



The Sky-Ship Showdown

Grade 6 math · Percentages, Exponents, Order of operations, Multiplication, Division · Reading level grades 3-4

Detective: _____ **Date:** _____

The Golden Compass has been stolen from the Sky Temple! The Chief Sky Warden needs your help to catch the cloud thief before they escape past the wind barrier.

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 cloud thief is _____

Possible suspects

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

NAME	SKY-SHIP ENGINE	SHIP TOOL	EYE GEAR	HEADWEAR	DISTRACTION
Navigator Ben	gravity lift	spark blaster	wears goggles	gold helmet	sweet treats
Anchor Al	turbo prop	net launcher	wears goggles	blue cap	loud noise
Slick Sam	magnet drive	spark blaster	wears goggles	red bandana	sweet treats
Echo Emma	gravity lift	fog horn	no goggles	red bandana	sweet treats
Rudder Ruby	turbo prop	grapple claw	wears goggles	blue cap	loud noise
Zephyr Zack	solar sails	spark blaster	wears goggles	red bandana	loud noise
Gale Gabe	turbo prop	smoke screen	no goggles	blue cap	sweet treats
Beacon Bob	steam engine	net launcher	wears goggles	red bandana	loud noise
Pilot Cole	magnet drive	smoke screen	wears goggles	blue cap	loud noise
Jet Jax	solar sails	grapple claw	wears goggles	red bandana	shiny gems
Skipper Mia	turbo prop	grapple claw	no goggles	blue cap	sweet treats
Stormy Sue	steam engine	fog horn	wears goggles	red bandana	sweet treats
Breezy Bella	steam engine	smoke screen	wears goggles	blue cap	sweet treats
Sunny Sophia	solar sails	net launcher	no goggles	blue cap	sweet treats
Captain Dax	magnet drive	smoke screen	wears goggles	red bandana	loud noise
Cloudy Cleo	gravity lift	grapple claw	no goggles	red bandana	sweet treats
Compass Cora	gravity lift	spark blaster	no goggles	red bandana	loud noise
Windy Will	steam engine	smoke screen	wears goggles	red bandana	loud noise
Skyler Sky	magnet drive	spark blaster	wears goggles	red bandana	loud noise
Clipper Cody	turbo prop	grapple claw	wears goggles	red bandana	sweet treats
Aero Andy	gravity lift	smoke screen	no goggles	red bandana	sweet treats

CLUE 1 Percentages

We scanned the sky-ship fuel gauges. The fuel tanks only show the remaining capacity in percentages, but we worked out the math to find a clue!

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

T																T
14	2	20	11	35	25	25	7	35	23	38	22	20	29	23	22	14
			T					T								
34	29	20	14	2	20	23	20	14	25	7	34	23	10	2	20	19

$25\% \text{ of } 56 = \square \rightarrow \text{T}$

$50\% \text{ of } 76 = \square \rightarrow \text{D}$

$25\% \text{ of } 116 = \square \rightarrow \text{S}$

$25\% \text{ of } 8 = \square \rightarrow \text{H}$

$10\% \text{ of } 250 = \square \rightarrow \text{L}$

$50\% \text{ of } 46 = \square \rightarrow \text{N}$

$20\% \text{ of } 175 = \square \rightarrow \text{I}$

$50\% \text{ of } 22 = \square \rightarrow \text{V}$

$10\% \text{ of } 190 = \square \rightarrow \text{R}$

$50\% \text{ of } 20 = \square \rightarrow \text{C}$

$50\% \text{ of } 44 = \square \rightarrow \text{O}$

$20\% \text{ of } 100 = \square \rightarrow \text{E}$

$10\% \text{ of } 70 = \square \rightarrow \text{A}$

$50\% \text{ of } 68 = \square \rightarrow \text{U}$

Scratch space:

CLUE 2

The ship grid is growing in power. The engine levels double with each exponent, helping us track the thief's exact escape speed!

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

Diagram illustrating the multiplication of 144 by 144 using a grid of boxes. The grid is 12 boxes wide and 12 boxes high. The top row contains the numbers 144, 36, 64, 81, 216, 81, 289, 64, 169, 144, 16, 128, 81. The second row contains 81, 289, 121, 144, 144, 64, 361. The third row contains 16, 64, 128, 196, 225, 8, 4. The fourth row contains 4, 121, 4, 4, 9, 64, 81. The boxes containing 144 are highlighted in orange and labeled with a 'T'.

$12^2 =$ $\rightarrow$ **T**

$$17^2 = \boxed{} \rightarrow \boxed{\text{P}}$$

$$2^3 = \boxed{} \rightarrow \boxed{\text{N}}$$

$$14^2 = \boxed{} \rightarrow \boxed{\text{R}}$$

$$8^2 = \boxed{} \rightarrow \boxed{\text{E}}$$

$19^2 = \boxed{} \rightarrow \boxed{\text{D}}$

$2^2 = \square \rightarrow \boxed{\mathbf{G}}$

$9^2 = \square \rightarrow \boxed{S}$

$2^7 = \square \rightarrow \boxed{\text{A}}$

$6^2 = \square \rightarrow \boxed{\text{H}}$

$3^2 = \square \rightarrow \boxed{\text{L}}$

$11^2 = \square \rightarrow \boxed{0}$

$13^2 =$ $\rightarrow$ **C**

$15^2 = \boxed{} \rightarrow \boxed{\text{I}}$

$$6^3 = \boxed{} \rightarrow \boxed{\text{U}}$$

$$2^4 = \boxed{} \rightarrow \boxed{\mathbf{W}}$$

Scratch space:

CLUE 3

Order of operations

We found a locked hatch on the getaway ship. We have to solve the math dials in the correct order of operations to crack the code!

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

T																	
21	36	39	56	16	7	7	10	16	27	16	46	46	66	10	30	39	38
72	61	10	7	26	42	38	27	26	16	46	39						

$6 \times 7 - 21 = \square \rightarrow \boxed{\text{T}}$

$4 \times 12 - 12 = \square \rightarrow \boxed{\text{H}}$

$23 + 2 \times 8 = \square \rightarrow \boxed{\text{E}}$

$23 + 2 \times 2 = \square \rightarrow \boxed{\text{N}}$

$8 \times 5 - 10 = \square \rightarrow \boxed{\text{R}}$

$4 + 2 \times 3 = \square \rightarrow \boxed{\text{A}}$

$16 + 5 \times 8 = \square \rightarrow \boxed{\text{V}}$

$10 + 4 \times 4 = \square \rightarrow \boxed{\text{O}}$

$52 + 7 \times 2 = \square \rightarrow \boxed{\text{C}}$

$10 \times 10 - 28 = \square \rightarrow \boxed{\text{B}}$

$36 + 2 \times 3 = \square \rightarrow \boxed{\text{U}}$

$10 + 2 \times 3 = \square \rightarrow \boxed{\text{I}}$

$10 \times 8 - 19 = \square \rightarrow \boxed{\text{Y}}$

$11 \times 6 - 20 = \square \rightarrow \boxed{\text{S}}$

$17 + 3 \times 7 = \square \rightarrow \boxed{\text{D}}$

$10 \times 2 - 13 = \square \rightarrow \boxed{\text{L}}$

Scratch space:

CLUE 4
Multiplication facts (1-12)

We checked the cargo hold docks. The thief ran past several equal rows of supply crates, and multiplying the rows gave us a new lead!

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

W																	
42	54	84	18	108	132	2	1	6	54	2	121	1	132	2	1	132	1
1	35	35	77	54	88	45	54	132	54								

$7 \times 6 = \square \rightarrow \boxed{\text{W}}$

$9 \times 12 = \square \rightarrow \boxed{\text{U}}$

$9 \times 6 = \square \rightarrow \boxed{\text{E}}$

$7 \times 5 = \square \rightarrow \boxed{\text{T}}$

$5 \times 9 = \square \rightarrow \boxed{\text{C}}$

$1 \times 6 = \square \rightarrow \boxed{\text{R}}$

$1 \times 2 = \square \rightarrow \boxed{\text{D}}$

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

$11 \times 11 = \square \rightarrow \boxed{\text{B}}$

$7 \times 11 = \square \rightarrow \boxed{\text{H}}$

$6 \times 3 = \square \rightarrow \boxed{\text{O}}$

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

$1 \times 1 = \square \rightarrow \boxed{\text{A}}$

$12 \times 7 = \square \rightarrow \boxed{\text{F}}$

Scratch space:

CLUE 5**Division facts (1-12) - the last clue**

The crew is sharing the remaining water rations. Dividing the supplies equally among the sky team helped us pinpoint the thief's direction!

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:

$5 \div 1 = \boxed{}$

$64 \div 8 = \boxed{}$

$18 \div 6 = \boxed{}$

$2 \div 1 = \boxed{}$

$36 \div 4 = \boxed{}$

$80 \div 8 = \boxed{}$

$88 \div 8 = \boxed{}$

$18 \div 3 = \boxed{}$

$12 \div 12 = \boxed{}$

$32 \div 8 = \boxed{}$

$70 \div 10 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain floats upward using the gravity lift, then hides in a thick smoke screen.
2. The villain zooms away using the turbo prop, then hides in a thick smoke screen.
3. The villain zooms forward using the magnet drive, then shoots sparks with a spark blaster.
4. The villain glides quietly using the solar sails, then escapes the trap with a net launcher.
5. The villain puffs smoke using the steam engine, then hides in a thick smoke screen.
6. The villain glides quietly using the solar sails, then zips through the sky with a grapple claw.
7. The villain zooms forward using the magnet drive, then escapes the trap with a net launcher.
8. The villain zooms forward using the magnet drive, then hides in a thick smoke screen.
9. The villain floats upward using the gravity lift, then makes a huge racket with a fog horn.
10. The villain glides quietly using the solar sails, then hides in a thick smoke screen.
11. The villain floats upward using the gravity lift, then escapes the trap with a net launcher.
12. The villain glides quietly using the solar sails, then shoots sparks with a spark blaster.

Answer Key

The Sky-Ship Showdown

Culprit: Zephyr Zack

solar sails · spark blaster · wears goggles · red bandana · loud noise

Trail: Start 21 → Clue 1 18 → Clue 2 12 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Percentages): "THE VILLAIN DOES NOT USE THE NET LAUNCHER"

25% of 56 = 14 (T) · 50% of 76 = 38 (D) · 25% of 116 = 29 (S) · 25% of 8 = 2 (H) · 10% of 250 = 25 (L) · 50% of 46 = 23 (N) · 20% of 175 = 35 (I) · 50% of 22 = 11 (V) · 10% of 190 = 19 (R) · 50% of 20 = 10 (C) · 50% of 44 = 22 (O) · 20% of 100 = 20 (E) · 10% of 70 = 7 (A) · 50% of 68 = 34 (U)

Clue 2 (Exponents): "THE SUSPECT WAS SPOTTED WEARING GOGGLES"

$12^2 = 144$ (T) · $17^2 = 289$ (P) · $2^3 = 8$ (N) · $14^2 = 196$ (R) · $8^2 = 64$ (E) · $19^2 = 361$ (D) · $2^2 = 4$ (G) · $9^2 = 81$ (S) · $2^7 = 128$ (A) · $6^2 = 36$ (H) · $3^2 = 9$ (L) · $11^2 = 121$ (O) · $13^2 = 169$ (C) · $15^2 = 225$ (I) · $6^3 = 216$ (U) · $2^4 = 16$ (W)

Clue 3 (Order of operations): "THE VILLAIN IS SCARED BY A LOUD NOISE"

$6 \times 7 - 21 = 21$ (T) · $4 \times 12 - 12 = 36$ (H) · $23 + 2 \times 8 = 39$ (E) · $23 + 2 \times 2 = 27$ (N) · $8 \times 5 - 10 = 30$ (R) · $4 + 2 \times 3 = 10$ (A) · $16 + 5 \times 8 = 56$ (V) · $10 + 4 \times 4 = 26$ (O) · $52 + 7 \times 2 = 66$ (C) · $10 \times 10 - 28 = 72$ (B) · $36 + 2 \times 3 = 42$ (U) · $10 + 2 \times 3 = 16$ (I) · $10 \times 8 - 19 = 61$ (Y) · $11 \times 6 - 20 = 46$ (S) · $17 + 3 \times 7 = 38$ (D) · $10 \times 2 - 13 = 7$ (L)

Clue 4 (Multiplication facts (1-12)): "WE FOUND A RED BANDANA AT THE SCENE"

$7 \times 6 = 42$ (W) · $9 \times 12 = 108$ (U) · $9 \times 6 = 54$ (E) · $7 \times 5 = 35$ (T) · $5 \times 9 = 45$ (C) · $1 \times 6 = 6$ (R) · $1 \times 2 = 2$ (D) · $12 \times 11 = 132$ (N) · $11 \times 11 = 121$ (B) · $7 \times 11 = 77$ (H) · $6 \times 3 = 18$ (O) · $11 \times 8 = 88$ (S) · $1 \times 1 = 1$ (A) · $12 \times 7 = 84$ (F)

Clue 5 (Division facts (1-12)): surviving statement is box 12 → Zephyr Zack

$5 \div 1 = 5$ · $64 \div 8 = 8$ · $18 \div 6 = 3$ · $2 \div 1 = 2$ · $36 \div 4 = 9$ · $80 \div 8 = 10$ · $88 \div 8 = 11$ · $18 \div 3 = 6$ · $12 \div 12 = 1$ · $32 \div 8 = 4$ · $70 \div 10 = 7$