



The Sky-Pirate of Zephyr Peak

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

Detective: _____ **Date:** _____

The legendary Skylight Astrolabe has been stolen from the Grand Observatory! Without it, the skyships will wander lost in the high-altitude storms. The Chief Cartographer spotted the culprit fleeing into the misty clouds, but we need your mathematical puzzle-solving skills to track them down before they escape the archipelago.

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-Thief is _____

Possible suspects

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

NAME	VESSEL CLASS	INFILTRATION TOOL	GOGGLE POSITION	HAIR STYLE	VULNERABILITY
Captain Amelia	Brass Zeppelin	Pneumatic Boots	Goggles over eyes	Neon blue streak	Steam whistles
Maxwell Bolt	Steam Cruiser	Pneumatic Boots	Goggles over eyes	Neon blue streak	Steam whistles
Amelia Earhart	Brass Zeppelin	Pneumatic Boots	Goggles on forehead	Neon blue streak	Steam whistles
Nellie Bly	Brass Zeppelin	Grappling Harpoon	Goggles on forehead	Copper-plated braid	High-altitude drafts
Orla Windward	Solar Skiff	Pneumatic Boots	Goggles over eyes	Neon blue streak	Steam whistles
Mae Jemison	Rusty Dreadnought	Smoke Bombs	Goggles on forehead	Copper-plated braid	Magnetic storms
Professor Orion	Solar Skiff	Pneumatic Boots	Goggles over eyes	Soot-dusted spikes	High-altitude drafts
Jules Verne	Brass Zeppelin	Smoke Bombs	Goggles on forehead	Soot-dusted spikes	Steam whistles
Gears Higgins	Brass Zeppelin	Grappling Harpoon	Goggles over eyes	Neon blue streak	Magnetic storms
Sable Drake	Rusty Dreadnought	Pneumatic Boots	Goggles over eyes	Neon blue streak	High-altitude drafts
Marco Polo	Wind Glider	Pneumatic Boots	Goggles over eyes	Soot-dusted spikes	Magnetic storms
Ada Lovelace	Brass Zeppelin	Pneumatic Boots	Goggles over eyes	Neon blue streak	Magnetic storms
Jacques Piccard	Solar Skiff	Smoke Bombs	Goggles over eyes	Neon blue streak	Magnetic storms
Silas Vance	Wind Glider	Grappling Harpoon	Goggles over eyes	Neon blue streak	Steam whistles
Viktor Brass	Wind Glider	Clockwork Glider	Goggles on forehead	Neon blue streak	Steam whistles
Cyrus Vance	Steam Cruiser	Grappling Harpoon	Goggles over eyes	Copper-plated braid	Steam whistles
Zephyr Jack	Rusty Dreadnought	Clockwork Glider	Goggles over eyes	Neon blue streak	Magnetic storms
Helena Sky	Solar Skiff	Pneumatic Boots	Goggles over eyes	Copper-plated braid	Steam whistles
Lyra Sterling	Rusty Dreadnought	Electric Net	Goggles over eyes	Neon blue streak	Steam whistles
Jasper Finch	Steam Cruiser	Smoke Bombs	Goggles over eyes	Copper-plated braid	High-altitude drafts
Evelyn Finch	Solar Skiff	Smoke Bombs	Goggles on forehead	Neon blue streak	Magnetic storms

CLUE 1 Integers

The sky-ship's altimeter recorded a series of climbs and drops as the thief fled. Track the net change in altitude to unlock the first cabin door.

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

T			T											T			
10	4	24	10	4	14	24	6	9	2	24	22	28	2	10	3	22	24
						T						T					
16	28	24	19	24	1	10	8	14	1	28	24	10					

$(-15) + 25 = \square \rightarrow \text{[T]}$	$(-5) + 14 = \square \rightarrow \text{[D]}$	$7 - (-15) = \square \rightarrow \text{[S]}$
$2 - (-4) = \square \rightarrow \text{[F]}$	$(-3) + 5 = \square \rightarrow \text{[O]}$	$(-11) + 12 = \square \rightarrow \text{[C]}$
$3 - (-11) = \square \rightarrow \text{[I]}$	$(-2) + 18 = \square \rightarrow \text{[A]}$	$6 - (-2) = \square \rightarrow \text{[R]}$
$(-7) + 11 = \square \rightarrow \text{[H]}$	$(-14) + 38 = \square \rightarrow \text{[E]}$	$(-8) + 27 = \square \rightarrow \text{[L]}$
$17 - (-11) = \square \rightarrow \text{[N]}$	$(-11) + 14 = \square \rightarrow \text{[U]}$	

Scratch space:

CLUE 2 Percentages

We scanned the cargo hold's fuel cells. Calculate the remaining energy percentage to power up the tracker and reveal the suspect's gear.

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

T										T				
22	4	35	45	6	45	50	35	29	22	47	12	39	35	

											T								
5	12	5	5	34	35	45	12	44	35	39	22	4	35	33	39	35	52	35	45

25% of 88 = → T	20% of 170 = → L	75% of 52 = → R
20% of 250 = → P	60% of 20 = → O	10% of 60 = → U
25% of 116 = → C	25% of 208 = → Y	20% of 25 = → G
50% of 94 = → W	5% of 660 = → I	10% of 450 = → S
10% of 440 = → V	20% of 20 = → H	10% of 350 = → E

Scratch space:

CLUE 3
Order of operations

A locked brass keypad blocks the engine room. Solve the sequence of operations in the correct order to override the lock and find the hair sample.

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

S								S				S
91	9	34	31	11	66	39	111	91	9	100	34	91

										S								
57	55	111	120	39	9	34	110	9	39	111	91	93	111	100	100	31	111	110

$9 \times 11 - 8 = \square \rightarrow \boxed{\text{S}}$

$10 \times 9 - 24 = \square \rightarrow \boxed{\text{W}}$

$2 + 3 \times 3 = \square \rightarrow \boxed{\text{M}}$

$75 + 2 \times 9 = \square \rightarrow \boxed{\text{V}}$

$8 \times 9 - 15 = \square \rightarrow \boxed{\text{F}}$

$1 + 2 \times 4 = \square \rightarrow \boxed{\text{T}}$

$12 \times 12 - 24 = \square \rightarrow \boxed{\text{G}}$

$11 \times 11 - 11 = \square \rightarrow \boxed{\text{N}}$

$12 \times 10 - 20 = \square \rightarrow \boxed{\text{L}}$

$93 + 9 \times 2 = \square \rightarrow \boxed{\text{I}}$

$8 \times 10 - 25 = \square \rightarrow \boxed{\text{R}}$

$4 + 5 \times 6 = \square \rightarrow \boxed{\text{E}}$

$8 \times 5 - 1 = \square \rightarrow \boxed{\text{H}}$

$7 + 3 \times 8 = \square \rightarrow \boxed{\text{A}}$

Scratch space:

CLUE 4 Exponents

The thief's homing beacon pulses on an exponential scale. Evaluate the power level to pinpoint the signal's origin and discover their physical weakness.

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

N			N																
9	49	64	9	216	225	400	49	289	243	32	16	125	324	16	243	9	128	125	
121	49	16	49	225	49	169	324	216	49	289	32	9	128						

$3^2 = \square \rightarrow$ N	$7^2 = \square \rightarrow$ E	$15^2 = \square \rightarrow$ L	$2^5 = \square \rightarrow$ I
$11^2 = \square \rightarrow$ W	$2^7 = \square \rightarrow$ D	$13^2 = \square \rightarrow$ F	$3^5 = \square \rightarrow$ A
$18^2 = \square \rightarrow$ T	$2^6 = \square \rightarrow$ O	$4^2 = \square \rightarrow$ R	$17^2 = \square \rightarrow$ H
$6^3 = \square \rightarrow$ B	$5^3 = \square \rightarrow$ S	$20^2 = \square \rightarrow$ U	

Scratch space:

CLUE 5**Two-step equations - the last clue**

We need to calculate the boiler pressure over time to find the thief's escape route. Solve for the missing variable to reveal their final trait.

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:

$6x + 8 = 44, x = \boxed{}$

$6x + 5 = 71, x = \boxed{}$

$2x + 3 = 21, x = \boxed{}$

$6x + 8 = 68, x = \boxed{}$

$4x + 3 = 31, x = \boxed{}$

$4x + 7 = 11, x = \boxed{}$

$5x + 7 = 27, x = \boxed{}$

$6x + 5 = 23, x = \boxed{}$

$4x + 1 = 49, x = \boxed{}$

$2x + 9 = 25, x = \boxed{}$

$5x + 4 = 14, x = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain navigated a wind glider, then escaped on a clockwork glider.
2. The villain piloted a steam cruiser, then fired a grappling harpoon.
3. The villain navigated a wind glider, then activated an electric net.
4. The villain sailed a rusty dreadnought, then fired a grappling harpoon.
5. The villain piloted a steam cruiser, then leaped with pneumatic boots.
6. The villain flew a brass zeppelin, then leaped with pneumatic boots.
7. The villain navigated a wind glider, then dropped dense smoke bombs.
8. The villain flew a brass zeppelin, then escaped on a clockwork glider.
9. The villain steered a solar skiff, then leaped with pneumatic boots.
10. The villain sailed a rusty dreadnought, then leaped with pneumatic boots.
11. The villain navigated a wind glider, then fired a grappling harpoon.
12. The villain steered a solar skiff, then dropped dense smoke bombs.

Answer Key

The Sky-Pirate of Zephyr Peak

Culprit: Maxwell Bolt

Steam Cruiser · Pneumatic Boots · Goggles over eyes · Neon blue streak · Steam whistles

Trail: Start 21 → Clue 1 20 → Clue 2 14 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Integers): "THE THIEF DOES NOT USE AN ELECTRIC NET"

$(-15) + 25 = 10$ (T) · $(-5) + 14 = 9$ (D) · $7 - (-15) = 22$ (S) · $2 - (-4) = 6$ (F) · $(-3) + 5 = 2$ (O) · $(-11) + 12 = 1$ (C) · $3 - (-11) = 14$ (I) · $(-2) + 18 = 16$ (A) · $6 - (-2) = 8$ (R) · $(-7) + 11 = 4$ (H) · $(-14) + 38 = 24$ (E) · $(-8) + 27 = 19$ (L) · $17 - (-11) = 28$ (N) · $(-11) + 14 = 3$ (U)

Clue 2 (Percentages): "THE SUSPECT WORE GOGGLES OVER THEIR EYES"

25% of 88 = 22 (T) · 20% of 170 = 34 (L) · 75% of 52 = 39 (R) · 20% of 250 = 50 (P) · 60% of 20 = 12 (O) · 10% of 60 = 6 (U) · 25% of 116 = 29 (C) · 25% of 208 = 52 (Y) · 20% of 25 = 5 (G) · 50% of 94 = 47 (W) · 5% of 660 = 33 (I) · 10% of 450 = 45 (S) · 10% of 440 = 44 (V) · 20% of 20 = 4 (H) · 10% of 350 = 35 (E)

Clue 3 (Order of operations): "STEAM WHISTLES FRIGHTEN THIS VILLAIN"

$9 \times 11 - 8 = 91$ (S) · $10 \times 9 - 24 = 66$ (W) · $2 + 3 \times 3 = 11$ (M) · $75 + 2 \times 9 = 93$ (V) · $8 \times 9 - 15 = 57$ (F) · $1 + 2 \times 4 = 9$ (T) · $12 \times 12 - 24 = 120$ (G) · $11 \times 11 - 11 = 110$ (N) · $12 \times 10 - 20 = 100$ (L) · $93 + 9 \times 2 = 111$ (I) · $8 \times 10 - 25 = 55$ (R) · $4 + 5 \times 6 = 34$ (E) · $8 \times 5 - 1 = 39$ (H) · $7 + 3 \times 8 = 31$ (A)

Clue 4 (Exponents): "NEON BLUE HAIR STRANDS WERE LEFT BEHIND"

$3^2 = 9$ (N) · $7^2 = 49$ (E) · $15^2 = 225$ (L) · $2^5 = 32$ (I) · $11^2 = 121$ (W) · $2^7 = 128$ (D) · $13^2 = 169$ (F) · $3^5 = 243$ (A) · $18^2 = 324$ (T) · $2^6 = 64$ (O) · $4^2 = 16$ (R) · $17^2 = 289$ (H) · $6^3 = 216$ (B) · $5^3 = 125$ (S) · $20^2 = 400$ (U)

Clue 5 (Two-step equations): surviving statement is box 5 → Maxwell Bolt

$6x + 8 = 44, x = 6$ · $6x + 5 = 71, x = 11$ · $2x + 3 = 21, x = 9$ · $6x + 8 = 68, x = 10$ · $4x + 3 = 31, x = 7$ · $4x + 7 = 11, x = 1$ · $5x + 7 = 27, x = 4$ · $6x + 5 = 23, x = 3$ · $4x + 1 = 49, x = 12$ · $2x + 9 = 25, x = 8$ · $5x + 4 = 14, x = 2$