



The Sapphire Cavern Mystery

Grade 4 math · Rounding, Bar models, Addition, Subtraction, Division · Reading level grades 3-4

Detective: _____ **Date:** _____

A sneaky intruder snuck into the Sapphire Cavern base camp and snatched the master map! Work through the clues to uncover who did it.

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 Shadow Raider is _____

Possible suspects

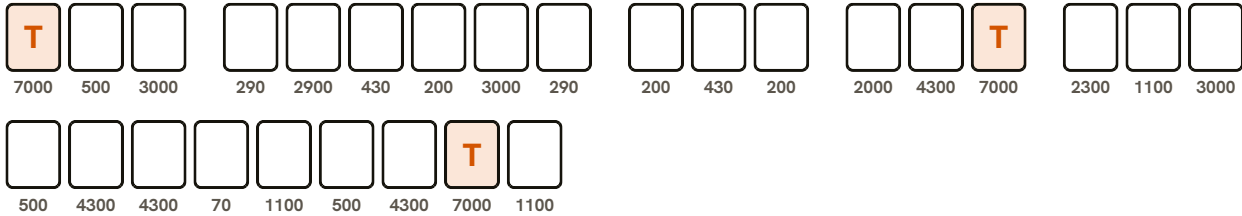
Cross off a row as each clue rules it out. The one left at the end is the culprit.

NAME	MAIN TOOL	GADGET	DOMINANT HAND	HAIR COLOR	FEAR
Jasper Cole	Rope Launcher	Hookshots	Right-Handed	Red Hair	Loud Whistles
Cora Sterling	Glider Wings	Pocket Compass	Right-Handed	Red Hair	Loud Whistles
Piper Reed	Rope Launcher	Night Goggles	Left-Handed	Red Hair	Loud Whistles
Wyatt Briggs	Torch Blaster	Night Goggles	Right-Handed	Black Hair	Loud Whistles
Drake Holloway	Smoke Bombs	Pocket Compass	Right-Handed	Red Hair	Cold Sprays
Uriah Knox	Climbing Claws	Hookshots	Left-Handed	Red Hair	Bright Flashes
Leo Maxwell	Smoke Bombs	Pocket Compass	Right-Handed	Red Hair	Loud Whistles
Sam Silas	Glider Wings	Hookshots	Right-Handed	Blonde Hair	Loud Whistles
Felix OConnor	Glider Wings	Night Goggles	Right-Handed	Red Hair	Loud Whistles
Owen Mercer	Glider Wings	Magnetic Boots	Right-Handed	Red Hair	Loud Whistles
Quinn Harper	Climbing Claws	Magnetic Boots	Left-Handed	Red Hair	Cold Sprays
Barnaby Finch	Torch Blaster	Night Goggles	Left-Handed	Black Hair	Bright Flashes
Tessa Vale	Smoke Bombs	Hookshots	Left-Handed	Red Hair	Bright Flashes
Amelia Vance	Glider Wings	Hookshots	Right-Handed	Red Hair	Loud Whistles
Gideon Drake	Glider Wings	Hookshots	Left-Handed	Red Hair	Cold Sprays
Ruby Stone	Torch Blaster	Night Goggles	Right-Handed	Red Hair	Bright Flashes
Elena Cruz	Smoke Bombs	Magnetic Boots	Left-Handed	Red Hair	Bright Flashes
Milo Vance	Climbing Claws	Night Goggles	Left-Handed	Black Hair	Loud Whistles
Nia Brooks	Climbing Claws	Pocket Compass	Left-Handed	Blonde Hair	Bright Flashes
Violet Hayes	Rope Launcher	Night Goggles	Left-Handed	Black Hair	Cold Sprays
Zane Cross	Glider Wings	Pocket Compass	Right-Handed	Black Hair	Loud Whistles

CLUE 1 Rounding

We compared the gear weights using bar models on our map tablet to cross off one useless gadget.

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



Round 6,952 to the nearest thousand → **T**

Round 1,524 to the nearest thousand → **N**

Round 238 to the nearest hundred → **D**

Round 2,261 to the nearest hundred → **U**

Round 73 to the nearest ten → **K**

Round 4,257 to the nearest hundred → **O**

Round 2,931 to the nearest hundred → **A**

Round 293 to the nearest ten → **R**

Round 489 to the nearest hundred → **H**

Round 3,331 to the nearest thousand → **E**

Round 1,064 to the nearest hundred → **S**

Round 428 to the nearest ten → **I**

Scratch space:

CLUE 2 Bar model word problems

The cavern scanner only shows rounded power numbers so we rounded each signal to spot a clue.

Draw a bar model to solve each word problem, then write its letter in the boxes to fill in the missing word.

A witness saw the villain was R D E D

14 47 21 10 27 10 131 91

Trail scout has 2 times as many compass as a teammate. The teammate has 7 compass. How many compass does trail scout have?

draw a bar model

Answer: → **R**

Trail scout has 2 times as many gemstone as a teammate.
The teammate has 5 gemstone. How many gemstone does trail scout have?

draw a bar model

Answer: $\rightarrow$ **H**

Trail scout has 182 rope coil, packed 2 to a bag. How many bags can be filled?

draw a bar model

Answer: → **N**

There were 59 compass in all. 12 compass were used. How many compass are left?

draw a bar model

Answer: →

There were 164 canteen in all. 33 canteen were used. How many canteen are left?

draw a bar model

Answer: → **A**

Trail scout has 7 times as many canteen as a teammate.
The teammate has 3 canteen. How many canteen does trail scout have?

draw a bar model

Answer: → **G**

Trail scout used $\frac{1}{3}$ of the gemstone on the first day. The other 18 gemstone were used the next day. How many gemstone were there in all?

draw a bar model

Answer: → **T**

CLUE 3

Addition

We added up all the lost supply counts found along the wet tunnel to find another lead.

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

T																			
7689	9399	2136	5942	7269	7854	9314	2136	5942	8024	2136	7269	5942	2136	9314	7807	7786	3884	9314	

				T			
3342	9399	7854	5495	7689	7807	2136	5495

$4625 + 3064 = \square \rightarrow \boxed{\text{T}}$

$2033 + 3909 = \square \rightarrow \boxed{\text{R}}$

$2102 + 1240 = \square \rightarrow \boxed{\text{W}}$

$1485 + 2399 = \square \rightarrow \boxed{\text{U}}$

$3394 + 2101 = \square \rightarrow \boxed{\text{S}}$

$1015 + 1121 = \square \rightarrow \boxed{\text{E}}$

$3889 + 3918 = \square \rightarrow \boxed{\text{L}}$

$3836 + 4018 = \square \rightarrow \boxed{\text{I}}$

$4149 + 3120 = \square \rightarrow \boxed{\text{A}}$

$3106 + 6208 = \square \rightarrow \boxed{\text{D}}$

$3639 + 4147 = \square \rightarrow \boxed{\text{O}}$

$4407 + 4992 = \square \rightarrow \boxed{\text{H}}$

$4468 + 3556 = \square \rightarrow \boxed{\text{F}}$

Scratch space:

CLUE 4

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

7979 7575 6143 7768 8612 3621 2580 6143 7768 3386 6143 4791 7979 7768 6143 2580





$$9958 - 1979 = \boxed{} \rightarrow \boxed{\text{T}}$$

$$4889 - 1503 = \boxed{} \rightarrow \boxed{\text{L}}$$

$$9231 - 4211 = \boxed{} \rightarrow \boxed{\text{N}}$$

$$10776 - 4113 = \boxed{} \rightarrow \boxed{\text{S}}$$

$$3149 - 569 = \boxed{} \rightarrow \boxed{\text{D}}$$

$$7205 - 2414 = \boxed{} \rightarrow \boxed{\text{F}}$$

$$11284 - 3516 = \boxed{} \rightarrow \boxed{\text{R}}$$

$$7203 - 3582 = \boxed{} \rightarrow \boxed{}$$

$$9067 - 2924 = \boxed{} \rightarrow \boxed{\text{E}}$$

$$12362 - 4787 = \boxed{} \rightarrow \boxed{\text{H}}$$

$12047 - 3435 = \square \rightarrow \boxed{\text{A}}$

$$7828 - 2870 = \boxed{} \rightarrow \boxed{\text{C}}$$

Scratch space:

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

We divided the final evidence cards equally among our scouts to catch the intruder.

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:

$6 \div 6 = \boxed{}$

$24 \div 3 = \boxed{}$

$66 \div 11 = \boxed{}$

$84 \div 7 = \boxed{}$

$32 \div 8 = \boxed{}$

$10 \div 1 = \boxed{}$

$3 \div 1 = \boxed{}$

$21 \div 3 = \boxed{}$

$54 \div 6 = \boxed{}$

$99 \div 9 = \boxed{}$

$22 \div 11 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain soared in with glider wings, then navigated tunnels with a pocket compass.
2. The villain created a distraction with smoke bombs, then spotted targets using night goggles.
3. The villain scaled the wall with climbing claws, then navigated tunnels with a pocket compass.
4. The villain scaled the wall with climbing claws, then walked on metal beams with magnetic boots.
5. The villain created a distraction with smoke bombs, then navigated tunnels with a pocket compass.
6. The villain soared in with glider wings, then spotted targets using night goggles.
7. The villain swung over gaps with a rope launcher, then spotted targets using night goggles.
8. The villain soared in with glider wings, then walked on metal beams with magnetic boots.
9. The villain soared in with glider wings, then zipped upward using a hookshot.
10. The villain scaled the wall with climbing claws, then spotted targets using night goggles.
11. The villain scaled the wall with climbing claws, then zipped upward using a hookshot.
12. The villain swung over gaps with a rope launcher, then navigated tunnels with a pocket compass.

Answer Key

The Sapphire Cavern Mystery

Culprit: Leo Maxwell

Smoke Bombs · Pocket Compass · Right-Handed · Red Hair · Loud Whistles

Trail: Start 21 → Clue 1 15 → Clue 2 8 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Rounding): "THE RAIDER DID NOT USE HOOKSHOTS"

Round 6,952 to the nearest thousand = 7000 (T) · Round 1,524 to the nearest thousand = 2000 (N) · Round 238 to the nearest hundred = 200 (D) · Round 2,261 to the nearest hundred = 2300 (U) · Round 73 to the nearest ten = 70 (K) · Round 4,257 to the nearest hundred = 4300 (O) · Round 2,931 to the nearest hundred = 2900 (A) · Round 293 to the nearest ten = 290 (R) · Round 489 to the nearest hundred = 500 (H) · Round 3,331 to the nearest thousand = 3000 (E) · Round 1,064 to the nearest hundred = 1100 (S) · Round 428 to the nearest ten = 430 (I)

Clue 2 (Bar model word problems): "RIGHT HANDED"

Trail scout has 2 times as many compass as a teammate. The teammate has 7 compass. How many compass does trail scout have? = 14 (R) · Trail scout has 2 times as many gemstone as a teammate. The teammate has 5 gemstone. How many gemstone does trail scout have? = 10 (H) · Trail scout has 182 rope coil, packed 2 to a bag. How many bags can be filled? = 91 (N) · There were 59 compass in all. 12 compass were used. How many compass are left? = 47 (I) · There were 164 canteen in all. 33 canteen were used. How many canteen are left? = 131 (A) · Trail scout has 7 times as many canteen as a teammate. The teammate has 3 canteen. How many canteen does trail scout have? = 21 (G) · Trail scout used $\frac{1}{3}$ of the gemstone on the first day. The other 18 gemstone were used the next day. How many gemstone were there in all? = 27 (T)

Clue 3 (Addition): "THE RAIDER FEARED LOUD WHISTLES"

$4625 + 3064 = 7689$ (T) · $2033 + 3909 = 5942$ (R) · $2102 + 1240 = 3342$ (W) · $1485 + 2399 = 3884$ (U) · $3394 + 2101 = 5495$ (S) · $1015 + 1121 = 2136$ (E) · $3889 + 3918 = 7807$ (L) · $3836 + 4018 = 7854$ (I) · $4149 + 3120 = 7269$ (A) · $3106 + 6208 = 9314$ (D) · $3639 + 4147 = 7786$ (O) · $4407 + 4992 = 9399$ (H) · $4468 + 3556 = 8024$ (F)

Clue 4 (Subtraction): "THE RAIDER LEFT RED HAIR AT SCENE"

$9958 - 1979 = 7979$ (T) · $4889 - 1503 = 3386$ (L) · $9231 - 4211 = 5020$ (N) · $10776 - 4113 = 6663$ (S) · $3149 - 569 = 2580$ (D) · $7205 - 2414 = 4791$ (F) · $11284 - 3516 = 7768$ (R) · $7203 - 3582 = 3621$ (I) · $9067 - 2924 = 6143$ (E) · $12362 - 4787 = 7575$ (H) · $12047 - 3435 = 8612$ (A) · $7828 - 2870 = 4958$ (C)

Clue 5 (Division facts (1-12)): surviving statement is box 5 → Leo Maxwell

$6 \div 6 = 1$ · $24 \div 3 = 8$ · $66 \div 11 = 6$ · $84 \div 7 = 12$ · $32 \div 8 = 4$ · $10 \div 1 = 10$ · $3 \div 1 = 3$ · $21 \div 3 = 7$ · $54 \div 6 = 9$ · $99 \div 9 = 11$ · $22 \div 11 = 2$