



The Sky-Island Heist

Grade 9 math · Two-step equations, Exponents, Square roots, Integers · Reading level grades 3-4

Detective: _____ **Date:** _____

The legendary Golden Compass has vanished from the Wind Keeper's grand airship! We must search the floating docks, track down the clues, and find which pilot is the sneaky Sky Bandit before a great storm rolls in.

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	MAIN TOOL	BACKUP GEAR	COMPASS TYPE	HAIR COLOR	SECRET FLAW
Tess Turbine	grappling hook	flash powder	uses a red compass	bright orange hair	scared of heights
Joy Jetstream	grappling hook	laser pointer	uses a red compass	curly yellow hair	allergic to pollen
Sam Stratos	jet boots	smoke bombs	uses a red compass	spiky brown hair	scared of heights
Mia Mapmaker	jet boots	laser pointer	uses a red compass	spiky brown hair	tickled by feathers
Sky Skipper	propeller pack	flash powder	uses a blue compass	spiky brown hair	allergic to pollen
Val Vector	glider wings	net launcher	uses a blue compass	spiky brown hair	allergic to pollen
Amy Aviator	grappling hook	smoke bombs	uses a red compass	spiky brown hair	tickled by feathers
Peg Pegasus	glider wings	net launcher	uses a blue compass	bright orange hair	allergic to pollen
Leo Pathfinder	climbing ropes	net launcher	uses a blue compass	bright orange hair	scared of heights
Rex Radar	climbing ropes	net launcher	uses a blue compass	spiky brown hair	allergic to pollen
Zack Zenith	climbing ropes	flash powder	uses a red compass	spiky brown hair	allergic to pollen
Cal Cumulus	climbing ropes	laser pointer	uses a red compass	curly yellow hair	allergic to pollen
Pip Propeller	grappling hook	flash powder	uses a blue compass	spiky brown hair	allergic to pollen
Ned Nimbus	climbing ropes	laser pointer	uses a red compass	spiky brown hair	allergic to pollen
Bob Balloon	jet boots	net launcher	uses a blue compass	curly yellow hair	allergic to pollen
Gus Goggles	glider wings	smoke bombs	uses a blue compass	spiky brown hair	tickled by feathers
Hal Helios	glider wings	wind blower	uses a blue compass	spiky brown hair	tickled by feathers
Ben Beacon	jet boots	flash powder	uses a red compass	spiky brown hair	scared of heights
Max Altitude	jet boots	flash powder	uses a red compass	curly yellow hair	allergic to pollen
Dot Drift	jet boots	flash powder	uses a blue compass	spiky brown hair	scared of heights
Kai Kite	glider wings	wind blower	uses a blue compass	spiky brown hair	allergic to pollen

CLUE 1

We found some gear boxes left on the wooden runway. The total weight of three small boxes plus a ten pound tool bag matches a heavy crate. Solve for the weight of a single box to unlock this clue.

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

Diagram illustrating a 2x3 grid of boxes. The top row contains boxes with values 13, 10, and 20. The bottom row contains boxes with values 13, 10, and 20. The box with value 13 in the top row is highlighted in orange and labeled 'T'.

$2x + 6 = 32, x = \square \rightarrow \boxed{\text{T}}$

$7x + 5 = 26, x = \boxed{} \rightarrow \boxed{0}$

$$7x + 10 = 115, x = \boxed{} \rightarrow \boxed{\text{L}}$$

$$2x + 7 = 23, x = \boxed{} \rightarrow \boxed{\text{S}}$$

$4x + 10 = 90, x = \boxed{} \rightarrow \boxed{\text{E}}$

$6x + 9 = 105$, $x =$ $\rightarrow$ **W**

$3x + 11 = 26, x = \square \rightarrow \boxed{\text{U}}$

$$8x + 8 = 24, x = \boxed{} \rightarrow \boxed{\text{N}}$$

$$8x + 4 = 92, x = \boxed{} \rightarrow \boxed{\text{D}}$$

$$7x + 3 = 87, x = \boxed{} \rightarrow \boxed{I}$$

$$4x + 12 = 52, x = \boxed{} \rightarrow \boxed{\text{H}}$$

$$5x + 5 = 75, x = \boxed{} \rightarrow \boxed{\text{R}}$$

$$6x + 6 = 108, x = \boxed{} \rightarrow \boxed{\text{A}}$$

$7x + 6 = 48, x = \boxed{} \rightarrow \boxed{\text{B}}$

Scratch space:

CLUE 2 Exponents

The Sky Bandit locked a cargo chest to slow us down. The lock code uses exponents. We must find the value of five raised to the third power to open the latch and read the note inside.

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

T			T													
225	441	121	225	441	512	121	100	169	9	324	36	36	121	169		343
25	64	8	121	32	324	216	36	343	361	361						

$15^2 = \square \rightarrow \text{T}$	$2^3 = \square \rightarrow \text{U}$	$10^2 = \square \rightarrow \text{F}$	$19^2 = \square \rightarrow \text{S}$
$5^2 = \square \rightarrow \text{B}$	$6^2 = \square \rightarrow \text{P}$	$8^2 = \square \rightarrow \text{L}$	$21^2 = \square \rightarrow \text{H}$
$6^3 = \square \rightarrow \text{M}$	$3^2 = \square \rightarrow \text{R}$	$8^3 = \square \rightarrow \text{I}$	$18^2 = \square \rightarrow \text{O}$
$7^3 = \square \rightarrow \text{A}$	$2^5 = \square \rightarrow \text{C}$	$11^2 = \square \rightarrow \text{E}$	$13^2 = \square \rightarrow \text{D}$

Scratch space:

CLUE 3 Square roots

We need to search a square landing pad for clues. If the total area of the square pad is sixty-four square yards, how long is one side? This number opens the next security file.

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

25 20 4 21 6 3 4 4 13 4 5 3 4 14 16 25 20 4

22 23 9 12 4 16 6

sqrt(625) = → **T**

sqrt(25) = → **D**

sqrt(16) = → **E**

sqrt(441) = → **Y**

sqrt(9) = → **N**

sqrt(169) = → **Z**

sqrt(81) = →

sqrt(36) = → **S**

sqrt(144) = → **W**

sqrt(484) = → **F**

sqrt(529) = →

sqrt(256) = → **R**

sqrt(196) = → **A**

sqrt(400) = → **H**

Scratch space:

CLUE 4 **Integers**

Our patrol airship altitude rose and fell during the chase. We started at ten feet, dropped twenty feet, and then climbed thirty feet. Find our final altitude to track the flight path.

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

W 22	4	3	20	29	31	18	40	23	6	8	16	27	11	20	W 22	31
9	32	6	11													

$$(-8) + 30 = \boxed{} \rightarrow \boxed{\text{W}}$$

$$(-3) + 26 = \boxed{} \rightarrow \boxed{\text{P}}$$

$$30 - (-1) = \boxed{} \rightarrow \boxed{\text{N}}$$

$$(-2) + 13 = \boxed{} \rightarrow \boxed{\text{R}}$$

$$(-14) + 54 = \boxed{} \rightarrow \boxed{\text{S}}$$

$$7 - (-11) = \boxed{} \rightarrow \boxed{\text{D}}$$

$$14 - (-6) = \boxed{} \rightarrow \boxed{\text{O}}$$

$$7 - (-2) = \boxed{} \rightarrow \boxed{\text{H}}$$

$$(-10) + 37 = \boxed{} \rightarrow \boxed{\text{B}}$$

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

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

$$(-5) + 13 = \boxed{} \rightarrow \boxed{\text{K}}$$

$$28 - (-1) = \boxed{} \rightarrow \boxed{\text{U}}$$

$$(-14) + 17 = \boxed{} \rightarrow \boxed{\text{F}}$$

$$(-14) + 46 = \boxed{} \rightarrow \boxed{\text{A}}$$

$$(-11) + 17 = \boxed{} \rightarrow \boxed{\text{I}}$$

Scratch space:

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

The crew needs to share our remaining fuel flasks. We have thirty total flasks, but five are leaking and ruined. The rest are split evenly among five scout ships. Solve for the flasks per ship to get the final clue.

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:

$9x + 1 = 82, x = \boxed{}$

$2x + 10 = 24, x = \boxed{}$

$4x + 4 = 16, x = \boxed{}$

$8x + 7 = 71, x = \boxed{}$

$9x + 7 = 25, x = \boxed{}$

$4x + 4 = 28, x = \boxed{}$

$4x + 8 = 48, x = \boxed{}$

$3x + 3 = 18, x = \boxed{}$

$7x + 12 = 89, x = \boxed{}$

$4x + 3 = 19, x = \boxed{}$

$7x + 10 = 94, x = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain zooms past the watchtower, then leaves a dusty cloud.
2. The villain blasts off from the runway, then drops a trail of glitter.
3. The villain scales the rocky cliff, then fires a tangled mesh.
4. The villain swings from the dock crane, then fires a tangled mesh.
5. The villain blasts off from the runway, then leaves a dusty cloud.
6. The villain soars through the clouds, then shines a bright light.
7. The villain swings from the dock crane, then leaves a dusty cloud.
8. The villain zooms past the watchtower, then drops a trail of glitter.
9. The villain soars through the clouds, then fires a tangled mesh.
10. The villain swings from the dock crane, then drops a trail of glitter.
11. The villain blasts off from the runway, then shines a bright light.
12. The villain scales the rocky cliff, then blows away the map.

Answer Key

The Sky-Island Heist

Culprit: Sky Skipper

propeller pack · flash powder · uses a blue compass · spiky brown hair · allergic to pollen

Trail: Start 21 → Clue 1 19 → Clue 2 9 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Two-step equations): "THE BANDIT DOES NOT USE THE WIND BLOWER"

$2x + 6 = 32$, $x = 13$ (T) · $7x + 5 = 26$, $x = 3$ (O) · $7x + 10 = 115$, $x = 15$ (L) · $2x + 7 = 23$, $x = 8$ (S) · $4x + 10 = 90$, $x = 20$ (E) · $6x + 9 = 105$, $x = 16$ (W) · $3x + 11 = 26$, $x = 5$ (U) · $8x + 8 = 24$, $x = 2$ (N) · $8x + 4 = 92$, $x = 11$ (D) · $7x + 3 = 87$, $x = 12$ (I) · $4x + 12 = 52$, $x = 10$ (H) · $5x + 5 = 75$, $x = 14$ (R) · $6x + 6 = 108$, $x = 17$ (A) · $7x + 6 = 48$, $x = 6$ (B)

Clue 2 (Exponents): "THE THIEF DROPPED A BLUE COMPASS"

$15^2 = 225$ (T) · $2^3 = 8$ (U) · $10^2 = 100$ (F) · $19^2 = 361$ (S) · $5^2 = 25$ (B) · $6^2 = 36$ (P) · $8^2 = 64$ (L) · $21^2 = 441$ (H) · $6^3 = 216$ (M) · $3^2 = 9$ (R) · $8^3 = 512$ (I) · $18^2 = 324$ (O) · $7^3 = 343$ (A) · $2^5 = 32$ (C) · $11^2 = 121$ (E) · $13^2 = 169$ (D)

Clue 3 (Square roots): "THEY SNEEZED NEAR THE FLOWERS"

$\sqrt{625} = 25$ (T) · $\sqrt{25} = 5$ (D) · $\sqrt{16} = 4$ (E) · $\sqrt{441} = 21$ (Y) · $\sqrt{9} = 3$ (N) · $\sqrt{169} = 13$ (Z) · $\sqrt{81} = 9$ (O) · $\sqrt{36} = 6$ (S) · $\sqrt{144} = 12$ (W) · $\sqrt{484} = 22$ (F) · $\sqrt{529} = 23$ (L) · $\sqrt{256} = 16$ (R) · $\sqrt{196} = 14$ (A) · $\sqrt{400} = 20$ (H)

Clue 4 (Integers): "WE FOUND SPIKY BROWN HAIR"

$(-8) + 30 = 22$ (W) · $(-3) + 26 = 23$ (P) · $30 - (-1) = 31$ (N) · $(-2) + 13 = 11$ (R) · $(-14) + 54 = 40$ (S) · $7 - (-11) = 18$ (D) · $14 - (-6) = 20$ (O) · $7 - (-2) = 9$ (H) · $(-10) + 37 = 27$ (B) · $(-6) + 10 = 4$ (E) · $10 - (-6) = 16$ (Y) · $(-5) + 13 = 8$ (K) · $28 - (-1) = 29$ (U) · $(-14) + 17 = 3$ (F) · $(-14) + 46 = 32$ (A) · $(-11) + 17 = 6$ (I)

Clue 5 (Two-step equations): surviving statement is box 1 → Sky Skipper

$9x + 1 = 82$, $x = 9$ · $2x + 10 = 24$, $x = 7$ · $4x + 4 = 16$, $x = 3$ · $8x + 7 = 71$, $x = 8$ · $9x + 7 = 25$, $x = 2$ · $4x + 4 = 28$, $x = 6$ · $4x + 8 = 48$, $x = 10$ · $3x + 3 = 18$, $x = 5$ · $7x + 12 = 89$, $x = 11$ · $4x + 3 = 19$, $x = 4$ · $7x + 10 = 94$, $x = 12$