The Starlight Orbital Mystery

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

Detective: _____ **Date:** _____

A mysterious phantom has tampered with the lunar crop growth chambers on Starlight Orbital Research Base! Chief Astrobiologist Dr. Vega discovered the environmental controls compromised. Examine the telemetry logs and sensor traces to unmask the station saboteur before the next orbit.

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 Station Saboteur is _____

Possible suspects

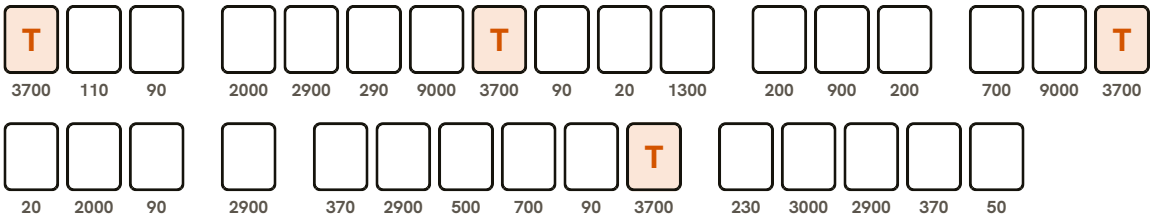
Cross off a row as each clue rules it out. The one left at the end is the culprit.

NAME	PRIMARY GADGET	SECONDARY MODULE	GLOVE HABIT	HELMET TINT	SYSTEM FLAW
Buzz Aldrin	Plasma Torch	Stun Beam	Adjusts Left Cuff	Solar Gold Tint	Low Battery Alarm
Robert Crippen	Sonic Scanner	Cloaking Device	Adjusts Right Cuff	Solar Gold Tint	Low Battery Alarm
Peggy Whitson	Laser Cutter	Stun Beam	Adjusts Right Cuff	Solar Gold Tint	Thermal Overheat
Joan Higginbotham	Laser Cutter	Stun Beam	Adjusts Right Cuff	Neon Blue Tint	Static Interference
Victor Glover	Gravity Boots	EMP Blaster	Adjusts Left Cuff	Cosmic Purple Tint	Low Battery Alarm
Jessica Meir	Gravity Boots	Cloaking Device	Adjusts Right Cuff	Neon Blue Tint	Low Battery Alarm
Guion Bluford	Sonic Scanner	Magnet Clamp	Adjusts Left Cuff	Cosmic Purple Tint	Thermal Overheat
Serena Aunon	Laser Cutter	EMP Blaster	Adjusts Right Cuff	Solar Gold Tint	Low Battery Alarm
Christina Koch	Laser Cutter	Stun Beam	Adjusts Left Cuff	Solar Gold Tint	Static Interference
Michael Collins	Laser Cutter	Cloaking Device	Adjusts Right Cuff	Solar Gold Tint	Low Battery Alarm
Stephanie Wilson	Sonic Scanner	Cloaking Device	Adjusts Right Cuff	Solar Gold Tint	Thermal Overheat
Guy Gardner	Jetpack Thruster	Hologram Projector	Adjusts Right Cuff	Solar Gold Tint	Low Battery Alarm
Bernard Harris	Sonic Scanner	Magnet Clamp	Adjusts Left Cuff	Neon Blue Tint	Thermal Overheat
Ellen Ochoa	Laser Cutter	Hologram Projector	Adjusts Left Cuff	Cosmic Purple Tint	Static Interference
Mae Jemison	Gravity Boots	Magnet Clamp	Adjusts Left Cuff	Neon Blue Tint	Low Battery Alarm
Sunita Williams	Laser Cutter	Cloaking Device	Adjusts Right Cuff	Cosmic Purple Tint	Thermal Overheat
Eileen Collins	Gravity Boots	Magnet Clamp	Adjusts Left Cuff	Solar Gold Tint	Static Interference
Sally Ride	Jetpack Thruster	Magnet Clamp	Adjusts Right Cuff	Neon Blue Tint	Low Battery Alarm
Joseph Acaba	Jetpack Thruster	Hologram Projector	Adjusts Right Cuff	Neon Blue Tint	Static Interference
Chris Hadfield	Gravity Boots	Magnet Clamp	Adjusts Right Cuff	Cosmic Purple Tint	Thermal Overheat
John Glenn	Sonic Scanner	Magnet Clamp	Adjusts Right Cuff	Solar Gold Tint	Low Battery Alarm

CLUE 1 Rounding

> The telemetry radar only displays long distance coordinates rounded to the nearest thousand. Decoding the signal gives us our first clue.

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



Round 3,687 to the nearest hundred ☐ → T

Round 464 to the nearest hundred ☐ → G

Round 2,940 to the nearest hundred ☐ → A

Round 889 to the nearest hundred ☐ → I

Round 198 to the nearest hundred ☐ → D

Round 291 to the nearest ten ☐ → B

Round 231 to the nearest ten ☐ → C

Round 113 to the nearest ten ☐ → H

Round 8,670 to the nearest thousand ☐ → O

Round 24 to the nearest ten ☐ → U

Round 53 to the nearest ten ☐ → P

Round 2,004 to the nearest thousand ☐ → S

Round 2,621 to the nearest thousand ☐ → L

Round 366 to the nearest ten ☐ → M

Round 1,332 to the nearest hundred ☐ → R

Round 737 to the nearest hundred ☐ → N

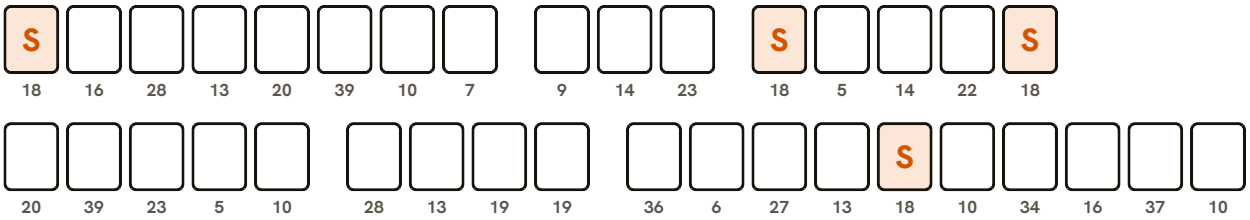
Round 92 to the nearest ten ☐ → E

Scratch space:

CLUE 2 Fractions of a number

> Dr. Vega calculated that a fraction of the power grid was rerouted during the intrusion. Analyzing this portion reveals the extra gear.

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



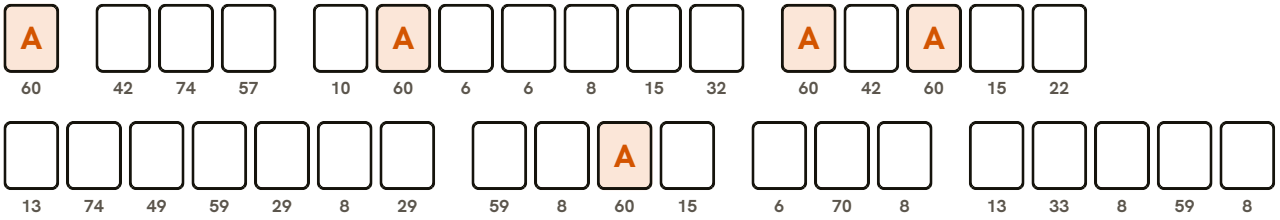
9/10 of 20 = ☐ → S	1/6 of 96 = ☐ → E	2/10 of 170 = ☐ → M
5/10 of 12 = ☐ → D	1/3 of 57 = ☐ → F	1/8 of 112 = ☐ → O
5/10 of 74 = ☐ → N	2/3 of 54 = ☐ → A	9/10 of 30 = ☐ → J
2/4 of 10 = ☐ → H	5/6 of 24 = ☐ → R	1/10 of 70 = ☐ → Y
2/4 of 20 = ☐ → T	2/8 of 156 = ☐ → I	3/6 of 46 = ☐ → G
1/8 of 176 = ☐ → W	1/4 of 36 = ☐ → L	2/6 of 84 = ☐ → C
3/6 of 26 = ☐ → U		

Scratch space:

CLUE 3 Order of operations

To unlock the encrypted security footage, you must evaluate the multi-step code sequence in exact order.

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



28 + 4 × 8 = ☐ → A

24 + 3 × 6 = ☐ → L

2 + 2 × 2 = ☐ → T

4 + 2 × 3 = ☐ → B

29 + 9 × 5 = ☐ → O

43 + 3 × 2 = ☐ → U

12 + 5 × 2 = ☐ → M

8 × 9 - 2 = ☐ → H

31 + 7 × 4 = ☐ → N

6 × 4 - 11 = ☐ → S

13 + 4 × 5 = ☐ → C

8 × 5 - 8 = ☐ → Y

9 × 9 - 24 = ☐ → W

14 + 5 × 3 = ☐ → D

9 × 2 - 10 = ☐ → E

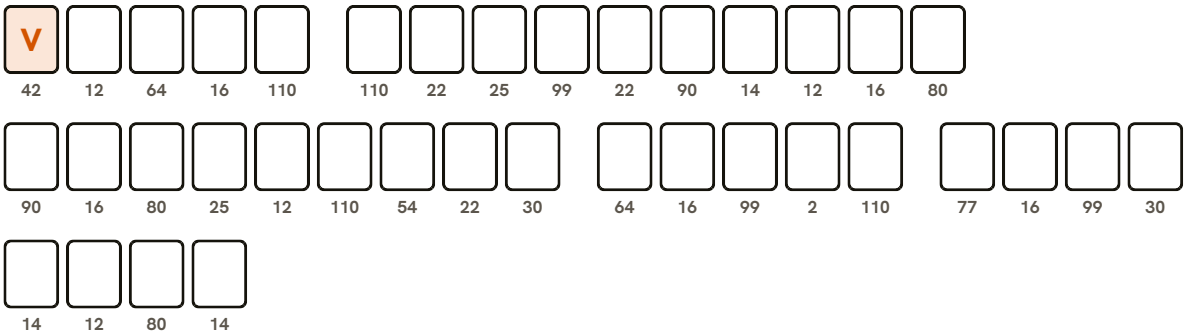
11 × 4 - 29 = ☐ → R

Scratch space:

CLUE 4 Multiplication facts (1-12)

> The intruder passed through several identical solar array corridors, creating repeating signal pulses across the grid.

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



6 × 7 = ☐ → V

2 × 11 = ☐ → E

7 × 11 = ☐ → G

5 × 5 = ☐ → F

8 × 10 = ☐ → N

5 × 6 = ☐ → D

11 × 10 = ☐ → R

2 × 7 = ☐ → T

8 × 2 = ☐ → O

9 × 6 = ☐ → M

9 × 11 = ☐ → L

4 × 3 = ☐ → I

8 × 8 = ☐ → S

2 × 1 = ☐ → A

9 × 10 = ☐ → C

Scratch space:

CLUE 5 Missing addends - the last clue

> Checking the station fuel vault logs shows a missing quantity of helium three needed to balance the energy ledger.

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:

21 + ___ = 32 ☐	22 + ___ = 24 ☐	18 + ___ = 19 ☐	2 + ___ = 5 ☐
19 + ___ = 24 ☐	16 + ___ = 22 ☐	5 + ___ = 12 ☐	39 + ___ = 49 ☐
26 + ___ = 34 ☐	16 + ___ = 28 ☐	26 + ___ = 30 ☐	

Step 2 - cross out the sentence with each answer:

1. The villain breaches the vault seal, then zaps the backup generator.
2. The villain maps the internal sensors, then vanishes into the shadows.
3. The villain slices through the hatch lock, then locks the hull clamps.
4. The villain flies over the security fence, then vanishes into the shadows.
5. The villain maps the internal sensors, then zaps the backup generator.
6. The villain slices through the hatch lock, then zaps the backup generator.
7. The villain maps the internal sensors, then creates a decoy projection.
8. The villain slices through the hatch lock, then creates a decoy projection.
9. The villain breaches the vault seal, then vanishes into the shadows.
10. The villain maps the internal sensors, then freezes the door controls.
11. The villain flies over the security fence, then creates a decoy projection.
12. The villain slices through the hatch lock, then freezes the door controls.

TEACHER / PARENT

Answer Key

The Starlight Orbital Mystery

Culprit: Michael Collins

Laser Cutter · Cloaking Device · Adjusts Right Cuff · Solar Gold Tint · Low Battery Alarm

Trail: Start 21 → Clue 1 14 → Clue 2 10 → Clue 3 5 → Clue 4 4 → Clue 5 1

Clue 1 (Rounding): "THE SABOTEUR DID NOT USE A MAGNET CLAMP"

Round 3,687 to the nearest hundred = 3700 (T) · Round 464 to the nearest hundred = 500 (G) · Round 2,940 to the nearest hundred = 2900 (A) · Round 889 to the nearest hundred = 900 (I) · Round 198 to the nearest hundred = 200 (D) · Round 291 to the nearest ten = 290 (B) · Round 231 to the nearest ten = 230 (C) · Round 113 to the nearest ten = 110 (H) · Round 8,670 to the nearest thousand = 9000 (O) · Round 24 to the nearest ten = 20 (U) · Round 53 to the nearest ten = 50 (P) · Round 2,004 to the nearest thousand = 2000 (S) · Round 2,621 to the nearest thousand = 3000 (L) · Round 366 to the nearest ten = 370 (M) · Round 1,332 to the nearest hundred = 1300 (R) · Round 737 to the nearest hundred = 700 (N) · Round 92 to the nearest ten = 90 (E)

Clue 2 (Fractions of a number): "SECURITY LOG SHOWS RIGHT CUFF ADJUSTMENT"

9/10 of 20 = 18 (S) · 1/6 of 96 = 16 (E) · 2/10 of 170 = 34 (M) · 5/10 of 12 = 6 (D) · 1/3 of 57 = 19 (F) · 1/8 of 112 = 14 (O) · 5/10 of 74 = 37 (N) · 2/3 of 54 = 36 (A) · 9/10 of 30 = 27 (J) · 2/4 of 10 = 5 (H) · 5/6 of 24 = 20 (R) · 1/10 of 70 = 7 (Y) · 2/4 of 20 = 10 (T) · 2/8 of 156 = 39 (I) · 3/6 of 46 = 23 (G) · 1/8 of 176 = 22 (W) · 1/4 of 36 = 9 (L) · 2/6 of 84 = 28 (C) · 3/6 of 26 = 13 (U)

Clue 3 (Order of operations): "A LOW BATTERY ALARM SOUNDED NEAR THE SCENE"

28 + 4 × 8 = 60 (A) · 24 + 3 × 6 = 42 (L) · 2 + 2 × 2 = 6 (T) · 4 + 2 × 3 = 10 (B) · 29 + 9 × 5 = 74 (O) · 43 + 3 × 2 = 49 (U) · 12 + 5 × 2 = 22 (M) · 8 × 9 - 2 = 70 (H) · 31 + 7 × 4 = 59 (N) · 6 × 4 - 11 = 13 (S) · 13 + 4 × 5 = 33 (C) · 8 × 5 - 8 = 32 (Y) · 9 × 9 - 24 = 57 (W) · 14 + 5 × 3 = 29 (D) · 9 × 2 - 10 = 8 (E) · 11 × 4 - 29 = 15 (R)

Clue 4 (Multiplication facts (1-12)): "VISOR REFLECTION CONFIRMED SOLAR GOLD TINT"

6 × 7 = 42 (V) · 2 × 11 = 22 (E) · 7 × 11 = 77 (G) · 5 × 5 = 25 (F) · 8 × 10 = 80 (N) · 5 × 6 = 30 (D) · 11 × 10 = 110 (R) · 2 × 7 = 14 (T) · 8 × 2 = 16 (O) · 9 × 6 = 54 (M) · 9 × 11 = 99 (L) · 4 × 3 = 12 (I) · 8 × 8 = 64 (S) · 2 × 1 = 2 (A) · 9 × 10 = 90 (C)

Clue 5 (Missing addends): surviving statement is box 9 → Michael Collins

21 + ___ = 32 = 11 · 22 + ___ = 24 = 2 · 18 + ___ = 19 = 1 · 2 + ___ = 5 = 3 · 19 + ___ = 24 = 5 · 16 + ___ = 22 = 6 · 5 + ___ = 12 = 7 · 39 + ___ = 49 = 10 · 26 + ___ = 34 = 8 · 16 + ___ = 28 = 12 · 26 + ___ = 30 = 4