



The Saboteur of Stellar Outpost Nova

Grade 6 math · Place value, Percentages, Exponents, Order of operations, Division · Reading level grades 5-6

Detective: _____ Date: _____

A sneaky space saboteur has hijacked the primary computer core of Stellar Outpost Nova! They scrambled the ship's docking codes and locked the life support controls. The Chief Commander needs your help to crack the security logs. Decode the clues left behind by the outpost's robotic sentries to identify the thief before they escape into deep space!

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 space 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 SPACE TOOL	EXTRA SPACE GEAR	TELEMETRY WATCH	SPACE SUIT HELMET	SYSTEM VULNERABILITY
Edgar Mitchell	Plasma Torch	Stellar Map	right wrist	Gold Visor	Strobe Lights
Pete Conrad	Gravity Boots	Oxygen Tank	right wrist	Gold Visor	Strobe Lights
Kalpana Chawla	Gravity Boots	Oxygen Tank	left wrist	Gold Visor	Strobe Lights
Guion Bluford	Hologram Projector	Radar Visor	right wrist	Silver Helmet	Extreme Cold
Mae Jemison	Hologram Projector	Radar Visor	left wrist	Silver Helmet	Magnetic Fields
Jack Swigert	Laser Welder	Stellar Map	left wrist	Silver Helmet	Magnetic Fields
Carl Sagan	Gravity Boots	Oxygen Tank	left wrist	Silver Helmet	Magnetic Fields
Christa McAuliffe	Sonic Scanner	Solar Shield	right wrist	Gold Visor	Magnetic Fields
Alan Shepard	Laser Welder	Stellar Map	right wrist	Gold Visor	Magnetic Fields
David Scott	Hologram Projector	Oxygen Tank	left wrist	Silver Helmet	Magnetic Fields
Neil Armstrong	Hologram Projector	Solar Shield	right wrist	Blue Hood	Magnetic Fields
Gherman Titov	Plasma Torch	Thrust Pack	left wrist	Silver Helmet	Magnetic Fields
Buzz Aldrin	Laser Welder	Radar Visor	left wrist	Blue Hood	Magnetic Fields
James Lovell	Plasma Torch	Solar Shield	left wrist	Silver Helmet	Extreme Cold
Yuri Gagarin	Hologram Projector	Radar Visor	right wrist	Silver Helmet	Magnetic Fields
Chris Hadfield	Sonic Scanner	Stellar Map	left wrist	Silver Helmet	Extreme Cold
Sally Ride	Plasma Torch	Oxygen Tank	right wrist	Blue Hood	Magnetic Fields
James Irwin	Sonic Scanner	Thrust Pack	left wrist	Gold Visor	Extreme Cold
Michael Collins	Hologram Projector	Oxygen Tank	right wrist	Silver Helmet	Magnetic Fields
Edwin Hubble	Plasma Torch	Thrust Pack	left wrist	Blue Hood	Strobe Lights
Fred Haise	Laser Welder	Thrust Pack	right wrist	Blue Hood	Extreme Cold

CLUE 1 Place value

Our security console flashed a giant coordinate number. Check the value of the hundreds place to decrypt this first log.

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

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T								T											T
1000	10	5000	8000	9000	90	20	1000	5000	500	70	200	20	5000	8000	7000	20	1000		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						T											T		
10	9000	60	5000	9000	1000	10	70	500	8000	1000	2000	9000	3000	800					

What is the value of the 1 in 41,852? →

What is the value of the 1 in 48,815? →

What is the value of the 3 in 903,802? →

What is the value of the 6 in 73,561? →

What is the value of the 2 in 65,625? →

What is the value of the 9 in 89,512? →

What is the value of the 8 in 978,704? →

What is the value of the 2 in 62,403? →

What is the value of the 5 in 315,134? →

What is the value of the 9 in 372,092? →

What is the value of the 5 in 648,568? →

What is the value of the 8 in 744,847? →

What is the value of the 2 in 47,274? →

What is the value of the 7 in 59,376? →

What is the value of the 7 in 237,415? →

Scratch space:

CLUE 2 Percentages

The backup battery is draining quickly. Calculate the percentage of power remaining to unlock the security transmission.

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

T			T						T					T					
5	22	36	5	36	18	36	25	36	5	31	19	40	34	5	44	22	40	34	3
						T						T							
3	36	36	21	20	21	5	22	36	18	36	33	5							

10% of 50 = → **T**

50% of 6 = → **S**

25% of 176 = → **C**

75% of 24 = → **L**

25% of 80 = → **O**

50% of 80 = → **W**

50% of 68 = → **A**

5% of 500 = → **M**

20% of 155 = → **R**

40% of 55 = → **H**

60% of 60 = → **E**

10% of 330 = → **F**

20% of 95 = → **Y**

20% of 105 = → **N**

Scratch space:

CLUE 3 Exponents

The central computer core is multiplying its backup signals rapidly. Solve the exponential equation to reveal the suspect's helmet details.

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

T								T								
128	243	121	144	196	64	196	128	36	4	8	16	64				
														T		
8	121	16	25	121	49	121	125	32	9	27	16	256	49	121	128	64

$2^7 = \square \rightarrow$ T	$3^2 = \square \rightarrow$ Y	$3^3 = \square \rightarrow$ M	$12^2 = \square \rightarrow$ V
$14^2 = \square \rightarrow$ I	$2^2 = \square \rightarrow$ R	$2^5 = \square \rightarrow$ B	$11^2 = \square \rightarrow$ E
$2^3 = \square \rightarrow$ W	$4^4 = \square \rightarrow$ G	$5^3 = \square \rightarrow$ D	$5^2 = \square \rightarrow$ K
$6^2 = \square \rightarrow$ O	$7^2 = \square \rightarrow$ N	$3^5 = \square \rightarrow$ H	$4^3 = \square \rightarrow$ S
$2^4 = \square \rightarrow$ A			

Scratch space:

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

The maintenance robots are dividing the remaining fuel cylinders equally among the rescue pods. Calculate the division problem to discover the telemetry watch details.

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:

$48 \div 8 = \square$

$96 \div 12 = \square$

$132 \div 12 = \square$

$9 \div 1 = \square$

$3 \div 3 = \square$

$33 \div 11 = \square$

$110 \div 11 = \square$

$4 \div 2 = \square$

$63 \div 9 = \square$

$25 \div 5 = \square$

$36 \div 9 = \square$

Step 2 - cross out the sentence with each answer:

1. The villain fired up their laser welder, then deployed the solar shield.
2. The villain activated their gravity boots, then adjusted the radar visor.
3. The villain activated their gravity boots, then consulted the stellar map.
4. The villain fired up their laser welder, then engaged the thrust pack.
5. The villain tuned their sonic scanner, then engaged the thrust pack.
6. The villain fired up their laser welder, then consulted the stellar map.
7. The villain ignited their plasma torch, then deployed the solar shield.
8. The villain activated their gravity boots, then vented the oxygen tank.
9. The villain activated their hologram projector, then engaged the thrust pack.
10. The villain fired up their laser welder, then adjusted the radar visor.
11. The villain activated their hologram projector, then vented the oxygen tank.
12. The villain activated their hologram projector, then adjusted the radar visor.

Answer Key

The Saboteur of Stellar Outpost Nova

Culprit: Mae Jemison

Hologram Projector · Radar Visor · left wrist · Silver Helmet · Magnetic Fields

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

Clue 1 (Place value): "THE SABOTEUR DOES NOT HAVE A THRUST PACK"

What is the value of the 1 in 41,852? = 1000 (T) · What is the value of the 1 in 48,815? = 10 (H) · What is the value of the 3 in 903,802? = 3000 (C) · What is the value of the 6 in 73,561? = 60 (V) · What is the value of the 2 in 65,625? = 20 (O) · What is the value of the 9 in 89,512? = 9000 (A) · What is the value of the 8 in 978,704? = 8000 (S) · What is the value of the 2 in 62,403? = 2000 (P) · What is the value of the 5 in 315,134? = 5000 (E) · What is the value of the 9 in 372,092? = 90 (B) · What is the value of the 5 in 648,568? = 500 (U) · What is the value of the 8 in 744,847? = 800 (K) · What is the value of the 2 in 47,274? = 200 (D) · What is the value of the 7 in 59,376? = 70 (R) · What is the value of the 7 in 237,415? = 7000 (N)

Clue 2 (Percentages): "THE TELEMETRY WATCH WAS SEEN ON THE LEFT"

10% of 50 = 5 (T) · 50% of 6 = 3 (S) · 25% of 176 = 44 (C) · 75% of 24 = 18 (L) · 25% of 80 = 20 (O) · 50% of 80 = 40 (W) · 50% of 68 = 34 (A) · 5% of 500 = 25 (M) · 20% of 155 = 31 (R) · 40% of 55 = 22 (H) · 60% of 60 = 36 (E) · 10% of 330 = 33 (F) · 20% of 95 = 19 (Y) · 20% of 105 = 21 (N)

Clue 3 (Exponents): "THE VISITOR WAS WEAKENED BY MAGNETS"

$2^7 = 128$ (T) · $3^2 = 9$ (Y) · $3^3 = 27$ (M) · $12^2 = 144$ (V) · $14^2 = 196$ (I) · $2^2 = 4$ (R) · $2^5 = 32$ (B) · $11^2 = 121$ (E) · $2^3 = 8$ (W) · $4^4 = 256$ (G) · $5^3 = 125$ (D) · $5^2 = 25$ (K) · $6^2 = 36$ (O) · $7^2 = 49$ (N) · $3^5 = 243$ (H) · $4^3 = 64$ (S) · $2^4 = 16$ (A)

Clue 4 (Order of operations): "SILVER PARTICLES WERE LEFT IN THE VENT"

$8 + 2 \times 4 = 16$ (S) · $18 + 2 \times 7 = 32$ (L) · $20 + 6 \times 5 = 50$ (W) · $28 + 3 \times 7 = 49$ (E) · $4 \times 6 - 1 = 23$ (I) · $46 + 7 \times 2 = 60$ (F) · $1 + 4 \times 2 = 9$ (P) · $20 + 2 \times 2 = 24$ (N) · $39 + 9 \times 3 = 66$ (R) · $7 \times 11 - 5 = 72$ (V) · $6 + 7 \times 7 = 55$ (C) · $27 + 5 \times 7 = 62$ (T) · $10 \times 7 - 27 = 43$ (H) · $12 \times 6 - 8 = 64$ (A)

Clue 5 (Division facts (1-12)): surviving statement is box 12 → Mae Jemison

$48 \div 8 = 6$ · $96 \div 12 = 8$ · $132 \div 12 = 11$ · $9 \div 1 = 9$ · $3 \div 3 = 1$ · $33 \div 11 = 3$ · $110 \div 11 = 10$ · $4 \div 2 = 2$ · $63 \div 9 = 7$ · $25 \div 5 = 5$ · $36 \div 9 = 4$