The Sky Citadel Heist

Grade 7 math · Integers, Percentages, Order of operations, Exponents, Two-step equations · Reading level grades 7-9

Detective: _____ **Date:** _____

During a midnight flight over the floating islands, a rogue intruder broke into the chart room and stole the golden skymap. Detective, analyze the flight logs and gear reports to unmask the intruder!

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 rogue sky pirate is _____

Possible suspects

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

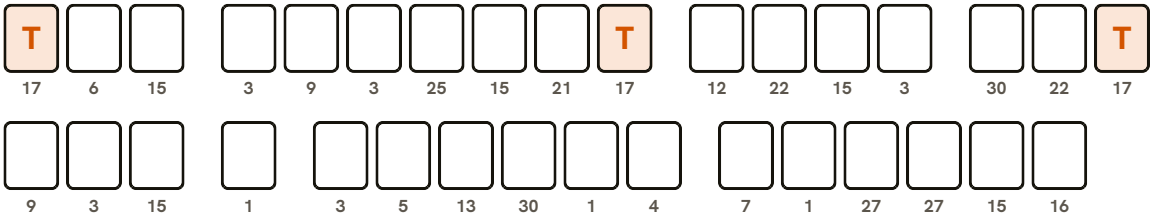
NAME	PRIMARY GEAR	SECONDARY TOOL	ATTIRE DETAIL	HAIRSTYLE	COUNTERMEASURE
Quartermaster Iris	EMP Blast	Sonic Whistle	Fabric Gauntlets	Spiky Raven Hair	Distracted By Bright Light
Captain Sterling	Grapple Hook	Signal Jammer	Fabric Gauntlets	Braided Auburn Hair	Stopped By Loud Chimes
Navigator Skye	Glider Wings	Sonic Whistle	Leather Gloves	Braided Auburn Hair	Stopped By Loud Chimes
Radio Specialist Nora	Glider Wings	Signal Jammer	Leather Gloves	Swept Silver Hair	Distracted By Bright Light
Captain Vance	Glider Wings	Magnetic Boots	Fabric Gauntlets	Braided Auburn Hair	Stopped By Loud Chimes
Surveyor Tessa	Sound Wave	Night Visor	Fabric Gauntlets	Spiky Raven Hair	Distracted By Bright Light
Observer Cole	Sound Wave	Sonic Whistle	Fabric Gauntlets	Braided Auburn Hair	Distracted By Bright Light
Officer Flynn	Sound Wave	Sonic Whistle	Fabric Gauntlets	Spiky Raven Hair	Stopped By Loud Chimes
Cadet Zeke	EMP Blast	Night Visor	Fabric Gauntlets	Swept Silver Hair	Trapped By Heavy Nets
Pilot Ember	EMP Blast	Radar Tracker	Fabric Gauntlets	Braided Auburn Hair	Trapped By Heavy Nets
Pilot Jax	EMP Blast	Sonic Whistle	Leather Gloves	Swept Silver Hair	Trapped By Heavy Nets
Engineer Leo	Grapple Hook	Magnetic Boots	Fabric Gauntlets	Spiky Raven Hair	Trapped By Heavy Nets
Navigator Orion	Sound Wave	Night Visor	Leather Gloves	Braided Auburn Hair	Trapped By Heavy Nets
Helmsman Ben	Grapple Hook	Sonic Whistle	Leather Gloves	Spiky Raven Hair	Stopped By Loud Chimes
Mechanic Rex	Sound Wave	Night Visor	Fabric Gauntlets	Braided Auburn Hair	Stopped By Loud Chimes
Chief Harlan	Smoke Flare	Magnetic Boots	Leather Gloves	Braided Auburn Hair	Distracted By Bright Light
Air Marshal Drake	Smoke Flare	Night Visor	Fabric Gauntlets	Spiky Raven Hair	Stopped By Loud Chimes
Scout Maya	EMP Blast	Signal Jammer	Leather Gloves	Braided Auburn Hair	Distracted By Bright Light
Sentry Silas	Sound Wave	Radar Tracker	Fabric Gauntlets	Braided Auburn Hair	Stopped By Loud Chimes
Engineer Piper	Grapple Hook	Magnetic Boots	Fabric Gauntlets	Braided Auburn Hair	Stopped By Loud Chimes
Cadet Rosa	Smoke Flare	Night Visor	Leather Gloves	Braided Auburn Hair	Trapped By Heavy Nets

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CLUE 1 Integers

> The airship altimeter logged several sudden climbs and drops above sea level during the night flight.

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



(-13) + 30 = ☐ → T

(-14) + 26 = ☐ → D

(-11) + 36 = ☐ → P

(-10) + 26 = ☐ → R

24 - (-3) = ☐ → M

(-4) + 5 = ☐ → A

(-10) + 32 = ☐ → O

(-9) + 30 = ☐ → C

(-13) + 18 = ☐ → I

6 - (-3) = ☐ → U

(-7) + 10 = ☐ → S

(-3) + 7 = ☐ → L

(-6) + 12 = ☐ → H

(-13) + 20 = ☐ → J

(-12) + 25 = ☐ → G

(-8) + 38 = ☐ → N

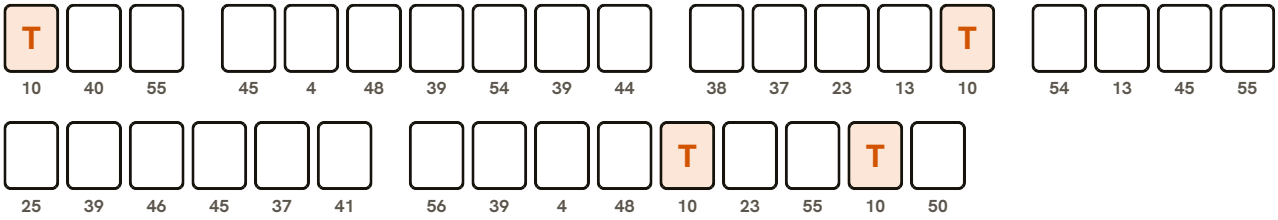
4 - (-11) = ☐ → E

Scratch space:

CLUE 2 Percentages

A flight log revealed what portion of the airship reserve fuel tank was drained during the heist.

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



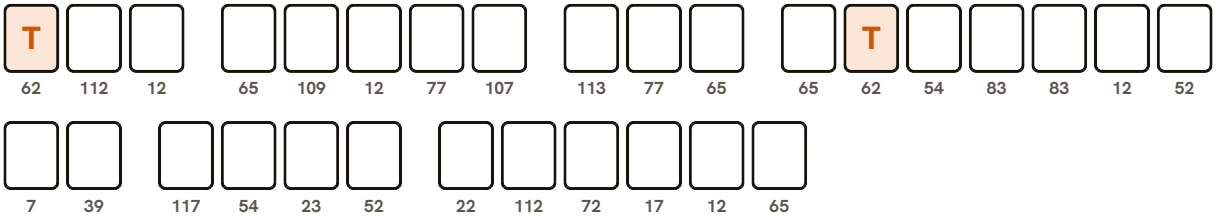
5% of 200 = ☐ → T	10% of 380 = ☐ → P	20% of 275 = ☐ → E
20% of 250 = ☐ → S	50% of 74 = ☐ → I	25% of 92 = ☐ → L
60% of 80 = ☐ → N	20% of 220 = ☐ → Y	60% of 90 = ☐ → W
10% of 410 = ☐ → C	20% of 195 = ☐ → A	40% of 10 = ☐ → U
25% of 184 = ☐ → B	10% of 560 = ☐ → G	60% of 75 = ☐ → R
5% of 260 = ☐ → O	40% of 100 = ☐ → H	50% of 50 = ☐ → F

Scratch space:

CLUE 3 Order of operations

> The bridge console required solving a sequence of prioritized gear rotations to unlock the security log.

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



38 + 4 × 6 = ☐ → T

21 + 7 × 8 = ☐ → A

7 × 7 - 10 = ☐ → Y

4 × 11 - 22 = ☐ → C

32 + 4 × 5 = ☐ → D

12 × 11 - 19 = ☐ → W

48 + 5 × 7 = ☐ → P

10 × 12 - 13 = ☐ → K

36 + 9 × 2 = ☐ → O

12 × 4 - 25 = ☐ → U

10 × 12 - 8 = ☐ → H

93 + 4 × 6 = ☐ → L

1 + 3 × 2 = ☐ → B

3 + 3 × 3 = ☐ → E

11 × 11 - 12 = ☐ → N

5 + 4 × 3 = ☐ → M

68 + 2 × 2 = ☐ → I

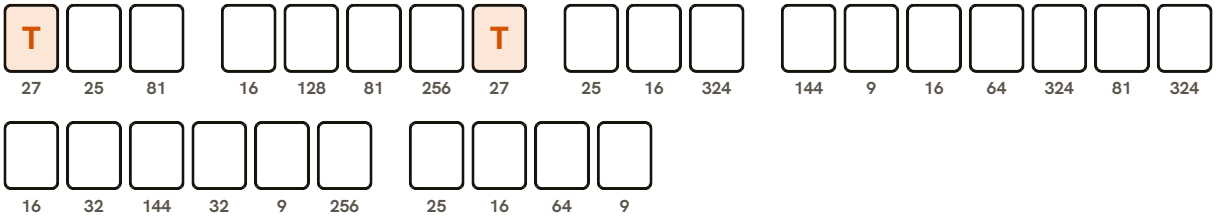
41 + 8 × 3 = ☐ → S

Scratch space:

CLUE 4 Exponents

> Sensors tracked a rapidly expanding signal sphere that multiplied in power every second.

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



3^3 = ☐ → T	3^2 = ☐ → R	18^2 = ☐ → D	2^4 = ☐ → A
2^7 = ☐ → G	2^5 = ☐ → U	2^8 = ☐ → N	2^6 = ☐ → I
9^2 = ☐ → E	5^2 = ☐ → H	12^2 = ☐ → B	

Scratch space:

CLUE 5 Two-step equations - the last clue

> The crew calculated the culprit flight time using air resistance coefficients and engine thruster values.

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:

5x + 2 = 57, x = ☐	3x + 8 = 35, x = ☐	4x + 4 = 24, x = ☐	6x + 2 = 20, x = ☐
4x + 6 = 10, x = ☐	5x + 11 = 41, x = ☐	4x + 2 = 50, x = ☐	4x + 1 = 33, x = ☐
5x + 5 = 25, x = ☐	6x + 3 = 63, x = ☐	4x + 6 = 14, x = ☐	

Step 2 - cross out the sentence with each answer:

1. The villain drops a smoke flare, then turns on a signal jammer.
2. The villain triggers an emp blast, then scans with a radar tracker.
3. The villain emits a sound wave, then turns on a signal jammer.
4. The villain deploys glider wings, then activates a night visor.
5. The villain deploys glider wings, then latches with magnetic boots.
6. The villain fires a grapple hook, then scans with a radar tracker.
7. The villain emits a sound wave, then activates a night visor.
8. The villain drops a smoke flare, then blows a sonic whistle.
9. The villain fires a grapple hook, then latches with magnetic boots.
10. The villain drops a smoke flare, then activates a night visor.
11. The villain emits a sound wave, then scans with a radar tracker.
12. The villain deploys glider wings, then scans with a radar tracker.

TEACHER / PARENT

Answer Key

The Sky Citadel Heist

Culprit: Mechanic Rex

Sound Wave · Night Visor · Fabric Gauntlets · Braided Auburn Hair · Stopped By Loud Chimes

Trail: Start 21 → Clue 1 18 → Clue 2 12 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Integers): "THE SUSPECT DOES NOT USE A SIGNAL JAMMER"

(-13) + 30 = 17 (T) · (-14) + 26 = 12 (D) · (-11) + 36 = 25 (P) · (-10) + 26 = 16 (R) · 24 - (-3) = 27 (M) · (-4) + 5 = 1 (A) · (-10) + 32 = 22 (O) · (-9) + 30 = 21 (C) · (-13) + 18 = 5 (I) · 6 - (-3) = 9 (U) · (-7) + 10 = 3 (S) · (-3) + 7 = 4 (L) · (-6) + 12 = 6 (H) · (-13) + 20 = 7 (J) · (-12) + 25 = 13 (G) · (-8) + 38 = 30 (N) · 4 - (-11) = 15 (E)

Clue 2 (Percentages): "THE RUNAWAY PILOT WORE FABRIC GAUNTLETS"

5% of 200 = 10 (T) · 10% of 380 = 38 (P) · 20% of 275 = 55 (E) · 20% of 250 = 50 (S) · 50% of 74 = 37 (I) · 25% of 92 = 23 (L) · 60% of 80 = 48 (N) · 20% of 220 = 44 (Y) · 60% of 90 = 54 (W) · 10% of 410 = 41 (C) · 20% of 195 = 39 (A) · 40% of 10 = 4 (U) · 25% of 184 = 46 (B) · 10% of 560 = 56 (G) · 60% of 75 = 45 (R) · 5% of 260 = 13 (O) · 40% of 100 = 40 (H) · 50% of 50 = 25 (F)

Clue 3 (Order of operations): "THE SNEAK WAS STOPPED BY LOUD CHIMES"

38 + 4 × 6 = 62 (T) · 21 + 7 × 8 = 77 (A) · 7 × 7 - 10 = 39 (Y) · 4 × 11 - 22 = 22 (C) · 32 + 4 × 5 = 52 (D) · 12 × 11 - 19 = 113 (W) · 48 + 5 × 7 = 83 (P) · 10 × 12 - 13 = 107 (K) · 36 + 9 × 2 = 54 (O) · 12 × 4 - 25 = 23 (U) · 10 × 12 - 8 = 112 (H) · 93 + 4 × 6 = 117 (L) · 1 + 3 × 2 = 7 (B) · 3 + 3 × 3 = 12 (E) · 11 × 11 - 12 = 109 (N) · 5 + 4 × 3 = 17 (M) · 68 + 2 × 2 = 72 (I) · 41 + 8 × 3 = 65 (S)

Clue 4 (Exponents): "THE AGENT HAD BRAIDED AUBURN HAIR"

3^3 = 27 (T) · 3^2 = 9 (R) · 18^2 = 324 (D) · 2^4 = 16 (A) · 2^7 = 128 (G) · 2^5 = 32 (U) · 2^8 = 256 (N) · 2^6 = 64 (I) · 9^2 = 81 (E) · 5^2 = 25 (H) · 12^2 = 144 (B)

Clue 5 (Two-step equations): surviving statement is box 7 → Mechanic Rex

5x + 2 = 57, x = 11 · 3x + 8 = 35, x = 9 · 4x + 4 = 24, x = 5 · 6x + 2 = 20, x = 3 · 4x + 6 = 10, x = 1 · 5x + 11 = 41, x = 6 · 4x + 2 = 50, x = 12 · 4x + 1 = 33, x = 8 · 5x + 5 = 25, x = 4 · 6x + 3 = 63, x = 10 · 4x + 6 = 14, x = 2