightarrow \text{T}$

$2/4 \text{ of } 10 = \square \rightarrow \text{E}$

$1/2 \text{ of } 42 = \square \rightarrow \text{O}$

$1/5 \text{ of } 185 = \square \rightarrow \text{C}$

$2/5 \text{ of } 45 = \square \rightarrow \text{H}$

$5/10 \text{ of } 24 = \square \rightarrow \text{V}$

$2/5 \text{ of } 10 = \square \rightarrow \text{L}$

$2/5 \text{ of } 40 = \square \rightarrow \text{U}$

$7/8 \text{ of } 16 = \square \rightarrow \text{Y}$

$5/8 \text{ of } 56 = \square \rightarrow \text{D}$

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

$1/8 \text{ of } 56 = \square \rightarrow \text{S}$

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

$1/2 \text{ of } 60 = \square \rightarrow \text{N}$

$1/2 \text{ of } 68 = \square \rightarrow \text{A}$

$2/3 \text{ of } 33 = \square \rightarrow \text{R}$

Scratch space:

CLUE 2
Order of operations

To unlock the encrypted airlock console, you must work through the multi step operational sequence in precise order.

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

W									W										
72	43	29	46	77	39	39	39	32	72	58	77	17	29	23	32	46	38	77	38
39	29	77	77	66	43	46	47												

$54 + 2 \times 9 = \square \rightarrow$ W	$38 + 5 \times 4 = \square \rightarrow$ L	$8 \times 7 - 10 = \square \rightarrow$ N
$6 \times 9 - 15 = \square \rightarrow$ S	$7 \times 5 - 6 = \square \rightarrow$ T	$37 + 5 \times 2 = \square \rightarrow$ G
$10 \times 6 - 17 = \square \rightarrow$ I	$14 + 3 \times 3 = \square \rightarrow$ H	$5 \times 8 - 8 = \square \rightarrow$ A
$5 + 3 \times 4 = \square \rightarrow$ F	$34 + 2 \times 2 = \square \rightarrow$ D	$21 + 5 \times 9 = \square \rightarrow$ R
$42 + 5 \times 7 = \square \rightarrow$ E		

Scratch space:

CLUE 3

Multiplication facts (1-12)

By calculating the output across identical solar arrays in the main grid, you reveal a hidden power log.

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

D					D														
8	1	25	1	54	8	1	144	24	5	24	1	8	6	24	99	144	55	54	32
90	6	32	54	1	99	60	84	25	60	1	100	8							

$1 \times 8 = \square \rightarrow \boxed{\text{D}}$

$1 \times 6 = \square \rightarrow \boxed{\text{A}}$

$12 \times 7 = \square \rightarrow \boxed{\text{C}}$

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

$4 \times 8 = \square \rightarrow \boxed{\text{G}}$

$5 \times 11 = \square \rightarrow \boxed{\text{O}}$

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

$9 \times 10 = \square \rightarrow \boxed{\text{M}}$

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

$1 \times 5 = \square \rightarrow \boxed{\text{U}}$

$10 \times 6 = \square \rightarrow \boxed{\text{I}}$

$5 \times 5 = \square \rightarrow \boxed{\text{F}}$

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

$6 \times 9 = \square \rightarrow \boxed{\text{N}}$

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

Scratch space:

CLUE 4 Rounding

The station radar display rounds off distance readings, requiring you to round the values to pinpoint the suspect.

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

A																			
430	200	130	230	200	50	900	2300	130	20	4300	300	2900	3700	130	9000	A	430	20	
110	230	2300	200	3000	230	200	4300	2000	130	3700	A	430	200	130	900				

Round 431 to the nearest ten → **A**

Round 285 to the nearest hundred → **R**

Round 2,272 to the nearest hundred → **U**

Round 9,289 to the nearest thousand → **W**

Round 938 to the nearest hundred → **L**

Round 129 to the nearest ten → **E**

Round 3,210 to the nearest thousand → **D**

Round 233 to the nearest ten → **O**

Round 106 to the nearest ten → **F**

Round 2,858 to the nearest hundred → **I**

Round 213 to the nearest hundred → **N**

Round 4,281 to the nearest hundred → **T**

Round 3,701 to the nearest hundred → **P**

Round 24 to the nearest ten → **S**

Round 53 to the nearest ten → **B**

Round 1,568 to the nearest thousand → **H**

Scratch space:

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

You divide the emergency oxygen canisters equally among the remaining pods to track where the intruder struck.

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:

$49 \div 7 = \boxed{}$

$11 \div 1 = \boxed{}$

$81 \div 9 = \boxed{}$

$21 \div 7 = \boxed{}$

$6 \div 6 = \boxed{}$

$24 \div 6 = \boxed{}$

$14 \div 7 = \boxed{}$

$56 \div 7 = \boxed{}$

$84 \div 7 = \boxed{}$

$55 \div 11 = \boxed{}$

$60 \div 10 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain cut through containment with a laser cutter, then tracked defense signals via radar dish.
2. The villain grabbed the module using a robot arm, then charged up the hyperdrive core.
3. The villain sliced open the hatch with a plasma torch, then tracked defense signals via radar dish.
4. The villain cut through containment with a laser cutter, then filtered toxic gases through an oxygen rebreather.
5. The villain marched along the hull in gravity boots, then filtered toxic gases through an oxygen rebreather.
6. The villain blasted off using a jetpack boost, then deflected orbital debris with a solar shield.
7. The villain blasted off using a jetpack boost, then filtered toxic gases through an oxygen rebreather.
8. The villain grabbed the module using a robot arm, then tracked defense signals via radar dish.
9. The villain sliced open the hatch with a plasma torch, then filtered toxic gases through an oxygen rebreather.
10. The villain cut through containment with a laser cutter, then deflected orbital debris with a solar shield.
11. The villain grabbed the module using a robot arm, then scanned the dark sector with a beam scanner.
12. The villain cut through containment with a laser cutter, then scanned the dark sector with a beam scanner.

Answer Key

The Lunar Base Heist

Culprit: Guion Bluford

LASER CUTTER · SOLAR SHIELD · LEFT HANDED · NEON BLUE STRIPE · MAGNETIC FIELD

Trail: Start 21 → Clue 1 18 → Clue 2 11 → Clue 3 5 → Clue 4 4 → Clue 5 1

Clue 1 (Fractions of a number): "THE VILLAINS SUIT HAD NO HYPERDRIVE CORE"

$2/10$ of 195 = 39 (T) · $2/4$ of 10 = 5 (E) · $1/2$ of 42 = 21 (O) · $1/5$ of 185 = 37 (C) · $2/5$ of 45 = 18 (H) · $5/10$ of 24 = 12 (V) · $2/5$ of 10 = 4 (L) · $2/5$ of 40 = 16 (U) · $7/8$ of 16 = 14 (Y) · $5/8$ of 56 = 35 (D) · $4/8$ of 34 = 17 (I) · $1/8$ of 56 = 7 (S) · $1/2$ of 54 = 27 (P) · $1/2$ of 60 = 30 (N) · $1/2$ of 68 = 34 (A) · $2/3$ of 33 = 22 (R)

Clue 2 (Order of operations): "WITNESS SAW LEFT HANDED STEERING"

$54 + 2 \times 9 = 72$ (W) · $38 + 5 \times 4 = 58$ (L) · $8 \times 7 - 10 = 46$ (N) · $6 \times 9 - 15 = 39$ (S) · $7 \times 5 - 6 = 29$ (T) · $37 + 5 \times 2 = 47$ (G) · $10 \times 6 - 17 = 43$ (I) · $14 + 3 \times 3 = 23$ (H) · $5 \times 8 - 8 = 32$ (A) · $5 + 3 \times 4 = 17$ (F) · $34 + 2 \times 2 = 38$ (D) · $21 + 5 \times 9 = 66$ (R) · $42 + 5 \times 7 = 77$ (E)

Clue 3 (Multiplication facts (1-12)): "DEFENDERS USED A STRONG MAGNETIC FIELD"

$1 \times 8 = 8$ (D) · $1 \times 6 = 6$ (A) · $12 \times 7 = 84$ (C) · $1 \times 1 = 1$ (E) · $4 \times 8 = 32$ (G) · $5 \times 11 = 55$ (O) · $11 \times 9 = 99$ (T) · $9 \times 10 = 90$ (M) · $10 \times 10 = 100$ (L) · $1 \times 5 = 5$ (U) · $10 \times 6 = 60$ (I) · $5 \times 5 = 25$ (F) · $12 \times 12 = 144$ (R) · $6 \times 9 = 54$ (N) · $12 \times 2 = 24$ (S)

Clue 4 (Rounding): "A NEON BLUE STRIPE WAS FOUND ON THE PANEL"

Round 431 to the nearest ten = 430 (A) · Round 285 to the nearest hundred = 300 (R) · Round 2,272 to the nearest hundred = 2300 (U) · Round 9,289 to the nearest thousand = 9000 (W) · Round 938 to the nearest hundred = 900 (L) · Round 129 to the nearest ten = 130 (E) · Round 3,210 to the nearest thousand = 3000 (D) · Round 233 to the nearest ten = 230 (O) · Round 106 to the nearest ten = 110 (F) · Round 2,858 to the nearest hundred = 2900 (I) · Round 213 to the nearest hundred = 200 (N) · Round 4,281 to the nearest hundred = 4300 (T) · Round 3,701 to the nearest hundred = 3700 (P) · Round 24 to the nearest ten = 20 (S) · Round 53 to the nearest ten = 50 (B) · Round 1,568 to the nearest thousand = 2000 (H)

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

$49 \div 7 = 7$ · $11 \div 1 = 11$ · $81 \div 9 = 9$ · $21 \div 7 = 3$ · $6 \div 6 = 1$ · $24 \div 6 = 4$ · $14 \div 7 = 2$ · $56 \div 7 = 8$ · $84 \div 7 = 12$ · $55 \div 11 = 5$ · $60 \div 10 = 6$