



The Skyship Chronograph Caper

Grade 7 math · Integers, Percentages, Order of operations, Exponents, Two-step equations · Reading level grades 5-6

Detective: _____ **Date:** _____

A sneaky thief has snatched the Golden Chronograph right from the grand observatory of Nimbus Station! The floating docks are in an uproar. The Cloud Patrol needs your math skills to track down the culprit among the visiting airship crews.

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	PRIMARY GEAR	POCKET UTILITY	GOGGLE POSITION	HAIR COLOR	EFFECTIVE TRAP
Jax	Copper Zipline	Signal Mirror	Neck Goggles	Spiky Silver	Sticky Sap
Flint	Steam Booster	Signal Mirror	Forehead Goggles	Neon Orange	Sneeze Powder
Cleo	Copper Zipline	Decoy Balloon	Neck Goggles	Windblown Blue	Sticky Sap
Hazel	Net Launcher	Decoy Balloon	Neck Goggles	Windblown Blue	Sticky Sap
Captain Zephyr	Clockwork Propeller	Brass Wrench	Forehead Goggles	Neon Orange	Shiny Decoys
Iris	Pocket Glider	Signal Mirror	Neck Goggles	Spiky Silver	Sticky Sap
Finn	Clockwork Propeller	Grappling Hook	Neck Goggles	Spiky Silver	Sneeze Powder
Piper	Net Launcher	Signal Mirror	Neck Goggles	Spiky Silver	Sneeze Powder
Stella	Clockwork Propeller	Smoke Pellet	Forehead Goggles	Spiky Silver	Sticky Sap
Gideon	Clockwork Propeller	Brass Wrench	Neck Goggles	Windblown Blue	Shiny Decoys
Tessa	Net Launcher	Smoke Pellet	Forehead Goggles	Spiky Silver	Shiny Decoys
Nova	Net Launcher	Grappling Hook	Neck Goggles	Spiky Silver	Sticky Sap
Skye	Clockwork Propeller	Brass Wrench	Neck Goggles	Spiky Silver	Sticky Sap
Maeve	Net Launcher	Decoy Balloon	Forehead Goggles	Windblown Blue	Sneeze Powder
Rowan	Clockwork Propeller	Decoy Balloon	Neck Goggles	Neon Orange	Sneeze Powder
Clara	Clockwork Propeller	Decoy Balloon	Neck Goggles	Spiky Silver	Sticky Sap
Hugo	Copper Zipline	Brass Wrench	Neck Goggles	Neon Orange	Sneeze Powder
Otis	Steam Booster	Signal Mirror	Neck Goggles	Windblown Blue	Shiny Decoys
Jasper	Copper Zipline	Decoy Balloon	Forehead Goggles	Neon Orange	Sticky Sap
Cooper	Net Launcher	Decoy Balloon	Forehead Goggles	Neon Orange	Sneeze Powder
Barnaby	Steam Booster	Brass Wrench	Neck Goggles	Spiky Silver	Shiny Decoys

CLUE 1 Integers

To find the escape route, we must calculate the airship's sudden drops and climbs above and below the zero altitude cloud line.

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

T			T											T					
18	29	16	18	29	9	16	15	10	2	16	7	26	2	18	24	7	16	22	
14	21	22	3	3	1	9	26	14	29	2	2	6							

$16 - (-2) = \square \rightarrow \text{T}$	$28 - (-1) = \square \rightarrow \text{H}$	$7 - (-2) = \square \rightarrow \text{I}$
$(-7) + 10 = \square \rightarrow \text{P}$	$12 - (-14) = \square \rightarrow \text{N}$	$(-7) + 8 = \square \rightarrow \text{L}$
$(-7) + 14 = \square \rightarrow \text{S}$	$(-10) + 32 = \square \rightarrow \text{A}$	$(-1) + 15 = \square \rightarrow \text{G}$
$(-10) + 16 = \square \rightarrow \text{K}$	$1 - (-9) = \square \rightarrow \text{D}$	$(-4) + 6 = \square \rightarrow \text{O}$
$(-4) + 19 = \square \rightarrow \text{F}$	$(-11) + 27 = \square \rightarrow \text{E}$	$(-12) + 33 = \square \rightarrow \text{R}$
$(-7) + 31 = \square \rightarrow \text{U}$		

Scratch space:

CLUE 2

We found the thief's discarded battery pack, but we need to calculate the percentage of power remaining to see how far they flew.

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

Diagram illustrating a sequence of numbers arranged in two rows of boxes. The top row contains 15 boxes, with the 1st and 8th boxes highlighted in orange and labeled 'T'. The bottom row contains 15 boxes, with the 11th box highlighted in orange and labeled 'T'.

Top row numbers (from left to right): 45, 32, 15, 9, 11, 9, 56, 15, 60, 45, 40, 15, 15, 56, 9.

Bottom row numbers (from left to right): 59, 8, 59, 59, 38, 15, 9, 55, 47, 8, 11, 50, 52, 45, 32, 15, 50, 15, 60, 40.

50% of 90 = $\rightarrow$ **T**

10% of 400 = $\rightarrow$ **K**

40% of 20 = $\rightarrow$ **O**

50% of 64 = $\rightarrow$ **H**

5% of 940 = → **R**

25% of 200 = $\rightarrow$ **N**

10% of 560 = → **P**

25% of 60 = → **E**

$$10\% \text{ of } 380 = \boxed{} \rightarrow \boxed{\text{L}}$$

20% of 260 = $\rightarrow$ **D**

20% of 295 = → **G**

60% of 100 = → **C**

10% of 110 = $\rightarrow$ **U**

10% of 550 = $\rightarrow$ **A**

5% of 180 = $\rightarrow$ **S**

Scratch space:

CLUE 3

Order of operations

A locked control panel blocks the engine room, and we must solve the order of button presses to crack the cabin door.

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

S						S						S				
12	30	62	80	45	26	12	93	74	30	19	93	74	12	30	77	32
19	53	120	93	44	93	26	9	93	120	65	62	30				

$3 \times 12 - 24 = \square \rightarrow \text{S}$

$3 \times 7 - 2 = \square \rightarrow \text{R}$

$41 + 6 \times 4 = \square \rightarrow \text{D}$

$9 \times 11 - 25 = \square \rightarrow \text{P}$

$11 \times 7 - 15 = \square \rightarrow \text{I}$

$12 \times 11 - 12 = \square \rightarrow \text{N}$

$17 + 3 \times 3 = \square \rightarrow \text{Y}$

$31 + 7 \times 2 = \square \rightarrow \text{K}$

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

$7 \times 4 - 19 = \square \rightarrow \text{B}$

$9 \times 9 - 4 = \square \rightarrow \text{H}$

$12 \times 5 - 16 = \square \rightarrow \text{W}$

$23 + 3 \times 3 = \square \rightarrow \text{E}$

$41 + 2 \times 6 = \square \rightarrow \text{U}$

$10 \times 5 - 20 = \square \rightarrow \text{T}$

$10 \times 12 - 27 = \square \rightarrow \text{A}$

Scratch space:

CLUE 4 Exponents

The thief escaped through a chamber of multiplying puff cloud plants that double in size every minute.

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

W															
169	196	121	81	128	25	324	196	144	128	25	196	36	16	8	216

25	100	216	400	121	81	25	4	361	9	121	81

$13^2 = \square \rightarrow$ W	$3^2 = \square \rightarrow$ U	$11^2 = \square \rightarrow$ N	$20^2 = \square \rightarrow$ A
$18^2 = \square \rightarrow$ P	$2^7 = \square \rightarrow$ Y	$6^2 = \square \rightarrow$ L	$6^3 = \square \rightarrow$ R
$19^2 = \square \rightarrow$ O	$5^2 = \square \rightarrow$ S	$2^2 = \square \rightarrow$ F	$10^2 = \square \rightarrow$ T
$2^4 = \square \rightarrow$ V	$2^3 = \square \rightarrow$ E	$12^2 = \square \rightarrow$ K	$3^4 = \square \rightarrow$ D
$14^2 = \square \rightarrow$ I			

Scratch space:

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

To weigh the heavy metal scraps left on the escape platform, we must balance the double sided cargo 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:

$6x + 9 = 51, x = \boxed{}$

$2x + 5 = 23, x = \boxed{}$

$3x + 8 = 26, x = \boxed{}$

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

$2x + 1 = 7, x = \boxed{}$

$4x + 1 = 45, x = \boxed{}$

$5x + 8 = 13, x = \boxed{}$

$2x + 5 = 29, x = \boxed{}$

$3x + 3 = 15, x = \boxed{}$

$5x + 12 = 37, x = \boxed{}$

$2x + 7 = 11, x = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain deploys a pocket glider, then snaps a grappling hook.
2. The villain blasts a steam booster, then snaps a grappling hook.
3. The villain revs a clockwork propeller, then flashes a signal mirror.
4. The villain blasts a steam booster, then drops a smoke pellet.
5. The villain swings on a copper zipline, then clangs a brass wrench.
6. The villain revs a clockwork propeller, then clangs a brass wrench.
7. The villain swings on a copper zipline, then flashes a signal mirror.
8. The villain deploys a pocket glider, then flashes a signal mirror.
9. The villain revs a clockwork propeller, then tosses a decoy balloon.
10. The villain blasts a steam booster, then flashes a signal mirror.
11. The villain shoots a net launcher, then drops a smoke pellet.
12. The villain shoots a net launcher, then flashes a signal mirror.

Answer Key

The Skyship Chronograph Caper

Culprit: Iris

Pocket Glider · Signal Mirror · Neck Goggles · Spiky Silver · Sticky Sap

Trail: Start 21 → Clue 1 19 → Clue 2 12 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Integers): "THE THIEF DOES NOT USE A GRAPPLING HOOK"

$16 - (-2) = 18$ (T) · $28 - (-1) = 29$ (H) · $7 - (-2) = 9$ (I) · $(-7) + 10 = 3$ (P) · $12 - (-14) = 26$ (N) · $(-7) + 8 = 1$ (L) · $(-7) + 14 = 7$ (S) · $(-10) + 32 = 22$ (A) · $(-1) + 15 = 14$ (G) · $(-10) + 16 = 6$ (K) · $1 - (-9) = 10$ (D) · $(-4) + 6 = 2$ (O) · $(-4) + 19 = 15$ (F) · $(-11) + 27 = 16$ (E) · $(-12) + 33 = 21$ (R) · $(-7) + 31 = 24$ (U)

Clue 2 (Percentages): "THE SUSPECT KEEPS GOGGLES AROUND THE NECK"

50% of 90 = 45 (T) · 10% of 400 = 40 (K) · 40% of 20 = 8 (O) · 50% of 64 = 32 (H) · 5% of 940 = 47 (R) · 25% of 200 = 50 (N) · 10% of 560 = 56 (P) · 25% of 60 = 15 (E) · 10% of 380 = 38 (L) · 20% of 260 = 52 (D) · 20% of 295 = 59 (G) · 60% of 100 = 60 (C) · 10% of 110 = 11 (U) · 10% of 550 = 55 (A) · 5% of 180 = 9 (S)

Clue 3 (Order of operations): "STICKY SAP TRAPS THE RUNAWAY BANDIT"

$3 \times 12 - 24 = 12$ (S) · $3 \times 7 - 2 = 19$ (R) · $41 + 6 \times 4 = 65$ (D) · $9 \times 11 - 25 = 74$ (P) · $11 \times 7 - 15 = 62$ (I) · $12 \times 11 - 12 = 120$ (N) · $17 + 3 \times 3 = 26$ (Y) · $31 + 7 \times 2 = 45$ (K) · $10 \times 9 - 10 = 80$ (C) · $7 \times 4 - 19 = 9$ (B) · $9 \times 9 - 4 = 77$ (H) · $12 \times 5 - 16 = 44$ (W) · $23 + 3 \times 3 = 32$ (E) · $41 + 2 \times 6 = 53$ (U) · $10 \times 5 - 20 = 30$ (T) · $10 \times 12 - 27 = 93$ (A)

Clue 4 (Exponents): "WINDY SPIKY SILVER STRANDS FOUND"

$13^2 = 169$ (W) · $3^2 = 9$ (U) · $11^2 = 121$ (N) · $20^2 = 400$ (A) · $18^2 = 324$ (P) · $2^7 = 128$ (Y) · $6^2 = 36$ (L) · $6^3 = 216$ (R) · $19^2 = 361$ (O) · $5^2 = 25$ (S) · $2^2 = 4$ (F) · $10^2 = 100$ (T) · $2^4 = 16$ (V) · $2^3 = 8$ (E) · $12^2 = 144$ (K) · $3^4 = 81$ (D) · $14^2 = 196$ (I)

Clue 5 (Two-step equations): surviving statement is box 8 → Iris

$6x + 9 = 51, x = 7$ · $2x + 5 = 23, x = 9$ · $3x + 8 = 26, x = 6$ · $4x + 4 = 44, x = 10$ · $2x + 1 = 7, x = 3$ · $4x + 1 = 45, x = 11$ · $5x + 8 = 13, x = 1$ · $2x + 5 = 29, x = 12$ · $3x + 3 = 15, x = 4$ · $5x + 12 = 37, x = 5$ · $2x + 7 = 11, x = 2$