The Sky-Islands Mystery

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

Detective: _____ **Date:** _____

The Sky-Islands of Aethelgard are in peril! The legendary Compass of the Winds has been stolen from the Chief Cartographer. A mysterious Sky Bandit infiltrated the high-altitude vault. As lead investigator of the Royal Skypatrol, you must decode the navigation logs, match the clues, and bring the culprit to justice before they sail beyond the horizon.

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 Sky Bandit is _____

Possible suspects

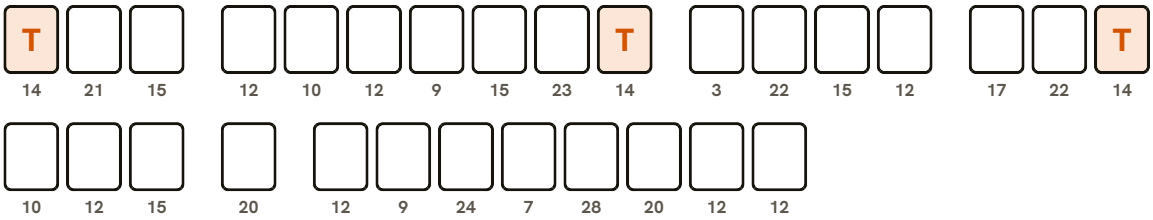
Cross off a row as each clue rules it out. The one left at the end is the culprit.

NAME	AIRSHIP CLASS	PRIMARY GADGET	STEERING GRIP	PILOT HAIR COLOR	ENGINE FLAW
Nobile	Cloud Skiff	Static Net	Right Handed Grip	Silver Gray	Steam Leak
Polo	Sky Sloop	Static Net	Right Handed Grip	Copper Red	Gear Jam
Earhart	Cloud Skiff	Grappling Hook	Right Handed Grip	Jet Black	Steam Leak
Chamberlin	Zeppelin	Static Net	Right Handed Grip	Silver Gray	Rudder Wobble
Frobisher	Storm Cruiser	Spyglass	Right Handed Grip	Jet Black	Gear Jam
Marco	Gale Cutter	Static Net	Left Handed Grip	Silver Gray	Gear Jam
Admundsen	Gale Cutter	Grappling Hook	Right Handed Grip	Silver Gray	Steam Leak
Amelia	Gale Cutter	Spyglass	Right Handed Grip	Jet Black	Gear Jam
Fawcett	Cloud Skiff	Smoke Bombs	Right Handed Grip	Copper Red	Rudder Wobble
Lindbergh	Cloud Skiff	Spyglass	Left Handed Grip	Copper Red	Steam Leak
Wilbur	Gale Cutter	Spyglass	Right Handed Grip	Copper Red	Rudder Wobble
Piccard	Storm Cruiser	Static Net	Right Handed Grip	Silver Gray	Steam Leak
Bessie	Zeppelin	Smoke Bombs	Right Handed Grip	Silver Gray	Steam Leak
Cabot	Sky Sloop	Spyglass	Right Handed Grip	Silver Gray	Steam Leak
Vespucci	Storm Cruiser	Smoke Bombs	Right Handed Grip	Jet Black	Rudder Wobble
Zeppelin	Gale Cutter	Wind Cannon	Left Handed Grip	Silver Gray	Gear Jam
Drake	Gale Cutter	Smoke Bombs	Left Handed Grip	Silver Gray	Steam Leak
Hudson	Storm Cruiser	Grappling Hook	Right Handed Grip	Copper Red	Steam Leak
Magellan	Sky Sloop	Spyglass	Left Handed Grip	Copper Red	Steam Leak
Shackleton	Gale Cutter	Wind Cannon	Left Handed Grip	Copper Red	Steam Leak
Raleigh	Zeppelin	Smoke Bombs	Right Handed Grip	Copper Red	Steam Leak

CLUE 1 Integers

> To track the bandit's flight path, you must calculate the total change in altitude as the airship scaled the thermals and plunged into the rocky ravines.

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



(-1) + 15 = ☐ → T

(-5) + 33 = ☐ → L

(-9) + 24 = ☐ → E

1 - (-2) = ☐ → D

15 - (-2) = ☐ → N

(-10) + 22 = ☐ → S

(-8) + 15 = ☐ → G

(-15) + 24 = ☐ → P

(-10) + 33 = ☐ → C

(-1) + 23 = ☐ → O

(-6) + 27 = ☐ → H

5 - (-5) = ☐ → U

(-15) + 39 = ☐ → Y

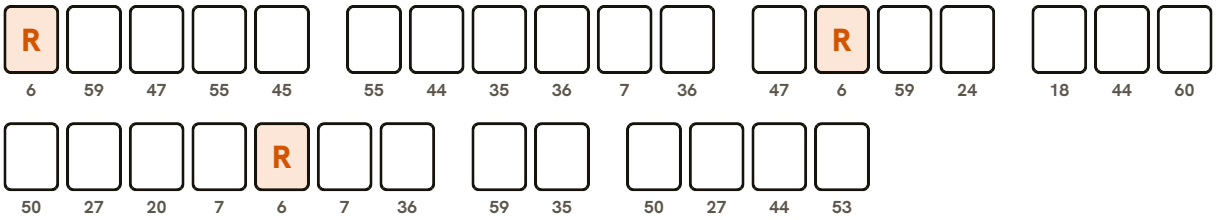
(-2) + 22 = ☐ → A

Scratch space:

CLUE 2 Percentages

> The cartographer's vault locked automatically when the primary battery power dropped past a specific percentage threshold during the heist.

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



75% of 8 = ☐ → R

25% of 236 = ☐ → I

20% of 250 = ☐ → C

50% of 70 = ☐ → N

20% of 35 = ☐ → E

50% of 120 = ☐ → S

10% of 440 = ☐ → A

10% of 450 = ☐ → T

20% of 120 = ☐ → P

75% of 48 = ☐ → D

50% of 110 = ☐ → H

75% of 36 = ☐ → O

5% of 360 = ☐ → W

20% of 235 = ☐ → G

10% of 530 = ☐ → L

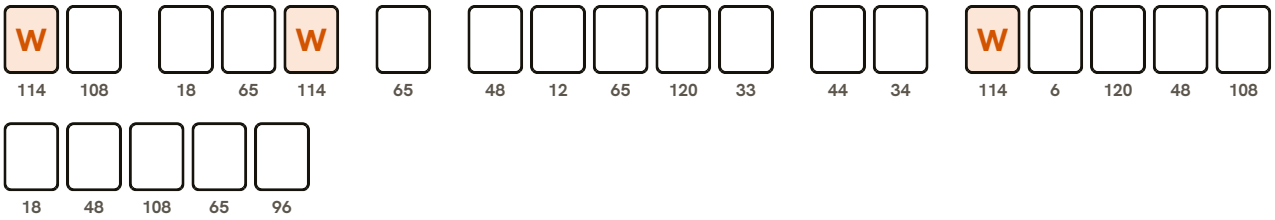
5% of 400 = ☐ → V

Scratch space:

CLUE 3 Order of operations

> A locked ledger on the navigation desk requires a specific sequence of operations to open without triggering the security alarm.

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



12 × 11 - 18 = ☐ → W

39 + 9 × 9 = ☐ → I

10 + 2 × 4 = ☐ → S

11 × 4 - 11 = ☐ → L

11 × 5 - 21 = ☐ → F

84 + 6 × 4 = ☐ → E

4 + 2 × 4 = ☐ → R

23 + 6 × 7 = ☐ → A

2 × 7 - 8 = ☐ → H

10 × 12 - 24 = ☐ → M

8 × 9 - 28 = ☐ → O

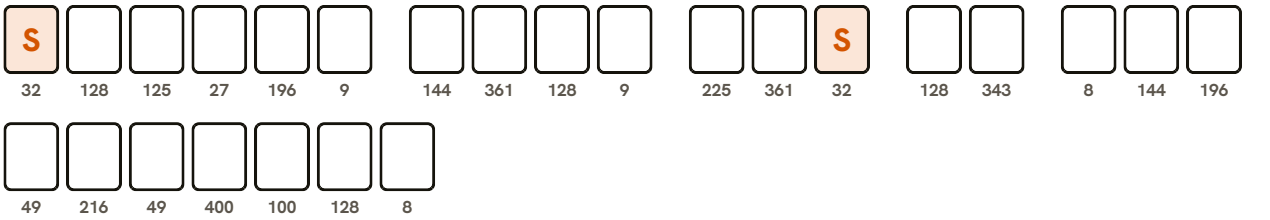
5 × 12 - 12 = ☐ → T

Scratch space:

CLUE 4 Exponents

> The bandit used unstable crystal fuel that doubles in energy output with every exponential level of pressure inside the boiler.

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



2^5 = ☐ → S	5^3 = ☐ → L	19^2 = ☐ → A	6^3 = ☐ → O
2^7 = ☐ → I	14^2 = ☐ → E	3^2 = ☐ → R	15^2 = ☐ → W
7^2 = ☐ → C	20^2 = ☐ → K	2^3 = ☐ → T	3^3 = ☐ → V
12^2 = ☐ → H	7^3 = ☐ → N	10^2 = ☐ → P	

Scratch space:

CLUE 5 Two-step equations - the last clue

> By analyzing the remaining oil reserve, you can solve for the exact hours flown based on the startup burn rate and hourly consumption.

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:

3x + 6 = 30, x = ☐	4x + 10 = 54, x = ☐	3x + 1 = 7, x = ☐	4x + 9 = 37, x = ☐
2x + 11 = 29, x = ☐	2x + 2 = 8, x = ☐	2x + 11 = 19, x = ☐	4x + 6 = 46, x = ☐
3x + 1 = 16, x = ☐	3x + 12 = 30, x = ☐	3x + 5 = 8, x = ☐	

Step 2 - cross out the sentence with each answer:

1. The villain sails the compact Sky Sloop, then deploys the Static Net.
2. The villain navigates the Storm Cruiser, then deploys the Static Net.
3. The villain steers the heavy Zeppelin, then deploys the Static Net.
4. The villain pilots the swift Gale Cutter, then peers through the Spyglass.
5. The villain steers the heavy Zeppelin, then blasts the Wind Cannon.
6. The villain pilots the swift Gale Cutter, then drops the Smoke Bombs.
7. The villain sails the compact Sky Sloop, then drops the Smoke Bombs.
8. The villain steers the heavy Zeppelin, then drops the Smoke Bombs.
9. The villain sails the compact Sky Sloop, then blasts the Wind Cannon.
10. The villain glides on the Cloud Skiff, then blasts the Wind Cannon.
11. The villain pilots the swift Gale Cutter, then fires the Grappling Hook.
12. The villain glides on the Cloud Skiff, then deploys the Static Net.

TEACHER / PARENT

Answer Key

The Sky-Islands Mystery

Culprit: Nobile

Cloud Skiff · Static Net · Right Handed Grip · Silver Gray · Steam Leak

Trail: Start 21 → Clue 1 15 → Clue 2 11 → Clue 3 7 → Clue 4 4 → Clue 5 1

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

(-1) + 15 = 14 (T) · (-5) + 33 = 28 (L) · (-9) + 24 = 15 (E) · 1 - (-2) = 3 (D) · 15 - (-2) = 17 (N) · (-10) + 22 = 12 (S) · (-8) + 15 = 7 (G) · (-15) + 24 = 9 (P) · (-10) + 33 = 23 (C) · (-1) + 23 = 22 (O) · (-6) + 27 = 21 (H) · 5 - (-5) = 10 (U) · (-15) + 39 = 24 (Y) · (-2) + 22 = 20 (A)

Clue 2 (Percentages): "RIGHT HANDED GRIP WAS COVERED IN COAL"

75% of 8 = 6 (R) · 25% of 236 = 59 (I) · 20% of 250 = 50 (C) · 50% of 70 = 35 (N) · 20% of 35 = 7 (E) · 50% of 120 = 60 (S) · 10% of 440 = 44 (A) · 10% of 450 = 45 (T) · 20% of 120 = 24 (P) · 75% of 48 = 36 (D) · 50% of 110 = 55 (H) · 75% of 36 = 27 (O) · 5% of 360 = 18 (W) · 20% of 235 = 47 (G) · 10% of 530 = 53 (L) · 5% of 400 = 20 (V)

Clue 3 (Order of operations): "WE SAW A TRAIL OF WHITE STEAM"

12 × 11 - 18 = 114 (W) · 39 + 9 × 9 = 120 (I) · 10 + 2 × 4 = 18 (S) · 11 × 4 - 11 = 33 (L) · 11 × 5 - 21 = 34 (F) · 84 + 6 × 4 = 108 (E) · 4 + 2 × 4 = 12 (R) · 23 + 6 × 7 = 65 (A) · 2 × 7 - 8 = 6 (H) · 10 × 12 - 24 = 96 (M) · 8 × 9 - 28 = 44 (O) · 5 × 12 - 12 = 48 (T)

Clue 4 (Exponents): "SILVER HAIR WAS IN THE COCKPIT"

2^5 = 32 (S) · 5^3 = 125 (L) · 19^2 = 361 (A) · 6^3 = 216 (O) · 2^7 = 128 (I) · 14^2 = 196 (E) · 3^2 = 9 (R) · 15^2 = 225 (W) · 7^2 = 49 (C) · 20^2 = 400 (K) · 2^3 = 8 (T) · 3^3 = 27 (V) · 12^2 = 144 (H) · 7^3 = 343 (N) · 10^2 = 100 (P)

Clue 5 (Two-step equations): surviving statement is box 12 → Nobile

3x + 6 = 30, x = 8 · 4x + 10 = 54, x = 11 · 3x + 1 = 7, x = 2 · 4x + 9 = 37, x = 7 · 2x + 11 = 29, x = 9 · 2x + 2 = 8, x = 3 · 2x + 11 = 19, x = 4 · 4x + 6 = 46, x = 10 · 3x + 1 = 16, x = 5 · 3x + 12 = 30, x = 6 · 3x + 5 = 8, x = 1