



The Kepler Sabotage

Grade 7 math · Place value, Addition, Subtraction, Multiplication, Missing addends · Reading level grades 7-9

Detective: _____ **Date:** _____

A critical research data drive has been stolen from the core database of the Kepler-88 Orbiting Outpost, threatening to delay the station's deep-space telescope launch. The thief bypassed high-security locks and left behind highly specific physical evidence. As the station's Lead Security Analyst, you must trace the clues and unmask the saboteur before they broadcast the classified files 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 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 SPECIALIZATION	UTILITY GEAR	DOMINANT GLOVE WEAR	HELMET FIBER TRACE	STATION COUNTERMEASURE
Jessica Meir	plasma welder	magnetic gloves	left handed glove wear	static orange strands	sonic frequency pulse
Sunita Williams	laser cutter	EMP grenade	right handed glove wear	static orange strands	sonic frequency pulse
Yuri Gagarin	gravity boots	visor scanner	left handed glove wear	dusty white fibers	sonic frequency pulse
Chris Hadfield	plasma welder	visor scanner	right handed glove wear	singed blue locks	sonic frequency pulse
Neil Armstrong	jetpack harness	oxygen canister	left handed glove wear	singed blue locks	flashbang beam
Alan Shepard	hacking deck	EMP grenade	right handed glove wear	dusty white fibers	flashbang beam
Samantha Cristoforetti	laser cutter	tracker drone	left handed glove wear	singed blue locks	foam trap gel
Valentina Tereshkova	plasma welder	tracker drone	right handed glove wear	dusty white fibers	sonic frequency pulse
Jeanette Epps	plasma welder	visor scanner	right handed glove wear	static orange strands	sonic frequency pulse
Buzz Aldrin	gravity boots	magnetic gloves	left handed glove wear	singed blue locks	flashbang beam
Scott Kelly	jetpack harness	visor scanner	right handed glove wear	dusty white fibers	sonic frequency pulse
Mae Jemison	jetpack harness	magnetic gloves	right handed glove wear	singed blue locks	sonic frequency pulse
Christina Koch	jetpack harness	tracker drone	right handed glove wear	singed blue locks	sonic frequency pulse
Yi So-yeon	gravity boots	EMP grenade	left handed glove wear	static orange strands	sonic frequency pulse
Guion Bluford	gravity boots	EMP grenade	right handed glove wear	singed blue locks	sonic frequency pulse
Peggy Whitson	laser cutter	tracker drone	right handed glove wear	singed blue locks	sonic frequency pulse
John Glenn	hacking deck	tracker drone	right handed glove wear	singed blue locks	foam trap gel
Kalpana Chawla	laser cutter	visor scanner	right handed glove wear	dusty white fibers	flashbang beam
Michael Collins	jetpack harness	tracker drone	left handed glove wear	singed blue locks	flashbang beam
Tim Peake	jetpack harness	visor scanner	left handed glove wear	singed blue locks	sonic frequency pulse
Ellen Ochoa	laser cutter	oxygen canister	left handed glove wear	singed blue locks	foam trap gel

CLUE 1

To unlock the central terminal security log, you must analyze the digit alignment of the system's reboot override passcode.

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

70 9000 5000 60 3000 300 200 70 5000 40 10 8000 200 5000 60 100 200 70

9000 3000 2000 5000 3000 100 5000 600 500 400 10 5000 100 3000 8000 5000

What is the value of the 7 in 18,176? → **T**

What is the value of the 5 in 15,279? → **E**

What is the value of the 3 in 13,470? → **A**

What is the value of the 1 in 67,817? → **R**

What is the value of the 2 in 187,273? → ☐

What is the value of the 2 in 12,369? → **V**

What is the value of the 5 in 17,514? → **P**

What is the value of the 4 in 936,426? → **G**

What is the value of the 1 in 32,135? → **N**

What is the value of the 8 in 48,376? → **D**

What is the value of the 6 in 84,467? → **S**

What is the value of the 3 in 129,361? → **B**

What is the value of the 6 in 55,610? → **M**

What is the value of the 9 in 89,578? → **H**

What is the value of the 4 in 89,743? → **U**

Scratch space:

CLUE 2 Addition

The airlock logs recorded the combined weight of several fuel cells loaded during the getaway, requiring you to sum the cargo manifest.

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

T									T				T				
4836	6424	6200	9659	2426	9659	2683	6200	9687	4836	7852	6200	8633	4836	9259	6200	5412	2731

		T						T						
8753	2717	4836	6424	6200	2731	2672	8493	6424	4836	8493	7852	8753	5272	6200

$3030 + 1806 = \square \rightarrow \boxed{\text{T}}$	$3643 + 6044 = \square \rightarrow \boxed{\text{C}}$	$4888 + 3605 = \square \rightarrow \boxed{\text{G}}$
$5902 + 3757 = \square \rightarrow \boxed{\text{S}}$	$1528 + 1189 = \square \rightarrow \boxed{\text{N}}$	$2859 + 3565 = \square \rightarrow \boxed{\text{H}}$
$2969 + 5664 = \square \rightarrow \boxed{\text{F}}$	$2803 + 5950 = \square \rightarrow \boxed{\text{O}}$	$4842 + 3010 = \square \rightarrow \boxed{\text{L}}$
$1785 + 887 = \square \rightarrow \boxed{\text{I}}$	$3295 + 5964 = \square \rightarrow \boxed{\text{W}}$	$3312 + 2100 = \square \rightarrow \boxed{\text{A}}$
$4165 + 2035 = \square \rightarrow \boxed{\text{E}}$	$3095 + 2177 = \square \rightarrow \boxed{\text{V}}$	$1202 + 1529 = \square \rightarrow \boxed{\text{R}}$
$1105 + 1578 = \square \rightarrow \boxed{\text{P}}$	$1520 + 906 = \square \rightarrow \boxed{\text{U}}$	

Scratch space:

CLUE 3
Subtraction

To determine how much emergency coolant was drained during the breach, you must find the difference between the starting tank level and the current reading.

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

A																			
2962	8225	1561	2496	7282	4046	8608	3562	8347	6107	6727	8347	2496	4046	1030	7832	6727	8591	8225	8347

														A		
8225	8980	6727	2496	2496	8347	4961	8980	3627	8347	5975	7282	8591	8591	2962	7282	2496

$3353 - 391 = \square \rightarrow \text{A}$

$8142 - 1415 = \square \rightarrow \text{U}$

$7081 - 4585 = \square \rightarrow \text{N}$

$12723 - 3743 = \square \rightarrow \text{T}$

$10693 - 2468 = \square \rightarrow \text{S}$

$8246 - 4200 = \square \rightarrow \text{C}$

$7612 - 1505 = \square \rightarrow \text{Q}$

$5228 - 3667 = \square \rightarrow \text{O}$

$11990 - 4158 = \square \rightarrow \text{P}$

$6649 - 674 = \square \rightarrow \text{V}$

$12145 - 4863 = \square \rightarrow \text{I}$

$3666 - 2636 = \square \rightarrow \text{Y}$

$10332 - 1985 = \square \rightarrow \text{E}$

$13531 - 4923 = \square \rightarrow \text{F}$

$7821 - 4194 = \square \rightarrow \text{H}$

$5074 - 113 = \square \rightarrow \text{D}$

$3933 - 371 = \square \rightarrow \text{R}$

$9343 - 752 = \square \rightarrow \text{L}$

Scratch space:

Multiplication facts (1-12)

You intercept a damaged grid readout displaying rows of identical solar battery arrays and need to calculate the total energy units.

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

A number line from 0 to 100. The line is divided into 10 equal segments, each representing 10 units. Below the line, the numbers 36, 12, 60, 32, 77, 55, 20, 96, 90, 77, 96, 21, 33, 25, 36, 49, 77, 80, and 77 are written. Above the line, there are 10 empty boxes. The first box is shaded orange and contains the letter 'S'. The other boxes are empty.

$9 \times 4 = \boxed{} \rightarrow \boxed{\text{S}}$

$$11 \times 1 = \boxed{} \rightarrow \boxed{\mathbf{A}}$$

$$7 \times 3 = \boxed{} \rightarrow \boxed{0}$$

$10 \times 11 = \boxed{} \rightarrow \mathbf{P}$

$11 \times 7 = \boxed{} \rightarrow \boxed{\text{E}}$

$11 \times 5 = \boxed{} \rightarrow \mathbf{D}$

$8 \times 10 = \boxed{} \rightarrow \mathbf{R}$

$10 \times 9 = \boxed{} \rightarrow \boxed{\mathbf{U}}$

$4 \times 7 = \boxed{} \rightarrow \mathbf{T}$

$7 \times 7 =$ $\rightarrow$ **W**

$4 \times 8 =$ $\rightarrow$ **G**

$5 \times 5 =$ $\rightarrow$ **K**

$5 \times 4 = \boxed{} \rightarrow \boxed{\mathbf{B}}$

$2 \times 6 = \boxed{} \rightarrow \boxed{1}$

$8 \times 12 = \boxed{} \rightarrow \boxed{\text{L}}$

$1 \times 3 = \boxed{} \rightarrow \boxed{\text{H}}$

$7 \times 5 = \square \rightarrow \mathbf{F}$

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

$$6 \times 10 = \boxed{} \rightarrow \boxed{\mathbf{N}}$$

Scratch space:

CLUE 5**Missing addends - the last clue**

The power grid requires a precise balance to run the diagnostics, and you must calculate the missing sector wattage to complete the circuit.

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:

$11 + \underline{\quad} = 21$

$37 + \underline{\quad} = 46$

$33 + \underline{\quad} = 38$

$34 + \underline{\quad} = 45$

$11 + \underline{\quad} = 13$

$24 + \underline{\quad} = 25$

$38 + \underline{\quad} = 42$

$19 + \underline{\quad} = 25$

$25 + \underline{\quad} = 33$

$34 + \underline{\quad} = 46$

$36 + \underline{\quad} = 43$

Step 2 - cross out the sentence with each answer:

1. The villain disables the main gravity generator, then hides in the cargo bay shadows.
2. The villain corrupts the main telemetry system, then retreats to the asteroid mining deck.
3. The villain disables the main gravity generator, then flees via an emergency escape pod.
4. The villain reroutes the solar battery power, then flees via an emergency escape pod.
5. The villain overrides the station airlock locks, then hides in the cargo bay shadows.
6. The villain corrupts the main telemetry system, then hides in the cargo bay shadows.
7. The villain corrupts the main telemetry system, then escapes through the maintenance tube.
8. The villain reroutes the solar battery power, then escapes through the maintenance tube.
9. The villain overrides the station airlock locks, then retreats to the asteroid mining deck.
10. The villain reroutes the solar battery power, then retreats to the asteroid mining deck.
11. The villain disables the main gravity generator, then blends into the crew quarters crowd.
12. The villain disables the main gravity generator, then retreats to the asteroid mining deck.

Answer Key

The Kepler Sabotage

Culprit: Chris Hadfield

plasma welder · visor scanner · right handed glove wear · singed blue locks · sonic frequency pulse

Trail: Start 21 → Clue 1 17 → Clue 2 9 → Clue 3 7 → Clue 4 4 → Clue 5 1

Clue 1 (Place value): "THE SABOTEUR DOES NOT HAVE AN EMP GRENADE"

What is the value of the 7 in 18,176? = 70 (T) · What is the value of the 5 in 15,279? = 5000 (E) · What is the value of the 3 in 13,470? = 3000 (A) · What is the value of the 1 in 67,817? = 10 (R) · What is the value of the 2 in 187,273? = 200 (O) · What is the value of the 2 in 12,369? = 2000 (V) · What is the value of the 5 in 17,514? = 500 (P) · What is the value of the 4 in 936,426? = 400 (G) · What is the value of the 1 in 32,135? = 100 (N) · What is the value of the 8 in 48,376? = 8000 (D) · What is the value of the 6 in 84,467? = 60 (S) · What is the value of the 3 in 129,361? = 300 (B) · What is the value of the 6 in 55,610? = 600 (M) · What is the value of the 9 in 89,578? = 9000 (H) · What is the value of the 4 in 89,743? = 40 (U)

Clue 2 (Addition): "THE SUSPECT LEFT WEAR ON THE RIGHT GLOVE"

3030 + 1806 = 4836 (T) · 3643 + 6044 = 9687 (C) · 4888 + 3605 = 8493 (G) · 5902 + 3757 = 9659 (S) · 1528 + 1189 = 2717 (N) · 2859 + 3565 = 6424 (H) · 2969 + 5664 = 8633 (F) · 2803 + 5950 = 8753 (O) · 4842 + 3010 = 7852 (L) · 1785 + 887 = 2672 (I) · 3295 + 5964 = 9259 (W) · 3312 + 2100 = 5412 (A) · 4165 + 2035 = 6200 (E) · 3095 + 2177 = 5272 (V) · 1202 + 1529 = 2731 (R) · 1105 + 1578 = 2683 (P) · 1520 + 906 = 2426 (U)

Clue 3 (Subtraction): "A SONIC FREQUENCY PULSE STUNNED THE VILLAIN"

3353 - 391 = 2962 (A) · 8142 - 1415 = 6727 (U) · 7081 - 4585 = 2496 (N) · 12723 - 3743 = 8980 (T) · 10693 - 2468 = 8225 (S) · 8246 - 4200 = 4046 (C) · 7612 - 1505 = 6107 (Q) · 5228 - 3667 = 1561 (O) · 11990 - 4158 = 7832 (P) · 6649 - 674 = 5975 (V) · 12145 - 4863 = 7282 (I) · 3666 - 2636 = 1030 (Y) · 10332 - 1985 = 8347 (E) · 13531 - 4923 = 8608 (F) · 7821 - 4194 = 3627 (H) · 5074 - 113 = 4961 (D) · 3933 - 371 = 3562 (R) · 9343 - 752 = 8591 (L)

Clue 4 (Multiplication facts (1-12)): "SINGED BLUE LOCKS WERE LEFT ON THE PANEL"

9 × 4 = 36 (S) · 11 × 1 = 11 (A) · 7 × 3 = 21 (O) · 10 × 11 = 110 (P) · 11 × 7 = 77 (E) · 11 × 5 = 55 (D) · 8 × 10 = 80 (R) · 10 × 9 = 90 (U) · 4 × 7 = 28 (T) · 7 × 7 = 49 (W) · 4 × 8 = 32 (G) · 5 × 5 = 25 (K) · 5 × 4 = 20 (B) · 2 × 6 = 12 (I) · 8 × 12 = 96 (L) · 1 × 3 = 3 (H) · 7 × 5 = 35 (F) · 3 × 11 = 33 (C) · 6 × 10 = 60 (N)

Clue 5 (Missing addends): surviving statement is box 3 → Chris Hadfield

11 + ___ = 21 = 10 · 37 + ___ = 46 = 9 · 33 + ___ = 38 = 5 · 34 + ___ = 45 = 11 · 11 + ___ = 13 = 2 · 24 + ___ = 25 = 1 · 38 + ___ = 42 = 4 · 19 + ___ = 25 = 6 · 25 + ___ = 33 = 8 · 34 + ___ = 46 = 12 · 36 + ___ = 43 = 7