



The Mystery of the Golden Compass

Grade 5 math · Place value, Addition, Subtraction, Multiplication, Division · Reading level grades 3-4

Detective: _____ **Date:** _____

Someone snuck into the Treehouse Headquarters and took the legendary Golden Compass. The Chief Cartographer needs your help to get it back. Use your math skills to track down the mischievous thief.

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 mischievous 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	SECONDARY TOOL	GLOVE STYLE	HAIR STYLE	SPECIAL WEAKNESS
Zoe Mapmaker	Grappling Hook	Brass Binoculars	Left hand glove	Curly red hair	Sweet honey
Finn Falcon	Grappling Hook	Brass Binoculars	Right hand glove	Spiky blue hair	Sweet honey
Marco Cruz	Jet Pack	Silver Whistle	Left hand glove	Spiky blue hair	Sweet honey
Navigator Nate	Glider Wings	Silver Whistle	Left hand glove	Curly red hair	Squeaky toys
Otis Owl	Grappling Hook	Old Map	Left hand glove	Curly red hair	Tickle feathers
Pip Pocket	Climbing Rope	Old Map	Left hand glove	Curly red hair	Tickle feathers
Skyler Wind	Grappling Hook	Shiny Compass	Left hand glove	Spiky blue hair	Tickle feathers
Penny Pilot	Rocket Boots	Tiny Flashlight	Left hand glove	Curly red hair	Tickle feathers
Daring Dora	Glider Wings	Old Map	Left hand glove	Curly red hair	Squeaky toys
Ruby Rope	Jet Pack	Shiny Compass	Right hand glove	Curly red hair	Tickle feathers
Bella Compass	Glider Wings	Brass Binoculars	Right hand glove	Spiky blue hair	Tickle feathers
Lexi Lock	Jet Pack	Tiny Flashlight	Left hand glove	Spiky blue hair	Squeaky toys
Kip Ranger	Jet Pack	Brass Binoculars	Right hand glove	Spiky blue hair	Squeaky toys
Gus Goggles	Glider Wings	Shiny Compass	Left hand glove	Curly red hair	Squeaky toys
Leo Lantern	Jet Pack	Silver Whistle	Left hand glove	Curly red hair	Tickle feathers
Miles Cloud	Climbing Rope	Brass Binoculars	Left hand glove	Curly red hair	Tickle feathers
Jax Explorer	Climbing Rope	Old Map	Right hand glove	Spiky blue hair	Sweet honey
Daisy Digger	Rocket Boots	Old Map	Right hand glove	Spiky blue hair	Squeaky toys
Toby Tracker	Rocket Boots	Old Map	Right hand glove	Curly red hair	Tickle feathers
Scout Sally	Rocket Boots	Silver Whistle	Right hand glove	Braided green hair	Sweet honey
Hazel Hawk	Jet Pack	Tiny Flashlight	Left hand glove	Spiky blue hair	Sweet honey

CLUE 1 Place value

We found the locked sky-chest! The lock screen shows a big number. We must look at the value of the hundreds digit to open the lid and find the first clue.

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

T						T												
100	600	400	80	5000	50	2000	100	30	50	400	80	70	50	100	600	90	200	400
T																		
100	600	400	8000	40	90	80	80	8000	3000	70	50	5000	2000	4000	90	40	80	

What is the value of the 1 in 609,105? → **T**

What is the value of the 4 in 853,849? → **R**

What is the value of the 5 in 15,680? → **C**

What is the value of the 8 in 68,504? → **B**

What is the value of the 2 in 81,255? → **V**

What is the value of the 9 in 852,196? → **A**

What is the value of the 8 in 433,684? → **S**

What is the value of the 3 in 13,781? → **I**

What is the value of the 6 in 854,634? → **H**

What is the value of the 4 in 84,135? → **L**

What is the value of the 3 in 40,938? → **D**

What is the value of the 2 in 862,506? → **U**

What is the value of the 5 in 327,052? → **O**

What is the value of the 7 in 338,478? → **N**

What is the value of the 4 in 83,460? → **E**

Scratch space:

CLUE 2 Addition

To track the thief, we need to gather our tools. We count the walking sticks we found in the yard and add them to the pile of ropes in our cart.

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

T															
6232	8139	3449	8730	5064	4102	4102	3804	5064	7627	2082	3449	3804	7057	8197	3804

			T										
4102	3449	5082	6232	8139	3804	7627	6773	2363	4102	2097	8730	3449	

$2311 + 3921 = \square \rightarrow \text{T}$	$801 + 1281 = \square \rightarrow \text{W}$	$3741 + 3316 = \square \rightarrow \text{R}$
$2061 + 1388 = \square \rightarrow \text{E}$	$1407 + 690 = \square \rightarrow \text{O}$	$3497 + 1585 = \square \rightarrow \text{F}$
$3411 + 5319 = \square \rightarrow \text{V}$	$1443 + 920 = \square \rightarrow \text{G}$	$1267 + 2835 = \square \rightarrow \text{L}$
$1576 + 3488 = \square \rightarrow \text{I}$	$2424 + 1380 = \square \rightarrow \text{A}$	$5657 + 2540 = \square \rightarrow \text{S}$
$3183 + 3590 = \square \rightarrow \text{D}$	$5245 + 2382 = \square \rightarrow \text{N}$	$3443 + 4696 = \square \rightarrow \text{H}$

Scratch space:

CLUE 3

Subtraction

The thief snatched some glowing crystal rocks from the collection. We count the remaining crystals and subtract them from the starting total to see how many are gone.

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

T									T											
6440	2169	1611	2926	4035	6496	5696	6496	8520	6440	8667	6496	3204	2495	3102	2169	4035	4035			
	T					T														
2495	6440	8238	3473	6440	8667	2169	2495	4093	2169	4035	4035	8520	2169	5422						

$$8745 - 2305 = \square \rightarrow \boxed{\text{T}}$$

$$7911 - 4985 = \square \rightarrow \boxed{\text{K}}$$

$$5535 - 2433 = \square \rightarrow \boxed{\text{W}}$$

$$4487 - 1283 = \square \rightarrow \boxed{\text{R}}$$

$$7152 - 1730 = \square \rightarrow \boxed{\text{N}}$$

$$3435 - 1266 = \square \rightarrow \boxed{\text{I}}$$

$$4900 - 2405 = \square \rightarrow \boxed{\text{S}}$$

$$6074 - 4463 = \square \rightarrow \boxed{\text{C}}$$

$$9879 - 1641 = \square \rightarrow \boxed{\text{O}}$$

$$13224 - 4704 = \square \rightarrow \boxed{\text{A}}$$

$$8010 - 4537 = \square \rightarrow \boxed{\text{P}}$$

$$7545 - 3452 = \square \rightarrow \boxed{\text{V}}$$

$$10001 - 3505 = \square \rightarrow \boxed{\text{E}}$$

$$7843 - 2147 = \square \rightarrow \boxed{\text{F}}$$

$$8758 - 4723 = \square \rightarrow \boxed{\text{L}}$$

$$13373 - 4706 = \square \rightarrow \boxed{\text{H}}$$

Scratch space:

CLUE 4

Multiplication facts (1-12)

We spot footprints leading into the ancient temple. They are arranged in neat rows. We multiply the rows of tracks to find the total number of steps.

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

W																		
2	121	144	72	32	64	12	55	32	22	88	11	22	121	12	7	100	54	22
100	66	66	7	121	60	55	121	64	121									

$1 \times 2 = \square \rightarrow \boxed{W}$

$8 \times 4 = \square \rightarrow \boxed{U}$

$9 \times 8 = \square \rightarrow \boxed{O}$

$11 \times 6 = \square \rightarrow \boxed{T}$

$11 \times 11 = \square \rightarrow \boxed{E}$

$2 \times 6 = \square \rightarrow \boxed{D}$

$6 \times 10 = \square \rightarrow \boxed{S}$

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

$11 \times 1 = \square \rightarrow \boxed{Y}$

$8 \times 8 = \square \rightarrow \boxed{N}$

$1 \times 7 = \square \rightarrow \boxed{H}$

$10 \times 10 = \square \rightarrow \boxed{A}$

$5 \times 11 = \square \rightarrow \boxed{C}$

$2 \times 11 = \square \rightarrow \boxed{R}$

$8 \times 11 = \square \rightarrow \boxed{L}$

$9 \times 6 = \square \rightarrow \boxed{I}$

Scratch space:

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

We find a stash of map pieces left behind. We must divide the scraps equally among our rescue team so everyone can study a piece.

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:

$72 \div 12 = \boxed{}$

$66 \div 6 = \boxed{}$

$27 \div 9 = \boxed{}$

$132 \div 11 = \boxed{}$

$81 \div 9 = \boxed{}$

$10 \div 2 = \boxed{}$

$2 \div 1 = \boxed{}$

$16 \div 2 = \boxed{}$

$14 \div 2 = \boxed{}$

$11 \div 11 = \boxed{}$

$20 \div 5 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain swung across on a grappling hook, then spied ahead through brass binoculars.
2. The villain soared down using glider wings, then checked the direction on a shiny compass.
3. The villain blasted off on a jet pack, then blew a signal on a silver whistle.
4. The villain blasted off on a jet pack, then spied ahead through brass binoculars.
5. The villain soared down using glider wings, then shined a light with a tiny flashlight.
6. The villain slid down a long climbing rope, then plotted a route on an old map.
7. The villain slid down a long climbing rope, then blew a signal on a silver whistle.
8. The villain soared down using glider wings, then plotted a route on an old map.
9. The villain zoomed past with rocket boots, then plotted a route on an old map.
10. The villain swung across on a grappling hook, then plotted a route on an old map.
11. The villain zoomed past with rocket boots, then shined a light with a tiny flashlight.
12. The villain zoomed past with rocket boots, then spied ahead through brass binoculars.

Answer Key

The Mystery of the Golden Compass

Culprit: Otis Owl

Grappling Hook · Old Map · Left hand glove · Curly red hair · Tickle feathers

Trail: Start 21 → Clue 1 16 → Clue 2 11 → Clue 3 5 → Clue 4 4 → Clue 5 1

Clue 1 (Place value): "THE SCOUT DOES NOT HAVE THE BRASS BINOCULARS"

What is the value of the 1 in 609,105? = 100 (T) · What is the value of the 4 in 853,849? = 40 (R) · What is the value of the 5 in 15,680? = 5000 (C) · What is the value of the 8 in 68,504? = 8000 (B) · What is the value of the 2 in 81,255? = 200 (V) · What is the value of the 9 in 852,196? = 90 (A) · What is the value of the 8 in 433,684? = 80 (S) · What is the value of the 3 in 13,781? = 3000 (I) · What is the value of the 6 in 854,634? = 600 (H) · What is the value of the 4 in 84,135? = 4000 (L) · What is the value of the 3 in 40,938? = 30 (D) · What is the value of the 2 in 862,506? = 2000 (U) · What is the value of the 5 in 327,052? = 50 (O) · What is the value of the 7 in 338,478? = 70 (N) · What is the value of the 4 in 83,460? = 400 (E)

Clue 2 (Addition): "THE VILLAIN WEARS A LEFT HAND GLOVE"

2311 + 3921 = 6232 (T) · 801 + 1281 = 2082 (W) · 3741 + 3316 = 7057 (R) · 2061 + 1388 = 3449 (E) · 1407 + 690 = 2097 (O) · 3497 + 1585 = 5082 (F) · 3411 + 5319 = 8730 (V) · 1443 + 920 = 2363 (G) · 1267 + 2835 = 4102 (L) · 1576 + 3488 = 5064 (I) · 2424 + 1380 = 3804 (A) · 5657 + 2540 = 8197 (S) · 3183 + 3590 = 6773 (D) · 5245 + 2382 = 7627 (N) · 3443 + 4696 = 8139 (H)

Clue 3 (Subtraction): "TICKLE FEATHERS WILL STOP THIS VILLAIN"

8745 - 2305 = 6440 (T) · 7911 - 4985 = 2926 (K) · 5535 - 2433 = 3102 (W) · 4487 - 1283 = 3204 (R) · 7152 - 1730 = 5422 (N) · 3435 - 1266 = 2169 (I) · 4900 - 2405 = 2495 (S) · 6074 - 4463 = 1611 (C) · 9879 - 1641 = 8238 (O) · 13224 - 4704 = 8520 (A) · 8010 - 4537 = 3473 (P) · 7545 - 3452 = 4093 (V) · 10001 - 3505 = 6496 (E) · 7843 - 2147 = 5696 (F) · 8758 - 4723 = 4035 (L) · 13373 - 4706 = 8667 (H)

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

1 × 2 = 2 (W) · 8 × 4 = 32 (U) · 9 × 8 = 72 (O) · 11 × 6 = 66 (T) · 11 × 11 = 121 (E) · 2 × 6 = 12 (D) · 6 × 10 = 60 (S) · 12 × 12 = 144 (F) · 11 × 1 = 11 (Y) · 8 × 8 = 64 (N) · 1 × 7 = 7 (H) · 10 × 10 = 100 (A) · 5 × 11 = 55 (C) · 2 × 11 = 22 (R) · 8 × 11 = 88 (L) · 9 × 6 = 54 (I)

Clue 5 (Division facts (1-12)): surviving statement is box 10 → Otis Owl

72 ÷ 12 = 6 · 66 ÷ 6 = 11 · 27 ÷ 9 = 3 · 132 ÷ 11 = 12 · 81 ÷ 9 = 9 · 10 ÷ 2 = 5 · 2 ÷ 1 = 2 · 16 ÷ 2 = 8 · 14 ÷ 2 = 7 · 11 ÷ 11 = 1 · 20 ÷ 5 = 4