



The Sunken Citadel Mystery

Grade 8 math · Fractions of a number, Place value, Multiplication, Word problems · Reading level grades 7-9

Detective: _____ **Date:** _____

The Coral Vault of Aquamarina has been breached! The legendary Heart of the Reef, a giant pearl that powers the city's bioluminescent glow, is gone. The Royal Pearl Keeper was trapped in a heavy-water bubble while the thief fled. As a detective of the deep, you must analyze the ocean currents and solve the clues to unmask the rogue tide-weaver.

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 rogue tide-weaver is _____

Possible suspects

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

NAME	PRIMARY MAGIC	SECONDARY ABILITY	TRIDENT WRIST FAVOR	HAIR COLOR	TACTICAL VULNERABILITY
Oceanus	coral-shaping	bioluminescence	right-wrist bracelet	anemone pink	high-frequency-pitch
Tethys	siren-song	deep-vision	left-wrist bracelet	anemone pink	high-frequency-pitch
Sedna	current-riding	deep-vision	left-wrist bracelet	seafoam green	high-frequency-pitch
Poseidon	siren-song	pearl-mimicry	left-wrist bracelet	kelp brown	high-frequency-pitch
Kai	siren-song	thermal-venting	right-wrist bracelet	anemone pink	dried-salt
Lir	storm-summoning	deep-vision	right-wrist bracelet	anemone pink	high-frequency-pitch
Triton	coral-shaping	electric-touch	right-wrist bracelet	anemone pink	silver-netting
Jacques	hydro-kinesis	pearl-mimicry	right-wrist bracelet	anemone pink	dried-salt
Delphine	current-riding	electric-touch	right-wrist bracelet	anemone pink	dried-salt
Ursula	storm-summoning	pearl-mimicry	right-wrist bracelet	seafoam green	high-frequency-pitch
Sirena	storm-summoning	deep-vision	right-wrist bracelet	kelp brown	dried-salt
Coralia	siren-song	pearl-mimicry	right-wrist bracelet	anemone pink	dried-salt
Ondine	current-riding	pearl-mimicry	left-wrist bracelet	anemone pink	silver-netting
Marina	hydro-kinesis	pearl-mimicry	left-wrist bracelet	kelp brown	dried-salt
Muriel	siren-song	pearl-mimicry	left-wrist bracelet	seafoam green	high-frequency-pitch
Ronan	siren-song	thermal-venting	right-wrist bracelet	seafoam green	dried-salt
Mazu	hydro-kinesis	thermal-venting	right-wrist bracelet	kelp brown	silver-netting
Thallo	siren-song	electric-touch	left-wrist bracelet	seafoam green	silver-netting
Caspian	siren-song	electric-touch	right-wrist bracelet	anemone pink	dried-salt
Calypso	hydro-kinesis	bioluminescence	left-wrist bracelet	anemone pink	dried-salt
Nerida	hydro-kinesis	pearl-mimicry	left-wrist bracelet	seafoam green	silver-netting

CLUE 1

Fractions of a number

We intercept an encrypted message sent to the rogue tide-weavers. Only a specific fraction of the bubbly signals contain true data while the rest are decoys. Calculating the exact fraction narrows down the suspect's magic style.

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

T			T											T			
4	27	39	4	27	58	39	49	23	21	39	12	3	21	4	19	12	39

T										T			
4	27	39	6	35	40	50	29	39	3	4	58	3	33

$2/3 \text{ of } 6 = \square \rightarrow \text{ T }$

$2/3 \text{ of } 9 = \square \rightarrow \text{ R }$

$3/6 \text{ of } 66 = \square \rightarrow \text{ G }$

$1/5 \text{ of } 95 = \square \rightarrow \text{ U }$

$4/8 \text{ of } 24 = \square \rightarrow \text{ S }$

$2/10 \text{ of } 115 = \square \rightarrow \text{ D }$

$1/4 \text{ of } 108 = \square \rightarrow \text{ H }$

$5/10 \text{ of } 6 = \square \rightarrow \text{ N }$

$1/4 \text{ of } 84 = \square \rightarrow \text{ O }$

$5/10 \text{ of } 116 = \square \rightarrow \text{ I }$

$2/5 \text{ of } 125 = \square \rightarrow \text{ L }$

$4/5 \text{ of } 50 = \square \rightarrow \text{ A }$

$7/8 \text{ of } 40 = \square \rightarrow \text{ M }$

$2/8 \text{ of } 196 = \square \rightarrow \text{ F }$

$1/5 \text{ of } 195 = \square \rightarrow \text{ E }$

$2/10 \text{ of } 145 = \square \rightarrow \text{ V }$

Scratch space:

CLUE 2 Place value

A deep-sea hydrophone records the thief's high-speed escape. By identifying the correct decimal place values in the recorded frequency, we isolate the unique wrist signature of the culprit.

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

R						R					R						
2000	90	600	500	8000	200	2000	90	900	8000	3000	2000	300	4000	50	80	50	8000

		R											
1000	300	2000	5000	90	400	600	900	9000	40	20	400	70	

What is the value of the 2 in 842,346? → **R**

What is the value of the 9 in 710,691? → **I**

What is the value of the 6 in 72,618? → **G**

What is the value of the 5 in 33,504? → **H**

What is the value of the 4 in 70,347? → **O**

What is the value of the 8 in 58,756? → **T**

What is the value of the 3 in 247,379? → **A**

What is the value of the 9 in 29,062? → **F**

What is the value of the 8 in 41,285? → **L**

What is the value of the 2 in 49,287? → **W**

What is the value of the 9 in 74,922? → **S**

What is the value of the 3 in 153,475? → **B**

What is the value of the 5 in 35,196? → **K**

What is the value of the 7 in 28,275? → **D**

What is the value of the 1 in 901,947? → **M**

What is the value of the 2 in 41,525? → **U**

What is the value of the 4 in 57,491? → **N**

What is the value of the 4 in 84,938? → **C**

What is the value of the 5 in 32,350? → **E**

Scratch space:

CLUE 3
Multiplication facts (1-12)

The Royal Guard counts the columns of damaged coral in the palace gardens. Multiplying the rows of ruined reefs helps us calculate the exact energy output of the thief's weakness.

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

T			T															
16	27	50	16	27	49	50	36	84	20	88	49	9	25	9	66	49	50	9
25	84	10	T															
25	84	10	16															

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

Scratch space:

CLUE 4 Word problems

A friendly sea turtle witnessed the getaway but speaks only in word puzzles about current speeds and swimming times. Resolving the turtle's math riddle reveals the exact defense we need to capture the thief.

Solve each problem, then write its letter in the boxes to fill in the missing word.

A strand of A K hair turned up at the scene.

63 91 116 61 82 91 116 19 117 91

There were 67 luminescent kelp. 4 were used up. How many luminescent kelp are left?

Answer: → **A**

There were 120 pearls. 3 were used up. How many pearls are left?

Answer: → ☒

Tide-hunter found 89 coral shards yesterday and 2 more today. How many coral shards in all?

Answer: → **N**

There were 136 luminescent kelp. 20 were used up. How many luminescent kelp are left?

Answer: → **E**

Tide-hunter found 2 coral shards yesterday and 59 more today. How many coral shards in all?

Answer: → **M**

There were 32 coral shards. 13 were used up. How many coral shards are left?

Answer: → **P**

There were 106 coral shards. 24 were used up. How many coral shards are left?

Answer: →

Scratch space:

CLUE 5**Fractions of a number - the last clue**

We recover a discarded pouch containing stolen pearls. Finding the precise fraction of these glowing gems that carry physical evidence reveals the exact hair color of the culprit.

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:

$1/8 \text{ of } 32 = \boxed{}$

$1/5 \text{ of } 45 = \boxed{}$

$1/3 \text{ of } 30 = \boxed{}$

$1/2 \text{ of } 4 = \boxed{}$

$2/4 \text{ of } 22 = \boxed{}$

$3/6 \text{ of } 16 = \boxed{}$

$3/8 \text{ of } 32 = \boxed{}$

$1/3 \text{ of } 3 = \boxed{}$

$1/2 \text{ of } 10 = \boxed{}$

$1/4 \text{ of } 28 = \boxed{}$

$5/10 \text{ of } 12 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain sang a distracting melody, then heated the surrounding water to a boil.
2. The villain conjured a localized whirlpool, then glowed brightly in the dark reef.
3. The villain sang a distracting melody, then disguised the pearl as a common stone.
4. The villain glided swiftly along the gulf stream, then sparked with a static charge.
5. The villain conjured a localized whirlpool, then disguised the pearl as a common stone.
6. The villain molded the solid coral gates, then glowed brightly in the dark reef.
7. The villain conjured a localized whirlpool, then heated the surrounding water to a boil.
8. The villain manipulated the water pressure, then navigated perfectly through the black abyss.
9. The villain sang a distracting melody, then sparked with a static charge.
10. The villain manipulated the water pressure, then disguised the pearl as a common stone.
11. The villain manipulated the water pressure, then sparked with a static charge.
12. The villain sang a distracting melody, then glowed brightly in the dark reef.

Answer Key

The Sunken Citadel Mystery

Culprit: Coralia

siren-song · pearl-mimicry · right-wrist bracelet · anemone pink · dried-salt

Trail: Start 21 → Clue 1 18 → Clue 2 9 → Clue 3 5 → Clue 4 4 → Clue 5 1

Clue 1 (Fractions of a number): "THE THIEF DOES NOT USE THERMAL VENTING"

$\frac{2}{3}$ of 6 = 4 (T) · $\frac{2}{3}$ of 9 = 6 (R) · $\frac{3}{6}$ of 66 = 33 (G) · $\frac{1}{5}$ of 95 = 19 (U) · $\frac{4}{8}$ of 24 = 12 (S) · $\frac{2}{10}$ of 115 = 23 (D) · $\frac{1}{4}$ of 108 = 27 (H) · $\frac{5}{10}$ of 6 = 3 (N) · $\frac{1}{4}$ of 84 = 21 (O) · $\frac{5}{10}$ of 116 = 58 (I) · $\frac{2}{5}$ of 125 = 50 (L) · $\frac{4}{5}$ of 50 = 40 (A) · $\frac{7}{8}$ of 40 = 35 (M) · $\frac{2}{8}$ of 196 = 49 (F) · $\frac{1}{5}$ of 195 = 39 (E) · $\frac{2}{10}$ of 145 = 29 (V)

Clue 2 (Place value): "RIGHT WRIST BRACELET MARKINGS FOUND"

What is the value of the 2 in 842,346? = 2000 (R) · What is the value of the 9 in 710,691? = 90 (I) · What is the value of the 6 in 72,618? = 600 (G) · What is the value of the 5 in 33,504? = 500 (H) · What is the value of the 4 in 70,347? = 40 (O) · What is the value of the 8 in 58,756? = 8000 (T) · What is the value of the 3 in 247,379? = 300 (A) · What is the value of the 9 in 29,062? = 9000 (F) · What is the value of the 8 in 41,285? = 80 (L) · What is the value of the 2 in 49,287? = 200 (W) · What is the value of the 9 in 74,922? = 900 (S) · What is the value of the 3 in 153,475? = 3000 (B) · What is the value of the 5 in 35,196? = 5000 (K) · What is the value of the 7 in 28,275? = 70 (D) · What is the value of the 1 in 901,947? = 1000 (M) · What is the value of the 2 in 41,525? = 20 (U) · What is the value of the 4 in 57,491? = 400 (N) · What is the value of the 4 in 84,938? = 4000 (C) · What is the value of the 5 in 32,350? = 50 (E)

Clue 3 (Multiplication facts (1-12)): "THE THIEF AVOIDS DRIED SALT"

$8 \times 2 = 16$ (T) · $1 \times 10 = 10$ (L) · $9 \times 1 = 9$ (D) · $11 \times 8 = 88$ (O) · $7 \times 12 = 84$ (A) · $11 \times 6 = 66$ (R) · $7 \times 7 = 49$ (I) · $10 \times 2 = 20$ (V) · $5 \times 10 = 50$ (E) · $5 \times 5 = 25$ (S) · $6 \times 6 = 36$ (F) · $9 \times 3 = 27$ (H)

Clue 4 (Word problems): "ANEMONE PINK"

There were 67 luminescent kelp. 4 were used up. How many luminescent kelp are left? = 63 (A) · There were 120 pearls. 3 were used up. How many pearls are left? = 117 (I) · Tide-hunter found 89 coral shards yesterday and 2 more today. How many coral shards in all? = 91 (N) · There were 136 luminescent kelp. 20 were used up. How many luminescent kelp are left? = 116 (E) · Tide-hunter found 2 coral shards yesterday and 59 more today. How many coral shards in all? = 61 (M) · There were 32 coral shards. 13 were used up. How many coral shards are left? = 19 (P) · There were 106 coral shards. 24 were used up. How many coral shards are left? = 82 (O)

Clue 5 (Fractions of a number): surviving statement is box 3 → Coralia

$\frac{1}{8}$ of 32 = 4 · $\frac{1}{5}$ of 45 = 9 · $\frac{1}{3}$ of 30 = 10 · $\frac{1}{2}$ of 4 = 2 · $\frac{2}{4}$ of 22 = 11 · $\frac{3}{6}$ of 16 = 8 · $\frac{3}{8}$ of 32 = 12 · $\frac{1}{3}$ of 3 = 1 · $\frac{1}{2}$ of 10 = 5 · $\frac{1}{4}$ of 28 = 7 · $\frac{5}{10}$ of 12 = 6