The Sabotage on Station Aethelgard

Grade 7 math · Integers, Percentages, Order of operations, Exponents, Missing addends · Reading level grades 7-9

Detective: _____ **Date:** _____

When essential navigational telemetry went dark across Sector 7, command traced the outage to a deliberate breach in the primary communications array. Detectives must analyze log entries and station evidence to identify which crew member compromised the orbital grid.

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.

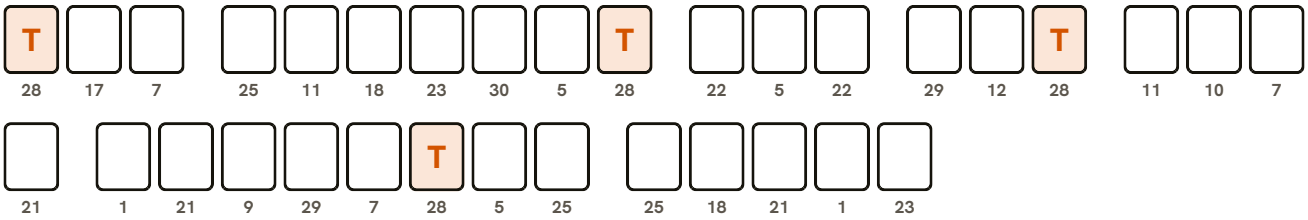
NAME	PRIMARY TOOL	BACKUP GEAR	OBSERVED HABIT	VISOR TINT	SYSTEM HAZARD
Agent Cross	Laser Cutter	Thruster Pack	Adjusts Visor	Gold Tint	Solar Flare
Major Drake	Plasma Torch	Stasis Field	Checks Wrist Gauge	Clear Tint	Static Shock
Sergeant Frost	Sonic Drill	Magnetic Clamp	Checks Wrist Gauge	Clear Tint	Low Oxygen
Cadet Rhys	Laser Cutter	Gravity Boots	Adjusts Visor	Blue Tint	Static Shock
Pilot Sterling	Plasma Torch	Stasis Field	Adjusts Visor	Clear Tint	Solar Flare
Director Stone	Thermal Welder	Stasis Field	Checks Wrist Gauge	Clear Tint	Solar Flare
Lieutenant Vega	Ion Beam	Gravity Boots	Checks Wrist Gauge	Blue Tint	Low Oxygen
Engineer Tanaka	Plasma Torch	Gravity Boots	Checks Wrist Gauge	Clear Tint	Solar Flare
Specialist Nova	Plasma Torch	Gravity Boots	Checks Wrist Gauge	Gold Tint	Static Shock
Analyst Quinn	Sonic Drill	Drone Swarm	Adjusts Visor	Blue Tint	Static Shock
Ranger Holt	Laser Cutter	Gravity Boots	Checks Wrist Gauge	Clear Tint	Solar Flare
Doctor Vance	Thermal Welder	Magnetic Clamp	Checks Wrist Gauge	Clear Tint	Solar Flare
Tech Yuri	Sonic Drill	Stasis Field	Checks Wrist Gauge	Blue Tint	Solar Flare
Navigator Sol	Ion Beam	Magnetic Clamp	Checks Wrist Gauge	Clear Tint	Solar Flare
Captain Mercer	Laser Cutter	Gravity Boots	Checks Wrist Gauge	Blue Tint	Solar Flare
Operator Kane	Laser Cutter	Gravity Boots	Adjusts Visor	Gold Tint	Solar Flare
Professor Orion	Ion Beam	Stasis Field	Checks Wrist Gauge	Gold Tint	Static Shock
Warden Cole	Laser Cutter	Drone Swarm	Checks Wrist Gauge	Clear Tint	Solar Flare
Officer Chen	Laser Cutter	Magnetic Clamp	Adjusts Visor	Blue Tint	Static Shock
Commander Hayes	Plasma Torch	Stasis Field	Adjusts Visor	Blue Tint	Low Oxygen
Chief Connor	Ion Beam	Magnetic Clamp	Checks Wrist Gauge	Blue Tint	Low Oxygen

make your own at mathcrackers.com

CLUE 1 Integers

> The station mainframes recorded fluctuating sub-zero temperature differentials across breached compartments during the incident.

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



(-4) + 32 = ☐ → **T**

(-6) + 17 = ☐ → **U**

(-3) + 4 = ☐ → **M**

8 - (-10) = ☐ → **L**

(-15) + 20 = ☐ → **I**

(-8) + 15 = ☐ → **E**

21 - (-1) = ☐ → **D**

4 - (-5) = ☐ → **G**

20 - (-5) = ☐ → **C**

(-6) + 27 = ☐ → **A**

(-1) + 18 = ☐ → **H**

17 - (-12) = ☐ → **N**

(-2) + 32 = ☐ → **R**

(-5) + 15 = ☐ → **S**

(-15) + 27 = ☐ → **O**

18 - (-5) = ☐ → **P**

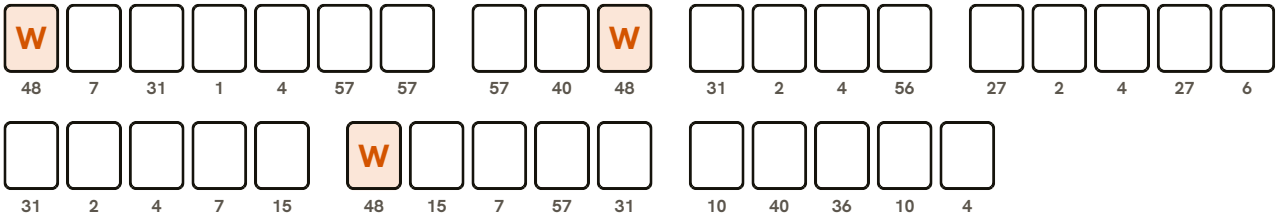
Scratch space:

CLUE 2

Percentages

Engineers computed emergency battery percentages required to keep secondary life support operational.

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



20% of 240 = ☐ → W

25% of 108 = ☐ → C

40% of 140 = ☐ → M

40% of 10 = ☐ → E

60% of 25 = ☐ → R

60% of 10 = ☐ → K

20% of 155 = ☐ → T

75% of 48 = ☐ → U

25% of 40 = ☐ → G

20% of 35 = ☐ → I

40% of 100 = ☐ → A

10% of 20 = ☐ → H

50% of 2 = ☐ → N

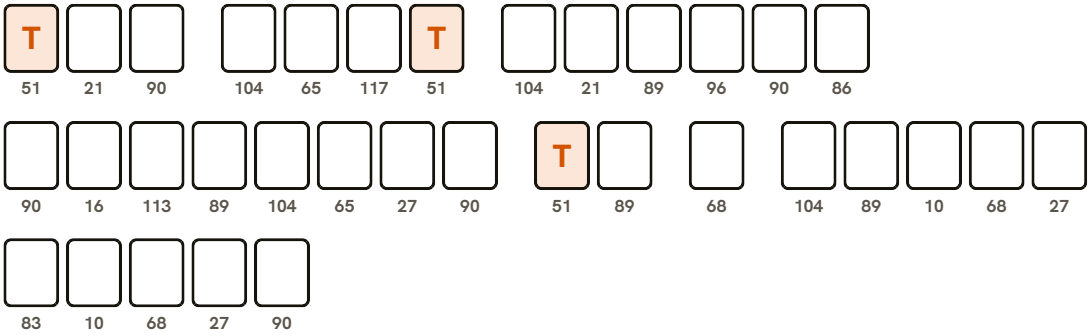
60% of 95 = ☐ → S

Scratch space:

CLUE 3 Order of operations

Orbital tracking computers calculated complex flight trajectories using standard order of operations rules.

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



43 + 4 × 2 = ☐ → T

59 + 4 × 6 = ☐ → F

72 + 8 × 3 = ☐ → W

9 × 12 - 22 = ☐ → D

97 + 4 × 4 = ☐ → P

8 × 11 - 23 = ☐ → U

10 × 12 - 3 = ☐ → I

5 + 7 × 9 = ☐ → A

1 + 5 × 4 = ☐ → H

9 × 12 - 19 = ☐ → O

42 + 6 × 8 = ☐ → E

4 + 3 × 2 = ☐ → L

2 + 7 × 2 = ☐ → X

6 × 8 - 21 = ☐ → R

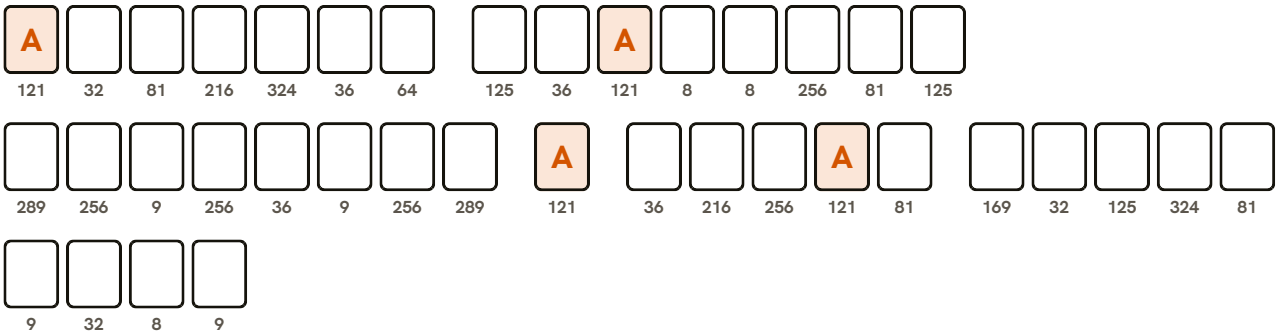
10 × 11 - 6 = ☐ → S

Scratch space:

CLUE 4 Exponents

> Data transmission logs revealed exponential increases in signal bandwidth during unauthorized broadcast bursts.

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



11^2 = ☐ → A

5^3 = ☐ → S

17^2 = ☐ → D

3^2 = ☐ → T

18^2 = ☐ → O

2^5 = ☐ → I

16^2 = ☐ → E

2^3 = ☐ → N

9^2 = ☐ → R

13^2 = ☐ → V

6^2 = ☐ → C

2^6 = ☐ → K

6^3 = ☐ → L

Scratch space:

CLUE 5

Missing addends - the last clue

Quartermasters audited remaining oxygen canisters against total inventory baselines to find the missing stock.

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:

2 + ___ = 5 ☐	3 + ___ = 8 ☐	10 + ___ = 22 ☐	12 + ___ = 16 ☐
36 + ___ = 43 ☐	33 + ___ = 35 ☐	40 + ___ = 49 ☐	18 + ___ = 26 ☐
4 + ___ = 14 ☐	35 + ___ = 46 ☐	33 + ___ = 39 ☐	

Step 2 - cross out the sentence with each answer:

1. The villain sliced the main power conduit, then latched on with gravity boots.
2. The villain cut through the hull hatch, then secured cargo with a magnetic clamp.
3. The villain sliced the main power conduit, then controlled a drone swarm.
4. The villain cut through the hull hatch, then escaped using a thruster pack.
5. The villain cut through the hull hatch, then latched on with gravity boots.
6. The villain welded the emergency exit shut, then escaped using a thruster pack.
7. The villain sliced the main power conduit, then secured cargo with a magnetic clamp.
8. The villain drilled into the storage vault, then escaped using a thruster pack.
9. The villain welded the emergency exit shut, then latched on with gravity boots.
10. The villain blasted the comms relay, then escaped using a thruster pack.
11. The villain welded the emergency exit shut, then secured cargo with a magnetic clamp.
12. The villain welded the emergency exit shut, then trapped guards in a stasis field.

TEACHER / PARENT

Answer Key

The Sabotage on Station Aethelgard

Culprit: Ranger Holt

Laser Cutter · Gravity Boots · Checks Wrist Gauge · Clear Tint · Solar Flare

Trail: Start 21 → Clue 1 16 → Clue 2 10 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Integers): "THE CULPRIT DID NOT USE A MAGNETIC CLAMP"

(-4) + 32 = 28 (T) · (-6) + 17 = 11 (U) · (-3) + 4 = 1 (M) · 8 - (-10) = 18 (L) · (-15) + 20 = 5 (I) · (-8) + 15 = 7 (E) · 21 - (-1) = 22 (D) · 4 - (-5) = 9 (G) · 20 - (-5) = 25 (C) · (-6) + 27 = 21 (A) · (-1) + 18 = 17 (H) · 17 - (-12) = 29 (N) · (-2) + 32 = 30 (R) · (-5) + 15 = 10 (S) · (-15) + 27 = 12 (O) · 18 - (-5) = 23 (P)

Clue 2 (Percentages): "WITNESS SAW THEM CHECK THEIR WRIST GAUGE"

20% of 240 = 48 (W) · 25% of 108 = 27 (C) · 40% of 140 = 56 (M) · 40% of 10 = 4 (E) · 60% of 25 = 15 (R) · 60% of 10 = 6 (K) · 20% of 155 = 31 (T) · 75% of 48 = 36 (U) · 25% of 40 = 10 (G) · 20% of 35 = 7 (I) · 40% of 100 = 40 (A) · 10% of 20 = 2 (H) · 50% of 2 = 1 (N) · 60% of 95 = 57 (S)

Clue 3 (Order of operations): "THE SUIT SHOWED EXPOSURE TO A SOLAR FLARE"

43 + 4 × 2 = 51 (T) · 59 + 4 × 6 = 83 (F) · 72 + 8 × 3 = 96 (W) · 9 × 12 - 22 = 86 (D) · 97 + 4 × 4 = 113 (P) · 8 × 11 - 23 = 65 (U) · 10 × 12 - 3 = 117 (I) · 5 + 7 × 9 = 68 (A) · 1 + 5 × 4 = 21 (H) · 9 × 12 - 19 = 89 (O) · 42 + 6 × 8 = 90 (E) · 4 + 3 × 2 = 10 (L) · 2 + 7 × 2 = 16 (X) · 6 × 8 - 21 = 27 (R) · 10 × 11 - 6 = 104 (S)

Clue 4 (Exponents): "AIRLOCK SCANNERS DETECTED A CLEAR VISOR TINT"

11^2 = 121 (A) · 5^3 = 125 (S) · 17^2 = 289 (D) · 3^2 = 9 (T) · 18^2 = 324 (O) · 2^5 = 32 (I) · 16^2 = 256 (E) · 2^3 = 8 (N) · 9^2 = 81 (R) · 13^2 = 169 (V) · 6^2 = 36 (C) · 2^6 = 64 (K) · 6^3 = 216 (L)

Clue 5 (Missing addends): surviving statement is box 1 → Ranger Holt

2 + ___ = 5 = 3 · 3 + ___ = 8 = 5 · 10 + ___ = 22 = 12 · 12 + ___ = 16 = 4 · 36 + ___ = 43 = 7 · 33 + ___ = 35 = 2 · 40 + ___ = 49 = 9 · 18 + ___ = 26 = 8 · 4 + ___ = 14 = 10 · 35 + ___ = 46 = 11 · 33 + ___ = 39 = 6