



The Case of the Missing Diamond

Grade 3 math · Place value, Addition, Subtraction, Multiplication, Missing addends · Reading level grades 3-4

Detective: _____ **Date:** _____

A master rogue called the Shadow Thief sneaked into the museum and stole the famous Star Diamond. Chief Detective Miller needs your help analyzing clues left at the scene to catch the right suspect.

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 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 SKILL	FAVORITE TOOL	DOMINANT HAND	HAIR COLOR	MAJOR WEAKNESS
Perry Mason	Code Breaking	Magnifying Glass	Right Handed	Black Hair	Barking Dogs
Amelia Peabody	Code Breaking	Magnifying Glass	Left Handed	Red Hair	Loud Sirens
Phryne Fisher	Stealth Walking	Magnifying Glass	Left Handed	Red Hair	Barking Dogs
Nancy Drew	Vault Cracking	Disguise Mask	Right Handed	Red Hair	Barking Dogs
Cormoran Strike	Code Breaking	Invisible Ink	Left Handed	Black Hair	Barking Dogs
Joe Hardy	Stealth Walking	Disguise Mask	Left Handed	Red Hair	Loud Sirens
Velma Dinkley	Code Breaking	Magnifying Glass	Left Handed	Red Hair	Barking Dogs
Cam Jansen	Code Breaking	Invisible Ink	Left Handed	Blonde Hair	Barking Dogs
Frank Hardy	Code Breaking	Magnifying Glass	Right Handed	Blonde Hair	Barking Dogs
Ellery Queen	Lock Picking	Invisible Ink	Left Handed	Blonde Hair	Loud Sirens
Encyclopedia Brown	Code Breaking	Invisible Ink	Right Handed	Black Hair	Barking Dogs
Sam Spade	Code Breaking	Smoke Bombs	Right Handed	Black Hair	Loud Sirens
Veronica Mars	Stealth Walking	Handy Lockpicks	Left Handed	Black Hair	Barking Dogs
Miss Marple	Vault Cracking	Handy Lockpicks	Right Handed	Black Hair	Loud Sirens
Enola Holmes	Code Breaking	Magnifying Glass	Right Handed	Blonde Hair	Loud Sirens
C Auguste Dupin	Vault Cracking	Handy Lockpicks	Left Handed	Black Hair	Flashing Lights
Detective Conan	Vault Cracking	Smoke Bombs	Right Handed	Black Hair	Barking Dogs
Inspector Clouseau	Lock Picking	Disguise Mask	Right Handed	Red Hair	Barking Dogs
Nero Wolfe	Lock Picking	Disguise Mask	Right Handed	Black Hair	Barking Dogs
Dick Tracy	Stealth Walking	Handy Lockpicks	Right Handed	Blonde Hair	Flashing Lights
Philip Marlowe	Shadow Disguise	Handy Lockpicks	Right Handed	Black Hair	Barking Dogs

Place value

Inspect the digital badge display at the museum entrance. Check the digit in the tens place to decode this report.

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

The diagram illustrates a multiplication problem using a grid of boxes. The top row contains 16 boxes with the following values: 400, 8000, 300, 80, 60, 300, 20, 90, 2000, 4000, 900, 50, 50, 20, 900, and 60. The bottom row contains 19 boxes with the following values: 60, 300, 4000, 300, 700, 600, 80, 300, 80, 80, 6000, 800, 90, 300, 1000, 800, 6000, 1000, and 80. The first box in the top row is highlighted with an orange background and contains the letter 'T'.

What is the value of the 4 in 460? → **T**

What is the value of the 8 in 870? → **0**

What is the value of the 3 in 354? → **E**

What is the value of the 1 in 1,567? → **B**

What is the value of the 6 in 4,362? → **N**

What is the value of the 6 in 36,784? → **M**

What is the value of the 5 in 7,459? → **L**

What is the value of the 2 in 725? → **A**

What is the value of the 4 in 74,275? → **V**

What is the value of the 7 in 728? → **R**

What is the value of the 9 in 4,903? →

1

What is the value of the 2 in 2,179? → **Y**

What is the value of the 6 in 623? → **U**

What is the value of the 8 in 1,387? → **S**

What is the value of the 8 in 8,694? → **H**

What is the value of the 9 in 6,098? → **K**

Scratch space:

CLUE 2

Addition

Add up all the footprint evidence tokens found in the hallway to reveal this suspect report.

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

F														
582	465	465	550	911	850	645	693	550	541	541	540	465	376	726

541	550	850	465	693	352	850	645	352	540	550	540	726	693	707

$266 + 316 = \square \rightarrow \text{F}$

$201 + 349 = \square \rightarrow \text{T}$

$273 + 577 = \square \rightarrow \text{R}$

$289 + 437 = \square \rightarrow \text{A}$

$347 + 346 = \square \rightarrow \text{N}$

$194 + 346 = \square \rightarrow \text{H}$

$432 + 213 = \square \rightarrow \text{I}$

$254 + 122 = \square \rightarrow \text{W}$

$198 + 154 = \square \rightarrow \text{G}$

$305 + 160 = \square \rightarrow \text{O}$

$431 + 480 = \square \rightarrow \text{P}$

$341 + 200 = \square \rightarrow \text{S}$

$478 + 229 = \square \rightarrow \text{D}$

Scratch space:

CLUE 3
Subtraction

Subtract the damaged evidence files from the master stack to unlock this detective clue.

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

T									T								
280	821	564	285	282	564	172	553	160	280	821	737	564	125	410	172	285	

285	229	172	164	564	641	262	160	262	172	164	553	737	282	505	641	261	505	285

$451 - 171 = \square \rightarrow \text{**T**}$

$519 - 394 = \square \rightarrow \text{**F**}$

$882 - 329 = \square \rightarrow \text{**K**}$

$477 - 195 = \square \rightarrow \text{**N**}$

$484 - 320 = \square \rightarrow \text{**R**}$

$809 - 168 = \square \rightarrow \text{**D**}$

$334 - 49 = \square \rightarrow \text{**S**}$

$715 - 305 = \square \rightarrow \text{**W**}$

$584 - 323 = \square \rightarrow \text{**O**}$

$917 - 180 = \square \rightarrow \text{**I**}$

$505 - 243 = \square \rightarrow \text{**B**}$

$601 - 372 = \square \rightarrow \text{**C**}$

$515 - 355 = \square \rightarrow \text{**Y**}$

$864 - 359 = \square \rightarrow \text{**G**}$

$558 - 386 = \square \rightarrow \text{**A**}$

$870 - 49 = \square \rightarrow \text{**H**}$

$802 - 238 = \square \rightarrow \text{**E**}$

Scratch space:

CLUE 4
Multiplication facts (1-12)

Multiply the rows of fingerprint cards in the filing cabinet to solve this clue.

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

A			A				A				A						
66	88	96	66	9	50	63	66	120	18	72	66	70	84	14	35	110	28
							A										
14	110	56	63	22	132	66	35	96	56	96	14	9	50				

$11 \times 6 = \square \rightarrow$ A	$12 \times 7 = \square \rightarrow$ F	$7 \times 4 = \square \rightarrow$ D	
$9 \times 1 = \square \rightarrow$ C	$10 \times 7 = \square \rightarrow$ S	$10 \times 11 = \square \rightarrow$ N	
$8 \times 12 = \square \rightarrow$ L	$2 \times 7 = \square \rightarrow$ O	$7 \times 8 = \square \rightarrow$ T	$9 \times 7 = \square \rightarrow$ H
$11 \times 2 = \square \rightarrow$ E	$7 \times 5 = \square \rightarrow$ U	$8 \times 11 = \square \rightarrow$ B	
$12 \times 10 = \square \rightarrow$ I	$10 \times 5 = \square \rightarrow$ K	$12 \times 11 = \square \rightarrow$ V	
$3 \times 6 = \square \rightarrow$ R	$6 \times 12 = \square \rightarrow$ W		

Scratch space:

CLUE 5**Missing addends - the last clue**

Find the missing number of clue badges needed to complete the case board.

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:

$5 + \underline{\quad} = 7$

$9 + \underline{\quad} = 18$

$3 + \underline{\quad} = 14$

$8 + \underline{\quad} = 18$

$8 + \underline{\quad} = 12$

$10 + \underline{\quad} = 17$

$2 + \underline{\quad} = 5$

$6 + \underline{\quad} = 18$

$5 + \underline{\quad} = 13$

$9 + \underline{\quad} = 15$

$4 + \underline{\quad} = 9$

Step 2 - cross out the sentence with each answer:

1. The villain breaks the secret security code, then searches with a magnifying glass.
2. The villain breaks the secret security code, then writes notes in invisible ink.
3. The villain picks the heavy metal lock, then writes notes in invisible ink.
4. The villain breaks the secret security code, then uses handy lockpicks.
5. The villain uses a shadow disguise, then drops a cloud of smoke bombs.
6. The villain cracks the high tech vault, then searches with a magnifying glass.
7. The villain uses a shadow disguise, then writes notes in invisible ink.
8. The villain walks softly without a sound, then writes notes in invisible ink.
9. The villain uses a shadow disguise, then uses handy lockpicks.
10. The villain picks the heavy metal lock, then searches with a magnifying glass.
11. The villain picks the heavy metal lock, then puts on a quick disguise mask.
12. The villain cracks the high tech vault, then puts on a quick disguise mask.

Answer Key

The Case of the Missing Diamond

Culprit: Perry Mason

Code Breaking · Magnifying Glass · Right Handed · Black Hair · Barking Dogs

Trail: Start 21 → Clue 1 19 → Clue 2 10 → Clue 3 7 → Clue 4 4 → Clue 5 1

Clue 1 (Place value): "THE SNEAKY VILLAIN NEVER USES SMOKE BOMBS"

What is the value of the 4 in 460? = 400 (T) · What is the value of the 8 in 870? = 800 (O) · What is the value of the 3 in 354? = 300 (E) · What is the value of the 1 in 1,567? = 1000 (B) · What is the value of the 6 in 4,362? = 60 (N) · What is the value of the 6 in 36,784? = 6000 (M) · What is the value of the 5 in 7,459? = 50 (L) · What is the value of the 2 in 725? = 20 (A) · What is the value of the 4 in 74,275? = 4000 (V) · What is the value of the 7 in 728? = 700 (R) · What is the value of the 9 in 4,903? = 900 (I) · What is the value of the 2 in 2,179? = 2000 (Y) · What is the value of the 6 in 623? = 600 (U) · What is the value of the 8 in 1,387? = 80 (S) · What is the value of the 8 in 8,694? = 8000 (H) · What is the value of the 9 in 6,098? = 90 (K)

Clue 2 (Addition): "FOOTPRINTS SHOW A STRONG RIGHT HAND"

$266 + 316 = 582$ (F) · $201 + 349 = 550$ (T) · $273 + 577 = 850$ (R) · $289 + 437 = 726$ (A) · $347 + 346 = 693$ (N) · $194 + 346 = 540$ (H) · $432 + 213 = 645$ (I) · $254 + 122 = 376$ (W) · $198 + 154 = 352$ (G) · $305 + 160 = 465$ (O) · $431 + 480 = 911$ (P) · $341 + 200 = 541$ (S) · $478 + 229 = 707$ (D)

Clue 3 (Subtraction): "THE SNEAKY THIEF WAS SCARED BY BARKING DOGS"

$451 - 171 = 280$ (T) · $519 - 394 = 125$ (F) · $882 - 329 = 553$ (K) · $477 - 195 = 282$ (N) · $484 - 320 = 164$ (R) · $809 - 168 = 641$ (D) · $334 - 49 = 285$ (S) · $715 - 305 = 410$ (W) · $584 - 323 = 261$ (O) · $917 - 180 = 737$ (I) · $505 - 243 = 262$ (B) · $601 - 372 = 229$ (C) · $515 - 355 = 160$ (Y) · $864 - 359 = 505$ (G) · $558 - 386 = 172$ (A) · $870 - 49 = 821$ (H) · $802 - 238 = 564$ (E)

Clue 4 (Multiplication facts (1-12)): "A BLACK HAIR WAS FOUND ON THE VAULT LOCK"

$11 \times 6 = 66$ (A) · $12 \times 7 = 84$ (F) · $7 \times 4 = 28$ (D) · $9 \times 1 = 9$ (C) · $10 \times 7 = 70$ (S) · $10 \times 11 = 110$ (N) · $8 \times 12 = 96$ (L) · $2 \times 7 = 14$ (O) · $7 \times 8 = 56$ (T) · $9 \times 7 = 63$ (H) · $11 \times 2 = 22$ (E) · $7 \times 5 = 35$ (U) · $8 \times 11 = 88$ (B) · $12 \times 10 = 120$ (I) · $10 \times 5 = 50$ (K) · $12 \times 11 = 132$ (V) · $3 \times 6 = 18$ (R) · $6 \times 12 = 72$ (W)

Clue 5 (Missing addends): surviving statement is box 1 → Perry Mason

$5 + \underline{\quad} = 7 = 2$ · $9 + \underline{\quad} = 18 = 9$ · $3 + \underline{\quad} = 14 = 11$ · $8 + \underline{\quad} = 18 = 10$ · $8 + \underline{\quad} = 12 = 4$ · $10 + \underline{\quad} = 17 = 7$ · $2 + \underline{\quad} = 5 = 3$ · $6 + \underline{\quad} = 18 = 12$ · $5 + \underline{\quad} = 13 = 8$ · $9 + \underline{\quad} = 15 = 6$ · $4 + \underline{\quad} = 9 = 5$