



The Lost Sky Map

Grade 7 math · Integers, Percentages, Order of operations, Exponents, Two-step equations · Reading level grades 3-4

Detective: _____ **Date:** _____

The Golden Compass has been swiped from the Grand Airship! Without it, Captain Skip cannot find the hidden Sky Temple. A rogue sky pirate slipped past the guard puffins, grabbed the compass, and flew off into the fog. We must find who did it before they lock the temple gates forever!

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	PILOT GEAR	SKY GADGET	STEERING GRIP	GOGGLE STRAP	PHOBIA
Cyrus	cloud board	spark blaster	left handed	bright yellow strap	fear of heights
Ryder	rotor pack	wind whistle	right handed	bright yellow strap	fear of balloons
Hudson	brass jetpack	smoke bomb	left handed	sunset red strap	fear of thunder
Silas	cloud board	smoke bomb	right handed	ocean blue strap	fear of thunder
Dora	steam boots	net launcher	right handed	sunset red strap	fear of thunder
Gideon	feather glider	net launcher	left handed	sunset red strap	fear of heights
Cleo	rotor pack	grappling hook	left handed	bright yellow strap	fear of heights
Amelia	steam boots	spark blaster	right handed	ocean blue strap	fear of thunder
Wyatt	steam boots	net launcher	right handed	ocean blue strap	fear of thunder
Freya	brass jetpack	net launcher	left handed	ocean blue strap	fear of thunder
Brody	rotor pack	grappling hook	right handed	ocean blue strap	fear of thunder
Indiana	feather glider	wind whistle	right handed	sunset red strap	fear of thunder
Sutton	steam boots	grappling hook	left handed	ocean blue strap	fear of balloons
Clara	steam boots	net launcher	right handed	bright yellow strap	fear of heights
Lara	steam boots	spark blaster	left handed	bright yellow strap	fear of thunder
Jacques	steam boots	net launcher	left handed	bright yellow strap	fear of heights
Buster	steam boots	wind whistle	right handed	ocean blue strap	fear of thunder
Nelly	steam boots	net launcher	left handed	bright yellow strap	fear of thunder
Pip	rotor pack	wind whistle	right handed	ocean blue strap	fear of thunder
Beckett	rotor pack	grappling hook	right handed	ocean blue strap	fear of balloons
Finn	steam boots	smoke bomb	right handed	sunset red strap	fear of heights

CLUE 1 Integers

To find the flight path, we must calculate the airship's change in height as it went above and below cloud level.

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

T								T								T			
15	7	10	22	11	12	20	15	10	16	14	10	4	27	14	15	13	4	10	

								T			
20	25	11	27	16	25	7	11	4	15	28	10

$$(-7) + 22 = \boxed{} \rightarrow \boxed{\text{T}}$$

$$(-11) + 25 = \boxed{} \rightarrow \boxed{\text{O}}$$

$$12 - (-15) = \boxed{} \rightarrow \boxed{\text{N}}$$

$$(-10) + 30 = \boxed{} \rightarrow \boxed{\text{A}}$$

$$(-6) + 19 = \boxed{} \rightarrow \boxed{\text{U}}$$

$$(-12) + 28 = \boxed{} \rightarrow \boxed{\text{D}}$$

$$(-14) + 26 = \boxed{} \rightarrow \boxed{\text{R}}$$

$$18 - (-4) = \boxed{} \rightarrow \boxed{\text{P}}$$

$$(-6) + 10 = \boxed{} \rightarrow \boxed{\text{S}}$$

$$(-13) + 38 = \boxed{} \rightarrow \boxed{\text{W}}$$

$$(-9) + 37 = \boxed{} \rightarrow \boxed{\text{L}}$$

$$(-14) + 25 = \boxed{} \rightarrow \boxed{\text{I}}$$

$$(-8) + 18 = \boxed{} \rightarrow \boxed{\text{E}}$$

$$(-10) + 17 = \boxed{} \rightarrow \boxed{\text{H}}$$

Scratch space:

CLUE 2 Percentages

The captain needs to check how much spark juice is left in the fuel tanks before we chase the thief.

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

W				W													
9	48	39	51	9	44	8	48	56	49	33	30	44	29	39	48		
44	8	48	49	52	52	49	54	8	44	8	51	28	46	30	28	33	31

$5\% \text{ of } 180 = \boxed{} \rightarrow \boxed{\text{W}}$

$75\% \text{ of } 40 = \boxed{} \rightarrow \boxed{\text{O}}$

$50\% \text{ of } 98 = \boxed{} \rightarrow \boxed{\text{I}}$

$25\% \text{ of } 208 = \boxed{} \rightarrow \boxed{\text{R}}$

$20\% \text{ of } 140 = \boxed{} \rightarrow \boxed{\text{N}}$

$5\% \text{ of } 580 = \boxed{} \rightarrow \boxed{\text{U}}$

$50\% \text{ of } 102 = \boxed{} \rightarrow \boxed{\text{A}}$

$25\% \text{ of } 124 = \boxed{} \rightarrow \boxed{\text{Y}}$

$25\% \text{ of } 216 = \boxed{} \rightarrow \boxed{\text{G}}$

$25\% \text{ of } 132 = \boxed{} \rightarrow \boxed{\text{L}}$

$10\% \text{ of } 80 = \boxed{} \rightarrow \boxed{\text{H}}$

$50\% \text{ of } 96 = \boxed{} \rightarrow \boxed{\text{E}}$

$25\% \text{ of } 224 = \boxed{} \rightarrow \boxed{\text{P}}$

$60\% \text{ of } 65 = \boxed{} \rightarrow \boxed{\text{S}}$

$25\% \text{ of } 184 = \boxed{} \rightarrow \boxed{\text{D}}$

$10\% \text{ of } 440 = \boxed{} \rightarrow \boxed{\text{T}}$

Scratch space:

CLUE 3
Order of operations

An ancient locked hatch blocks our way. Solve the sequence on the keypad buttons in the correct order to open it.

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

A								A									
56	47	50	41	32	114	47	56	37	50	65	43	31	41	26	32	90	40

		A								A		A	
108	114	56	40	90	32	43	31	90	99	56	93	56	77

$40 + 2 \times 8 = \square \rightarrow \text{A}$

$63 + 9 \times 4 = \square \rightarrow \text{M}$

$26 + 3 \times 8 = \square \rightarrow \text{O}$

$10 \times 10 - 23 = \square \rightarrow \text{Y}$

$5 \times 12 - 17 = \square \rightarrow \text{T}$

$7 \times 6 - 2 = \square \rightarrow \text{R}$

$7 \times 10 - 29 = \square \rightarrow \text{U}$

$4 \times 11 - 18 = \square \rightarrow \text{N}$

$74 + 4 \times 4 = \square \rightarrow \text{E}$

$29 + 2 \times 4 = \square \rightarrow \text{P}$

$8 \times 7 - 24 = \square \rightarrow \text{D}$

$26 + 3 \times 7 = \square \rightarrow \text{L}$

$9 \times 10 - 25 = \square \rightarrow \text{F}$

$98 + 2 \times 5 = \square \rightarrow \text{S}$

$13 + 3 \times 6 = \square \rightarrow \text{H}$

$78 + 6 \times 6 = \square \rightarrow \text{C}$

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

Scratch space:

CLUE 4 Exponents

The power core uses glowing power crystals that multiply rapidly. Let's calculate the total energy boost.

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

W																	
100	8	32	16	225	400	361	125	400	16	36	8	125	400	144	121	225	8
243	9	343	125	4	169	400	9	25	8	361	169	343	9				

$10^2 = \square \rightarrow$ W	$4^2 = \square \rightarrow$ O	$11^2 = \square \rightarrow$ L	$6^2 = \square \rightarrow$ C
$5^2 = \square \rightarrow$ H	$2^5 = \square \rightarrow$ F	$20^2 = \square \rightarrow$ N	$12^2 = \square \rightarrow$ B
$3^2 = \square \rightarrow$ T	$3^5 = \square \rightarrow$ S	$13^2 = \square \rightarrow$ I	$5^3 = \square \rightarrow$ A
$19^2 = \square \rightarrow$ D	$7^3 = \square \rightarrow$ R	$2^2 = \square \rightarrow$ P	$2^3 = \square \rightarrow$ E
$15^2 = \square \rightarrow$ U			

Scratch space:

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

We found a scale with heavy golden bricks and unknown cargo bags. Find the weight of one bag to balance the scale.

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:

$2x + 5 = 27, x = \boxed{}$

$3x + 12 = 48, x = \boxed{}$

$4x + 8 = 44, x = \boxed{}$

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

$2x + 2 = 14, x = \boxed{}$

$3x + 5 = 20, x = \boxed{}$

$5x + 11 = 26, x = \boxed{}$

$3x + 5 = 29, x = \boxed{}$

$5x + 8 = 43, x = \boxed{}$

$4x + 6 = 46, x = \boxed{}$

$2x + 3 = 5, x = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain hovered near the windows with a rotor pack, then summoned a gust with a wind whistle.
2. The villain zoomed through the clouds on a brass jetpack, then zapped the alarm with a spark blaster.
3. The villain surfed the sky currents on a cloud board, then summoned a gust with a wind whistle.
4. The villain leaped across the chasms in steam boots, then zapped the alarm with a spark blaster.
5. The villain zoomed through the clouds on a brass jetpack, then swung away using a grappling hook.
6. The villain leaped across the chasms in steam boots, then summoned a gust with a wind whistle.
7. The villain glided over the peaks with a feather glider, then escaped into the mist with a smoke bomb.
8. The villain glided over the peaks with a feather glider, then summoned a gust with a wind whistle.
9. The villain hovered near the windows with a rotor pack, then swung away using a grappling hook.
10. The villain leaped across the chasms in steam boots, then swung away using a grappling hook.
11. The villain surfed the sky currents on a cloud board, then escaped into the mist with a smoke bomb.
12. The villain leaped across the chasms in steam boots, then trapped the guard puffins in a net launcher.

Answer Key

The Lost Sky Map

Culprit: Amelia

steam boots · spark blaster · right handed · ocean blue strap · fear of thunder

Trail: Start 21 → Clue 1 17 → Clue 2 8 → Clue 3 5 → Clue 4 4 → Clue 5 1

Clue 1 (Integers): "THE PIRATE DOES NOT USE A WIND WHISTLE"

$(-7) + 22 = 15$ (T) · $(-11) + 25 = 14$ (O) · $12 - (-15) = 27$ (N) · $(-10) + 30 = 20$ (A) · $(-6) + 19 = 13$ (U) · $(-12) + 28 = 16$ (D) · $(-14) + 26 = 12$ (R) · $18 - (-4) = 22$ (P) · $(-6) + 10 = 4$ (S) · $(-13) + 38 = 25$ (W) · $(-9) + 37 = 28$ (L) · $(-14) + 25 = 11$ (I) · $(-8) + 18 = 10$ (E) · $(-10) + 17 = 7$ (H)

Clue 2 (Percentages): "WE SAW THE PILOT USE THEIR RIGHT HAND ONLY"

5% of 180 = 9 (W) · 75% of 40 = 30 (O) · 50% of 98 = 49 (I) · 25% of 208 = 52 (R) · 20% of 140 = 28 (N) · 5% of 580 = 29 (U) · 50% of 102 = 51 (A) · 25% of 124 = 31 (Y) · 25% of 216 = 54 (G) · 25% of 132 = 33 (L) · 10% of 80 = 8 (H) · 50% of 96 = 48 (E) · 25% of 224 = 56 (P) · 60% of 65 = 39 (S) · 25% of 184 = 46 (D) · 10% of 440 = 44 (T)

Clue 3 (Order of operations): "A LOUD CLAP OF THUNDER SCARED THEM AWAY"

$40 + 2 \times 8 = 56$ (A) · $63 + 9 \times 4 = 99$ (M) · $26 + 3 \times 8 = 50$ (O) · $10 \times 10 - 23 = 77$ (Y) · $5 \times 12 - 17 = 43$ (T) · $7 \times 6 - 2 = 40$ (R) · $7 \times 10 - 29 = 41$ (U) · $4 \times 11 - 18 = 26$ (N) · $74 + 4 \times 4 = 90$ (E) · $29 + 2 \times 4 = 37$ (P) · $8 \times 7 - 24 = 32$ (D) · $26 + 3 \times 7 = 47$ (L) · $9 \times 10 - 25 = 65$ (F) · $98 + 2 \times 5 = 108$ (S) · $13 + 3 \times 6 = 31$ (H) · $78 + 6 \times 6 = 114$ (C) · $75 + 2 \times 9 = 93$ (W)

Clue 4 (Exponents): "WE FOUND AN OCEAN BLUE STRAP IN THE DIRT"

$10^2 = 100$ (W) · $4^2 = 16$ (O) · $11^2 = 121$ (L) · $6^2 = 36$ (C) · $5^2 = 25$ (H) · $2^5 = 32$ (F) · $20^2 = 400$ (N) · $12^2 = 144$ (B) · $3^2 = 9$ (T) · $3^5 = 243$ (S) · $13^2 = 169$ (I) · $5^3 = 125$ (A) · $19^2 = 361$ (D) · $7^3 = 343$ (R) · $2^2 = 4$ (P) · $2^3 = 8$ (E) · $15^2 = 225$ (U)

Clue 5 (Two-step equations): surviving statement is box 4 → Amelia

$2x + 5 = 27, x = 11$ · $3x + 12 = 48, x = 12$ · $4x + 8 = 44, x = 9$ · $5x + 4 = 14, x = 2$ · $2x + 2 = 14, x = 6$ · $3x + 5 = 20, x = 5$ · $5x + 11 = 26, x = 3$ · $3x + 5 = 29, x = 8$ · $5x + 8 = 43, x = 7$ · $4x + 6 = 46, x = 10$ · $2x + 3 = 5, x = 1$