The Astra Nebula Sabotage

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

Detective: _____ **Date:** _____

The experimental Starcore Generator has been stolen from the heart of the Astra Nebula Outpost! With the station running on emergency backup power, the crew is counting on you to crack the case. Decode the space logs and use your math skills to identify the saboteur before our orbit decays!

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

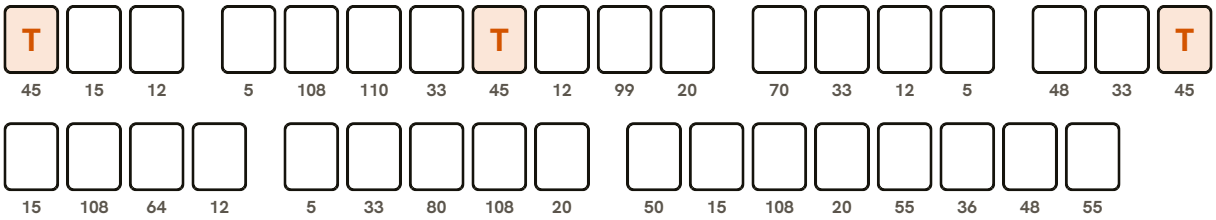
Cross off a row as each clue rules it out. The one left at the end is the culprit.

NAME	PRIMARY ABILITY	SPECIALIZED GEAR	OBSERVED SCAN	VISOR HAIR SAMPLE	DEFENSIVE COUNTER
Kalpana Chawla	Laser Welding	Meteor Shielding	Wears Left Wrist Computer	Floating Blue Hair	Flashbang Flare
Yi So-yeon	Holographic Mimicry	Magneto Walking	Wears Left Wrist Computer	Floating Blue Hair	EMP Blast
Gennady Padalka	Holographic Mimicry	Meteor Shielding	Wears Right Wrist Computer	Cropped Silver Hair	Magnetic Trap
Helen Sharman	Gravity Manipulation	Jetpack Thrusting	Wears Right Wrist Computer	Floating Blue Hair	Flashbang Flare
Buzz Aldrin	Plasma Venting	Meteor Shielding	Wears Left Wrist Computer	Cropped Silver Hair	Flashbang Flare
Tim Peake	Warp Tunneling	Magneto Walking	Wears Left Wrist Computer	Cropped Silver Hair	EMP Blast
Sally Ride	Warp Tunneling	Magneto Walking	Wears Right Wrist Computer	Floating Blue Hair	Flashbang Flare
Mae Jemison	Plasma Venting	Meteor Shielding	Wears Right Wrist Computer	Floating Blue Hair	Magnetic Trap
Ellen Ochoa	Plasma Venting	Cybernetic Hacking	Wears Right Wrist Computer	Neon Green Mohawks	EMP Blast
Guion Bluford	Plasma Venting	Cybernetic Hacking	Wears Left Wrist Computer	Floating Blue Hair	EMP Blast
Alan Shepard	Warp Tunneling	Magneto Walking	Wears Left Wrist Computer	Floating Blue Hair	EMP Blast
Scott Kelly	Warp Tunneling	Solar Charging	Wears Right Wrist Computer	Floating Blue Hair	Magnetic Trap
Yuri Gagarin	Laser Welding	Jetpack Thrusting	Wears Left Wrist Computer	Cropped Silver Hair	Flashbang Flare
John Glenn	Laser Welding	Magneto Walking	Wears Left Wrist Computer	Cropped Silver Hair	EMP Blast
Peggy Whitson	Warp Tunneling	Solar Charging	Wears Left Wrist Computer	Floating Blue Hair	EMP Blast
Sunita Williams	Laser Welding	Meteor Shielding	Wears Right Wrist Computer	Floating Blue Hair	EMP Blast
Guy Laliberte	Plasma Venting	Meteor Shielding	Wears Right Wrist Computer	Cropped Silver Hair	Magnetic Trap
Michael Collins	Gravity Manipulation	Meteor Shielding	Wears Left Wrist Computer	Neon Green Mohawks	EMP Blast
Chris Hadfield	Plasma Venting	Cybernetic Hacking	Wears Right Wrist Computer	Floating Blue Hair	EMP Blast
Anousheh Ansari	Warp Tunneling	Cybernetic Hacking	Wears Left Wrist Computer	Floating Blue Hair	EMP Blast
Charles Bolden	Gravity Manipulation	Meteor Shielding	Wears Right Wrist Computer	Floating Blue Hair	Flashbang Flare

CLUE 1 Multiplication facts (1-12)

> We found a grid of discarded fuel cells left behind by the intruder. Count the total cells by multiplying the rows by the columns to unlock the security log!

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



9 × 5 = ☐ → T	10 × 5 = ☐ → C	9 × 12 = ☐ → A
8 × 8 = ☐ → V	5 × 1 = ☐ → S	9 × 11 = ☐ → U
3 × 11 = ☐ → O	8 × 10 = ☐ → L	11 × 5 = ☐ → G
5 × 3 = ☐ → H	9 × 4 = ☐ → I	4 × 12 = ☐ → N
10 × 7 = ☐ → D	11 × 10 = ☐ → B	6 × 2 = ☐ → E
		4 × 5 = ☐ → R

Scratch space:

CLUE 2 Fractions of a number

> The saboteur broke into the supply bay and took a specific fraction of our star-maps. Calculate the exact fraction of maps stolen to reveal the villain's escape route.

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

L																			
8	30	33	19	34	18	17	11	19	16	39	22	23	5	19	30	18			

	L																	
25	8	39	34	30	2	17	21	19	38	30	2	32	18	31	21	30	11	11

1/6 of 48 = ☐ → L

3/5 of 55 = ☐ → F

4/10 of 75 = ☐ → E

2/6 of 93 = ☐ → K

5/10 of 68 = ☐ → W

6/10 of 65 = ☐ → O

1/6 of 102 = ☐ → I

1/5 of 105 = ☐ → N

1/4 of 92 = ☐ → P

1/5 of 190 = ☐ → H

1/3 of 48 = ☐ → C

1/2 of 10 = ☐ → U

5/10 of 4 = ☐ → D

5/10 of 38 = ☐ → T

2/6 of 96 = ☐ → A

1/4 of 100 = ☐ → G

2/8 of 88 = ☐ → M

1/10 of 110 = ☐ → S

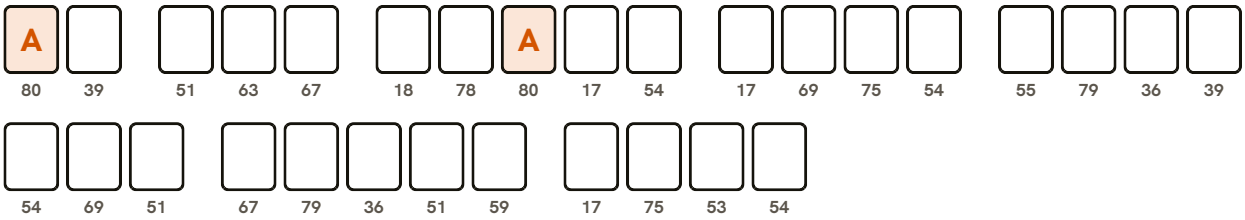
2/4 of 36 = ☐ → R

Scratch space:

CLUE 3 Order of operations

> To bypass the encrypted airlock door, we must solve a multi-step equation. Follow the proper order of operations to crack the code and find the next clue.

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



59 + 7 × 3 = ☐ → A

31 + 7 × 4 = ☐ → R

9 × 10 - 27 = ☐ → M

7 × 9 - 10 = ☐ → I

25 + 9 × 6 = ☐ → O

11 × 5 - 19 = ☐ → W

2 × 9 - 1 = ☐ → S

11 × 9 - 24 = ☐ → U

46 + 2 × 4 = ☐ → T

6 + 3 × 4 = ☐ → B

10 × 7 - 19 = ☐ → E

15 + 8 × 5 = ☐ → D

9 × 11 - 30 = ☐ → H

6 × 8 - 9 = ☐ → N

9 × 11 - 21 = ☐ → L

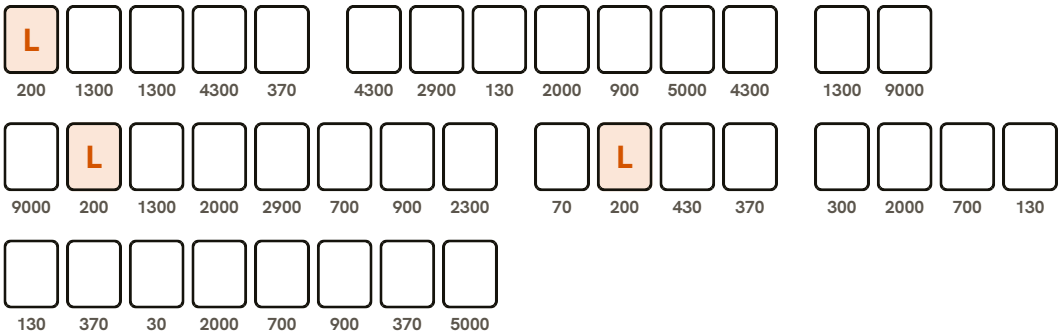
37 + 6 × 5 = ☐ → P

Scratch space:

CLUE 4 Rounding

> Our tracking radar is fuzzy, showing only a rounded distance to the runner's pod. Round this coordinate to the nearest hundred to isolate their tracking signature.

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



Round 193 to the nearest hundred ☐ → **L**

Round 132 to the nearest ten ☐ → **R**

Round 8,604 to the nearest thousand ☐ → **F**

Round 429 to the nearest ten ☐ → **U**

Round 858 to the nearest hundred ☐ → **N**

Round 2,083 to the nearest thousand ☐ → **A**

Round 665 to the nearest hundred ☐ → **I**

Round 5,138 to the nearest thousand ☐ → **D**

Round 2,261 to the nearest hundred ☐ → **G**

Round 1,266 to the nearest hundred ☐ → **O**

Round 4,254 to the nearest hundred ☐ → **S**

Round 372 to the nearest ten ☐ → **E**

Round 34 to the nearest ten ☐ → **M**

Round 2,921 to the nearest hundred ☐ → **T**

Round 265 to the nearest hundred ☐ → **H**

Round 70 to the nearest ten ☐ → **B**

Scratch space:

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

> We recovered a crate of power canisters dropped during the getaway. If we divide these evenly among our patrol drones, how many does each drone get?

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:

99 ÷ 9 = ☐	27 ÷ 9 = ☐	14 ÷ 7 = ☐	20 ÷ 4 = ☐	10 ÷ 10 = ☐
56 ÷ 7 = ☐	81 ÷ 9 = ☐	120 ÷ 12 = ☐	49 ÷ 7 = ☐	60 ÷ 5 = ☐
42 ÷ 7 = ☐				

Step 2 - cross out the sentence with each answer:

1. The villain welds the emergency exit shut with a laser, then blasts away with a jetpack.
2. The villain tears a warp tunnel through the bulkhead, then magneto walks up the outer hull.
3. The villain creates a holographic duplicate of himself, then magneto walks up the outer hull.
4. The villain tears a warp tunnel through the bulkhead, then hacks the security mainframe.
5. The villain creates a holographic duplicate of himself, then hacks the security mainframe.
6. The villain manipulates the local gravity field, then absorbs energy from the solar panels.
7. The villain manipulates the local gravity field, then magneto walks up the outer hull.
8. The villain welds the emergency exit shut with a laser, then magneto walks up the outer hull.
9. The villain manipulates the local gravity field, then hacks the security mainframe.
10. The villain creates a holographic duplicate of himself, then blasts away with a jetpack.
11. The villain vents superheated plasma into the hall, then hacks the security mainframe.
12. The villain tears a warp tunnel through the bulkhead, then blocks the pursuit with meteor shields.

TEACHER / PARENT

Answer Key

The Astra Nebula Sabotage

Culprit: Anousheh Ansari

Warp Tunneling · Cybernetic Hacking · Wears Left Wrist Computer · Floating Blue Hair · EMP Blast

Trail: Start 21 → Clue 1 19 → Clue 2 10 → Clue 3 7 → Clue 4 4 → Clue 5 1

Clue 1 (Multiplication facts (1-12)): "THE SABOTEUR DOES NOT HAVE SOLAR CHARGING"

9 × 5 = 45 (T) · 10 × 5 = 50 (C) · 9 × 12 = 108 (A) · 8 × 8 = 64 (V) · 5 × 1 = 5 (S) · 9 × 11 = 99 (U) · 3 × 11 = 33 (O) · 8 × 10 = 80 (L) · 11 × 5 = 55 (G) · 5 × 3 = 15 (H) · 9 × 4 = 36 (I) · 4 × 12 = 48 (N) · 4 × 5 = 20 (R) · 10 × 7 = 70 (D) · 11 × 10 = 110 (B) · 6 × 2 = 12 (E)

Clue 2 (Fractions of a number): "LEFT WRIST COMPUTER GLOWED IN THE DARKNESS"

1/6 of 48 = 8 (L) · 3/5 of 55 = 33 (F) · 4/10 of 75 = 30 (E) · 2/6 of 93 = 31 (K) · 5/10 of 68 = 34 (W) · 6/10 of 65 = 39 (O) · 1/6 of 102 = 17 (I) · 1/5 of 105 = 21 (N) · 1/4 of 92 = 23 (P) · 1/5 of 190 = 38 (H) · 1/3 of 48 = 16 (C) · 1/2 of 10 = 5 (U) · 5/10 of 4 = 2 (D) · 5/10 of 38 = 19 (T) · 2/6 of 96 = 32 (A) · 1/4 of 100 = 25 (G) · 2/8 of 88 = 22 (M) · 1/10 of 110 = 11 (S) · 2/4 of 36 = 18 (R)

Clue 3 (Order of operations): "AN EMP BLAST SHUT DOWN THE POWER SUIT"

59 + 7 × 3 = 80 (A) · 31 + 7 × 4 = 59 (R) · 9 × 10 - 27 = 63 (M) · 7 × 9 - 10 = 53 (I) · 25 + 9 × 6 = 79 (O) · 11 × 5 - 19 = 36 (W) · 2 × 9 - 1 = 17 (S) · 11 × 9 - 24 = 75 (U) · 46 + 2 × 4 = 54 (T) · 6 + 3 × 4 = 18 (B) · 10 × 7 - 19 = 51 (E) · 15 + 8 × 5 = 55 (D) · 9 × 11 - 30 = 69 (H) · 6 × 8 - 9 = 39 (N) · 9 × 11 - 21 = 78 (L) · 37 + 6 × 5 = 67 (P)

Clue 4 (Rounding): "LOOSE STRANDS OF FLOATING BLUE HAIR REMAINED"

Round 193 to the nearest hundred = 200 (L) · Round 132 to the nearest ten = 130 (R) · Round 8,604 to the nearest thousand = 9000 (F) · Round 429 to the nearest ten = 430 (U) · Round 858 to the nearest hundred = 900 (N) · Round 2,083 to the nearest thousand = 2000 (A) · Round 665 to the nearest hundred = 700 (I) · Round 5,138 to the nearest thousand = 5000 (D) · Round 2,261 to the nearest hundred = 2300 (G) · Round 1,266 to the nearest hundred = 1300 (O) · Round 4,254 to the nearest hundred = 4300 (S) · Round 372 to the nearest ten = 370 (E) · Round 34 to the nearest ten = 30 (M) · Round 2,921 to the nearest hundred = 2900 (T) · Round 265 to the nearest hundred = 300 (H) · Round 70 to the nearest ten = 70 (B)

Clue 5 (Division facts (1-12)): surviving statement is box 4 → Anousheh Ansari

99 ÷ 9 = 11 · 27 ÷ 9 = 3 · 14 ÷ 7 = 2 · 20 ÷ 4 = 5 · 10 ÷ 10 = 1 · 56 ÷ 7 = 8 · 81 ÷ 9 = 9 · 120 ÷ 12 = 10 · 49 ÷ 7 = 7 · 60 ÷ 5 = 12 · 42 ÷ 7 = 6