



The Nebula Station Heist

Grade 7 math · Integers, Percentages, Order of operations, Exponents, Two-step equations · Reading level grades 5-6

Detective: _____ **Date:** _____

A sneaky saboteur has broken into the main vault of Nebula Outpost Omega. They have locked the crew out of the control deck and scrambled the flight paths. Our Stellar Patrol team must crack the codes, track down the culprit, and save the station before it drifts into the asteroid belt.

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 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 TOOL	SECONDARY TOOL	TABLET GRIP	SPACESUIT PATCH COLOR	SYSTEM VULNERABILITY
Guion Bluford	hacking pad	drone swarm	left-handed stylus use	bright orange patch	strong magnetic fields
Jack Swigert	hacking pad	cloaking field	right-handed stylus use	neon green patch	high-frequency radio static
Michael Collins	jetpack	sonic disruptor	right-handed stylus use	bright orange patch	ultra-bright floodlights
Franklin Chang-Diaz	jetpack	EMP device	right-handed stylus use	glowing purple patch	high-frequency radio static
Margaret Hamilton	plasma torch	EMP device	left-handed stylus use	neon green patch	strong magnetic fields
Neil Armstrong	plasma torch	cloaking field	left-handed stylus use	bright orange patch	strong magnetic fields
John Glenn	hacking pad	force shield	right-handed stylus use	glowing purple patch	strong magnetic fields
Alan Shepard	jetpack	sonic disruptor	left-handed stylus use	bright orange patch	high-frequency radio static
Buzz Aldrin	plasma torch	EMP device	right-handed stylus use	glowing purple patch	strong magnetic fields
Sally Ride	hacking pad	EMP device	right-handed stylus use	glowing purple patch	strong magnetic fields
Judith Resnik	laser cutter	force shield	right-handed stylus use	neon green patch	high-frequency radio static
Jim Lovell	jetpack	cloaking field	left-handed stylus use	glowing purple patch	high-frequency radio static
Valentina Tereshkova	hacking pad	drone swarm	right-handed stylus use	glowing purple patch	strong magnetic fields
Yuri Gagarin	laser cutter	drone swarm	right-handed stylus use	glowing purple patch	strong magnetic fields
Carl Sagan	hacking pad	EMP device	right-handed stylus use	neon green patch	strong magnetic fields
Chris Hadfield	laser cutter	force shield	right-handed stylus use	bright orange patch	ultra-bright floodlights
Pete Conrad	plasma torch	EMP device	left-handed stylus use	bright orange patch	strong magnetic fields
Mae Jemison	plasma torch	drone swarm	right-handed stylus use	neon green patch	ultra-bright floodlights
Ellen Ochoa	jetpack	EMP device	left-handed stylus use	glowing purple patch	strong magnetic fields
Fred Haise	hacking pad	drone swarm	left-handed stylus use	neon green patch	high-frequency radio static
Kalpana Chawla	jetpack	drone swarm	right-handed stylus use	neon green patch	strong magnetic fields

CLUE 1 Integers

To unlock the frozen vault door, we must calculate the exact temperature drops. The climate controls show deep-space levels below zero. Solve this integer puzzle to crack the seal.

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

T																T
28	20	30	26	19	15	15	2	19	29	21	13	30	17	29	13	28
20	2	26	30	2	18	13	22	25	30	17	20	19	30	15	21	

$14 - (-14) = \square \rightarrow \text{T}$	$(-15) + 17 = \square \rightarrow \text{A}$	$(-7) + 29 = \square \rightarrow \text{R}$
$(-11) + 24 = \square \rightarrow \text{O}$	$(-2) + 21 = \square \rightarrow \text{I}$	$(-13) + 28 = \square \rightarrow \text{L}$
$(-5) + 35 = \square \rightarrow \text{E}$	$11 - (-14) = \square \rightarrow \text{C}$	$11 - (-10) = \square \rightarrow \text{D}$
$13 - (-4) = \square \rightarrow \text{S}$	$5 - (-13) = \square \rightarrow \text{F}$	$(-7) + 27 = \square \rightarrow \text{H}$
$24 - (-5) = \square \rightarrow \text{N}$	$(-11) + 37 = \square \rightarrow \text{V}$	

Scratch space:

CLUE 2 Percentages

The station computer is running a deep scan on the corrupted files. It shows what percentage of the mainframe has been restored so far. Find the percentage to unlock the next file.

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

R													R					R		
47	11	34	14	36	14	29	26	51	57	51	34	47	11	44	25	29	47	17	33	
								R										R		
59	26	36	14	57	29	11	47	58	59	2	17	51	59	59	47					

$5\% \text{ of } 940 = \square \rightarrow \text{R}$

$40\% \text{ of } 65 = \square \rightarrow \text{N}$

$75\% \text{ of } 68 = \square \rightarrow \text{D}$

$5\% \text{ of } 220 = \square \rightarrow \text{I}$

$20\% \text{ of } 10 = \square \rightarrow \text{C}$

$5\% \text{ of } 340 = \square \rightarrow \text{K}$

$5\% \text{ of } 680 = \square \rightarrow \text{G}$

$40\% \text{ of } 145 = \square \rightarrow \text{L}$

$5\% \text{ of } 580 = \square \rightarrow \text{A}$

$50\% \text{ of } 72 = \square \rightarrow \text{T}$

$50\% \text{ of } 114 = \square \rightarrow \text{E}$

$20\% \text{ of } 70 = \square \rightarrow \text{H}$

$50\% \text{ of } 88 = \square \rightarrow \text{P}$

$50\% \text{ of } 66 = \square \rightarrow \text{S}$

$10\% \text{ of } 590 = \square \rightarrow \text{O}$

$5\% \text{ of } 500 = \square \rightarrow \text{M}$

Scratch space:

CLUE 3
Order of operations

The saboteur left a locked security pad. We have to solve the equation in the exact right order of priority to bypass the lock. Put the operations in order to get the code.

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

V																
71	111	116	116	58	111	81	59	58	81	108	59	14	45	32	29	99

105	58	59	55	14	45	58	55	81	99	32	35

$29 + 6 \times 7 = \square \rightarrow \text{V}$

$8 + 3 \times 9 = \square \rightarrow \text{S}$

$38 + 7 \times 3 = \square \rightarrow \text{R}$

$73 + 8 \times 4 = \square \rightarrow \text{C}$

$8 \times 10 - 22 = \square \rightarrow \text{A}$

$12 \times 11 - 16 = \square \rightarrow \text{L}$

$2 + 6 \times 2 = \square \rightarrow \text{O}$

$75 + 2 \times 3 = \square \rightarrow \text{N}$

$29 + 2 \times 8 = \square \rightarrow \text{M}$

$16 + 4 \times 4 = \square \rightarrow \text{T}$

$10 \times 12 - 12 = \square \rightarrow \text{F}$

$81 + 3 \times 6 = \square \rightarrow \text{E}$

$8 + 3 \times 7 = \square \rightarrow \text{H}$

$5 \times 12 - 5 = \square \rightarrow \text{G}$

$91 + 5 \times 4 = \square \rightarrow \text{I}$

Scratch space:

CLUE 4 Exponents

Tiny nanobots are multiplying fast inside the main generator. Their power level grows exponentially every second. Calculate the total power of the bots to shut them down.

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

P			P														
128	343	27	128	169	64	289	25	27	400	128	169	64	16	81	216	4	
81	144	64	8	64	4	81											

$2^7 = \square \rightarrow \text{P}$	$3^3 = \square \rightarrow \text{R}$	$2^2 = \square \rightarrow \text{N}$	$9^2 = \square \rightarrow \text{T}$
$2^3 = \square \rightarrow \text{V}$	$13^2 = \square \rightarrow \text{L}$	$4^2 = \square \rightarrow \text{F}$	$4^3 = \square \rightarrow \text{E}$
$7^3 = \square \rightarrow \text{U}$	$12^2 = \square \rightarrow \text{H}$	$6^3 = \square \rightarrow \text{I}$	$20^2 = \square \rightarrow \text{A}$
$17^2 = \square \rightarrow \text{S}$	$5^2 = \square \rightarrow \text{C}$		

Scratch space:

CLUE 5**Two-step equations - the last clue**

We found a heavy canister of stolen asteroid dust. To find the dust weight, we must subtract the canister shell and divide the rest. Solve this two-step equation to read the scale.

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:

$3x + 4 = 25, x = \boxed{}$

$4x + 9 = 13, x = \boxed{}$

$3x + 6 = 15, x = \boxed{}$

$2x + 6 = 10, x = \boxed{}$

$2x + 1 = 17, x = \boxed{}$

$4x + 3 = 23, x = \boxed{}$

$6x + 12 = 78, x = \boxed{}$

$4x + 3 = 39, x = \boxed{}$

$2x + 3 = 11, x = \boxed{}$

$3x + 10 = 40, x = \boxed{}$

$4x + 3 = 27, x = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain sabotaged the life support generator, then floated up to the observation deck.
2. The villain locked the main laboratory door, then zipped away in an escape pod.
3. The villain scrambled the navigation coordinates, then floated up to the observation deck.
4. The villain scrambled the navigation coordinates, then slid into the dark cargo bay.
5. The villain sabotaged the life support generator, then zipped away in an escape pod.
6. The villain locked the main laboratory door, then scuttled down the maintenance pipe.
7. The villain scrambled the navigation coordinates, then escaped through the waste chute.
8. The villain locked the main laboratory door, then escaped through the waste chute.
9. The villain drained the auxiliary fuel reserve, then floated up to the observation deck.
10. The villain overrode the automatic pilot system, then floated up to the observation deck.
11. The villain scrambled the navigation coordinates, then scuttled down the maintenance pipe.
12. The villain drained the auxiliary fuel reserve, then escaped through the waste chute.

Answer Key

The Nebula Station Heist

Culprit: Buzz Aldrin

plasma torch · EMP device · right-handed stylus use · glowing purple patch · strong magnetic fields

Trail: Start 21 → Clue 1 18 → Clue 2 10 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Integers): "THE VILLAIN DOES NOT HAVE A FORCE SHIELD"

$14 - (-14) = 28$ (T) · $(-15) + 17 = 2$ (A) · $(-7) + 29 = 22$ (R) · $(-11) + 24 = 13$ (O) · $(-2) + 21 = 19$ (I) · $(-13) + 28 = 15$ (L) · $(-5) + 35 = 30$ (E) · $11 - (-14) = 25$ (C) · $11 - (-10) = 21$ (D) · $13 - (-4) = 17$ (S) · $5 - (-13) = 18$ (F) · $(-7) + 27 = 20$ (H) · $24 - (-5) = 29$ (N) · $(-11) + 37 = 26$ (V)

Clue 2 (Percentages): "RIGHT HANDED GRIP MARKS ON THE AIRLOCK DOOR"

5% of 940 = 47 (R) · 40% of 65 = 26 (N) · 75% of 68 = 51 (D) · 5% of 220 = 11 (I) · 20% of 10 = 2 (C) · 5% of 340 = 17 (K) · 5% of 680 = 34 (G) · 40% of 145 = 58 (L) · 5% of 580 = 29 (A) · 50% of 72 = 36 (T) · 50% of 114 = 57 (E) · 20% of 70 = 14 (H) · 50% of 88 = 44 (P) · 50% of 66 = 33 (S) · 10% of 590 = 59 (O) · 5% of 500 = 25 (M)

Clue 3 (Order of operations): "VILLAIN RAN FROM THE CARGO MAGNETS"

$29 + 6 \times 7 = 71$ (V) · $8 + 3 \times 9 = 35$ (S) · $38 + 7 \times 3 = 59$ (R) · $73 + 8 \times 4 = 105$ (C) · $8 \times 10 - 22 = 58$ (A) · $12 \times 11 - 16 = 116$ (L) · $2 + 6 \times 2 = 14$ (O) · $75 + 2 \times 3 = 81$ (N) · $29 + 2 \times 8 = 45$ (M) · $16 + 4 \times 4 = 32$ (T) · $10 \times 12 - 12 = 108$ (F) · $81 + 3 \times 6 = 99$ (E) · $8 + 3 \times 7 = 29$ (H) · $5 \times 12 - 5 = 55$ (G) · $91 + 5 \times 4 = 111$ (I)

Clue 4 (Exponents): "PURPLE SCRAP LEFT IN THE VENT"

$2^7 = 128$ (P) · $3^3 = 27$ (R) · $2^2 = 4$ (N) · $9^2 = 81$ (T) · $2^3 = 8$ (V) · $13^2 = 169$ (L) · $4^2 = 16$ (F) · $4^3 = 64$ (E) · $7^3 = 343$ (U) · $12^2 = 144$ (H) · $6^3 = 216$ (I) · $20^2 = 400$ (A) · $17^2 = 289$ (S) · $5^2 = 25$ (C)

Clue 5 (Two-step equations): surviving statement is box 12 → Buzz Aldrin

$3x + 4 = 25, x = 7$ · $4x + 9 = 13, x = 1$ · $3x + 6 = 15, x = 3$ · $2x + 6 = 10, x = 2$ · $2x + 1 = 17, x = 8$ · $4x + 3 = 23, x = 5$ · $6x + 12 = 78, x = 11$ · $4x + 3 = 39, x = 9$ · $2x + 3 = 11, x = 4$ · $3x + 10 = 40, x = 10$ · $4x + 3 = 27, x = 6$