



The Abyssal Reef Heist

Grade 7 math · Multiplication, Word problems, Fractions of a number, Multi-step word problems · Reading level grades 7-9

Detective: _____ Date: _____

A daring saboteur has breached the high-tech underwater labs of the Sunken Reef Research Station! The primary energy core has been taken, and the marine sanctuary is losing power. We must analyze the physical evidence and use tactical mathematics to identify the culprit before they escape into the open ocean.

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 deep-sea saboteur is _____

Possible suspects

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

NAME	DEEP SEA GEAR	INFILTRATION DEVICE	OBSERVED DEVICE PLACEMENT	STRAY HAIR SAMPLE	COUNTERMEASURE STRATEGY
Jacques Cousteau	hydro-jet thrusters	thermal engine boost	wears a right-wrist sonar	shimmering silver hair	sticky sea-foam spray
Charles Darwin	laser glass cutter	black ink smoke-screen	wears a left-wrist sonar	kelp green hair	sticky sea-foam spray
Edith Widder	mechanical claw	chameleon kelp camo	wears a right-wrist sonar	shimmering silver hair	loud high-frequency ping
Ernest Shackleton	hydro-jet thrusters	thermal engine boost	wears a left-wrist sonar	neon coral hair	loud high-frequency ping
Fridtjof Nansen	hydro-jet thrusters	high-voltage eel shock	wears a right-wrist sonar	neon coral hair	bright high-beam flash
James Cameron	heavy depth armor	magnetic anchor lock	wears a right-wrist sonar	kelp green hair	sticky sea-foam spray
Sylvia Earle	sonar tracking system	high-voltage eel shock	wears a right-wrist sonar	shimmering silver hair	sticky sea-foam spray
Robert Ballard	hydro-jet thrusters	thermal engine boost	wears a right-wrist sonar	kelp green hair	sticky sea-foam spray
Alistair Hardy	sonar tracking system	high-voltage eel shock	wears a right-wrist sonar	kelp green hair	sticky sea-foam spray
Rachel Carson	laser glass cutter	chameleon kelp camo	wears a left-wrist sonar	neon coral hair	sticky sea-foam spray
Matthew Henson	sonar tracking system	magnetic anchor lock	wears a right-wrist sonar	kelp green hair	sticky sea-foam spray
Walter Munk	laser glass cutter	high-voltage eel shock	wears a left-wrist sonar	kelp green hair	bright high-beam flash
Jeanne Baret	sonar tracking system	magnetic anchor lock	wears a left-wrist sonar	neon coral hair	loud high-frequency ping
Vilhjalmur Stefansson	hydro-jet thrusters	high-voltage eel shock	wears a left-wrist sonar	neon coral hair	sticky sea-foam spray
James Cook	hydro-jet thrusters	chameleon kelp camo	wears a right-wrist sonar	kelp green hair	sticky sea-foam spray
Eugenie Clark	heavy depth armor	black ink smoke-screen	wears a right-wrist sonar	shimmering silver hair	sticky sea-foam spray
William Beebe	mechanical claw	black ink smoke-screen	wears a right-wrist sonar	kelp green hair	bright high-beam flash
Vasco da Gama	heavy depth armor	magnetic anchor lock	wears a right-wrist sonar	kelp green hair	loud high-frequency ping
John Cabot	heavy depth armor	thermal engine boost	wears a right-wrist sonar	kelp green hair	loud high-frequency ping
Roger Revelle	laser glass cutter	chameleon kelp camo	wears a left-wrist sonar	shimmering silver hair	bright high-beam flash
Auguste Piccard	mechanical claw	black ink smoke-screen	wears a right-wrist sonar	neon coral hair	bright high-beam flash

Multiplication facts (1-12)

The salvage crew finds several storage racks inside the flooded chamber, each containing a grid of gear boxes. Multiply the rows of gear by the columns to count the total kits and recover the first encoded clue.

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

A 2x10 grid of boxes. The top row contains the following values from left to right: 16 (with an orange 'T' above it), 132, 9, 108, 10, 12, 121, 33, 1, 35, 9, 108, 70, 35, 16 (with an orange 'T' above it), 8, 108, 9. The bottom row contains the following values from left to right: 10, 132, 12, 121, 9, 54, 9, 35, 70, 30, 9, 54, 33, 10, 12, 121, 35.

$$2 \times 8 = \boxed{} \rightarrow \boxed{\text{T}}$$

$$1 \times 8 = \boxed{} \rightarrow \boxed{\text{U}}$$

$$11 \times 11 = \boxed{} \rightarrow \mathbf{M}$$

$10 \times 7 = \boxed{} \rightarrow \boxed{\text{N}}$

$5 \times 6 = \boxed{} \rightarrow \boxed{\text{K}}$

$6 \times 9 = \boxed{} \rightarrow \boxed{\text{L}}$

$11 \times 3 = \square \rightarrow \mathbf{P}$

$9 \times 1 = \square \rightarrow \mathbf{E}$

$$11 \times 12 = \boxed{} \rightarrow \boxed{\text{H}}$$

$9 \times 12 = \square \rightarrow \mathbf{S}$

$7 \times 5 = \boxed{} \rightarrow \boxed{0}$

$10 \times 1 = \boxed{} \rightarrow \boxed{\text{C}}$

$2 \times 6 = \square \rightarrow \boxed{\mathbf{A}}$

$1 \times 1 = \square \rightarrow \mathbf{D}$

Scratch space:

CLUE 2

Word problems

We intercept a scrambled acoustic signal bouncing off the deep ocean trench. Deciphering the sonar logs reveals a word puzzle about supply distributions that unlocks the second lead.

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

A witness saw the villain was

W										H	T	W					T		O	N		
80	18	57	56	34	57	56	110	66				80	56	110	34			34			57	56

There were 99 pearl clams. 19 were used up. How many pearl clams are left?

Answer: → **W**

There were 44 coral samples. 26 were used up. How many coral samples are left?

Answer: → **E**

There were 68 diving tanks. 11 were used up. How many diving tanks are left?

Answer: → **A**

The marine biologist found 15 coral samples yesterday and 41 more today. How many coral samples in all?

Answer: → **R**

The marine biologist found 11 pearl clams yesterday and 23 more today. How many pearl clams in all?

Answer: → **S**

The marine biologist lined up 10 rows of 11 diving tanks. How many diving tanks in all?

Answer: → **I**

The marine biologist lined up 6 rows of 11 coral samples. How many coral samples in all?

Answer: → **G**

Scratch space:

CLUE 3

Fractions of a number

A locked copper trunk from the sunken wreck requires a fraction of the gold coins to be placed on a pressure plate. Calculating this exact fraction pops open the double latch.

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

U																			
31	53	55	37	15	55	53	37	13	46	56	11	53	55	52	26	8	52	51	
53	19	42	52	11	8	3	37	15	55	51									

$$1/2 \text{ of } 62 = \boxed{} \rightarrow \boxed{\text{U}}$$

$$3/6 \text{ of } 52 = \boxed{} \rightarrow \boxed{\text{F}}$$

$$3/6 \text{ of } 74 = \boxed{} \rightarrow \boxed{\text{T}}$$

$$2/4 \text{ of } 106 = \boxed{} \rightarrow \boxed{\text{S}}$$

$$4/8 \text{ of } 102 = \boxed{} \rightarrow \boxed{\text{M}}$$

$$3/5 \text{ of } 70 = \boxed{} \rightarrow \boxed{\text{R}}$$

$$1/2 \text{ of } 16 = \boxed{} \rightarrow \boxed{\text{O}}$$

$$5/10 \text{ of } 110 = \boxed{} \rightarrow \boxed{\text{E}}$$

$$4/10 \text{ of } 130 = \boxed{} \rightarrow \boxed{\text{A}}$$

$$1/8 \text{ of } 104 = \boxed{} \rightarrow \boxed{\text{I}}$$

$$4/6 \text{ of } 69 = \boxed{} \rightarrow \boxed{\text{C}}$$

$$1/8 \text{ of } 152 = \boxed{} \rightarrow \boxed{\text{P}}$$

$$3/4 \text{ of } 20 = \boxed{} \rightarrow \boxed{\text{H}}$$

$$1/4 \text{ of } 12 = \boxed{} \rightarrow \boxed{\text{N}}$$

$$1/3 \text{ of } 168 = \boxed{} \rightarrow \boxed{\text{K}}$$

$$3/6 \text{ of } 22 = \boxed{} \rightarrow \boxed{\text{Y}}$$

Scratch space:

CLUE 4

Multi-step word problems

Our submarine needs to balance its fuel tanks and ballast weight before descending into the abyss. Solving the multi-step load calculations allows the main computer to scan the seafloor.

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

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

89 9 19 46 7 90 9 9 25 90

The marine biologist filled 4 boxes with 6 diving tanks each, then found 65 more diving tanks. How many diving tanks are there in all?

Answer: → K

The marine biologist collected 31 lead anchors in the morning and 14 lead anchors in the afternoon, then split them equally among 5 the research vessel crew. How many lead anchors did each get?

Answer: → E

There were 358 lead anchors in all. 36 lead anchors were set aside. The rest were shared equally among 7 the research vessel crew. How many lead anchors did each get?

Answer: → P

The marine biologist collected 117 lead anchors in the morning and 153 lead anchors in the afternoon, then split them equally among 3 the research vessel crew. How many lead anchors did each get?

Answer: → R

The marine biologist collected 29 diving tanks in the morning and 13 diving tanks in the afternoon, then split them equally among 6 the research vessel crew. How many diving tanks did each get?

Answer: → G

The marine biologist earned 6 pearl clams in each of 2 rounds, plus 21 bonus pearl clams. Then 8 pearl clams were lost. How many pearl clams are left?

Answer: → N

The marine biologist collected 19 diving tanks in the morning and 38 diving tanks in the afternoon, then split them equally among 3 the research vessel crew. How many diving tanks did each get?

Answer: → L

Scratch space:

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

The pressure-dome vault is sealed by a water-wheel lock. We must drain a precise fraction of the total gallons in the main tank to stop the gears and grab the final piece of evidence.

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:

$2/6 \text{ of } 36 = \boxed{}$

$1/5 \text{ of } 10 = \boxed{}$

$2/8 \text{ of } 28 = \boxed{}$

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

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

$2/8 \text{ of } 20 = \boxed{}$

$1/10 \text{ of } 30 = \boxed{}$

$3/10 \text{ of } 20 = \boxed{}$

$8/10 \text{ of } 10 = \boxed{}$

$1/5 \text{ of } 55 = \boxed{}$

$4/8 \text{ of } 18 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain sabotaged the sub's propellers, then hid in the dark trenches.
2. The villain cracked open the deep sea vault, then fled into the sunken shipwreck.
3. The villain stole the giant pearl of the reef, then slipped away through the kelp forest.
4. The villain reprogrammed the research drone, then swam off into the barrier reef.
5. The villain disabled the underwater habitat generator, then hid in the dark trenches.
6. The villain sabotaged the sub's propellers, then fled into the sunken shipwreck.
7. The villain stole the giant pearl of the reef, then escaped in a swift mini-sub.
8. The villain cracked open the deep sea vault, then swam off into the barrier reef.
9. The villain disabled the underwater habitat generator, then escaped in a swift mini-sub.
10. The villain sabotaged the sub's propellers, then slipped away through the kelp forest.
11. The villain reprogrammed the research drone, then escaped in a swift mini-sub.
12. The villain stole the giant pearl of the reef, then fled into the sunken shipwreck.

Answer Key

The Abyssal Reef Heist

Culprit: Robert Ballard

hydro-jet thrusters · thermal engine boost · wears a right-wrist sonar · kelp green hair · sticky sea-foam spray

Trail: Start 21 → Clue 1 17 → Clue 2 12 → Clue 3 7 → Clue 4 4 → Clue 5 1

Clue 1 (Multiplication facts (1-12)): "THE SCAMP DOES NOT USE CHAMELEON KELP CAMO"

$2 \times 8 = 16$ (T) · $1 \times 8 = 8$ (U) · $11 \times 11 = 121$ (M) · $10 \times 7 = 70$ (N) · $5 \times 6 = 30$ (K) · $6 \times 9 = 54$ (L) · $11 \times 3 = 33$ (P) · $9 \times 1 = 9$ (E) · $11 \times 12 = 132$ (H) · $9 \times 12 = 108$ (S) · $7 \times 5 = 35$ (O) · $10 \times 1 = 10$ (C) · $2 \times 6 = 12$ (A) · $1 \times 1 = 1$ (D)

Clue 2 (Word problems): "WEARS A RIGHT WRIST SONAR"

There were 99 pearl clams. 19 were used up. How many pearl clams are left? = 80 (W) · There were 44 coral samples. 26 were used up. How many coral samples are left? = 18 (E) · There were 68 diving tanks. 11 were used up. How many diving tanks are left? = 57 (A) · The marine biologist found 15 coral samples yesterday and 41 more today. How many coral samples in all? = 56 (R) · The marine biologist found 11 pearl clams yesterday and 23 more today. How many pearl clams in all? = 34 (S) · The marine biologist lined up 10 rows of 11 diving tanks. How many diving tanks in all? = 110 (I) · The marine biologist lined up 6 rows of 11 coral samples. How many coral samples in all? = 66 (G)

Clue 3 (Fractions of a number): "USE THE STICKY SEA FOAM SPRAY ON THEM"

$1/2$ of 62 = 31 (U) · $3/6$ of 52 = 26 (F) · $3/6$ of 74 = 37 (T) · $2/4$ of 106 = 53 (S) · $4/8$ of 102 = 51 (M) · $3/5$ of 70 = 42 (R) · $1/2$ of 16 = 8 (O) · $5/10$ of 110 = 55 (E) · $4/10$ of 130 = 52 (A) · $1/8$ of 104 = 13 (I) · $4/6$ of 69 = 46 (C) · $1/8$ of 152 = 19 (P) · $3/4$ of 20 = 15 (H) · $1/4$ of 12 = 3 (N) · $1/3$ of 168 = 56 (K) · $3/6$ of 22 = 11 (Y)

Clue 4 (Multi-step word problems): "KELP GREEN HAIR"

The marine biologist filled 4 boxes with 6 diving tanks each, then found 65 more diving tanks. How many diving tanks are there in all? = 89 (K) · The marine biologist collected 31 lead anchors in the morning and 14 lead anchors in the afternoon, then split them equally among 5 the research vessel crew. How many lead anchors did each get? = 9 (E) · There were 358 lead anchors in all. 36 lead anchors were set aside. The rest were shared equally among 7 the research vessel crew. How many lead anchors did each get? = 46 (P) · The marine biologist collected 117 lead anchors in the morning and 153 lead anchors in the afternoon, then split them equally among 3 the research vessel crew. How many lead anchors did each get? = 90 (R) · The marine biologist collected 29 diving tanks in the morning and 13 diving tanks in the afternoon, then split them equally among 6 the research vessel crew. How many diving tanks did each get? = 7 (G) · The marine biologist earned 6 pearl clams in each of 2 rounds, plus 21 bonus pearl clams. Then 8 pearl clams were lost. How many pearl clams are left? = 25 (N) · The marine biologist collected 19 diving tanks in the morning and 38 diving tanks in the afternoon, then split them equally among 3 the research vessel crew. How many diving tanks did each get? = 19 (L)

Clue 5 (Fractions of a number): surviving statement is box 10 → Robert Ballard

$2/6$ of 36 = 12 · $1/5$ of 10 = 2 · $2/8$ of 28 = 7 · $1/8$ of 32 = 4 · $2/4$ of 2 = 1 · $2/8$ of 20 = 5 · $1/10$ of 30 = 3 · $3/10$ of 20 = 6 · $8/10$ of 10 = 8 · $1/5$ of 55 = 11 · $4/8$ of 18 = 9