The Mystery of the Missing Sea Grass Sanctuary

Grade 6 math · Percentages, Exponents, Order of operations, Multiplication, Division · Reading level grades 7-9

Detective: _____ **Date:** _____

Late last night, someone breached the security gates at Crystal Cove Manatee Reserve, disabling the hydrophone network and stealing rare acoustic tracking tags meant for vulnerable manatee calves. As dawn breaks over the misty mangroves, the sanctuary team must decipher the scattered digital logs and physical evidence left behind to identify the culprit before the morning tide.

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 sanctuary intruder is _____

Possible suspects

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

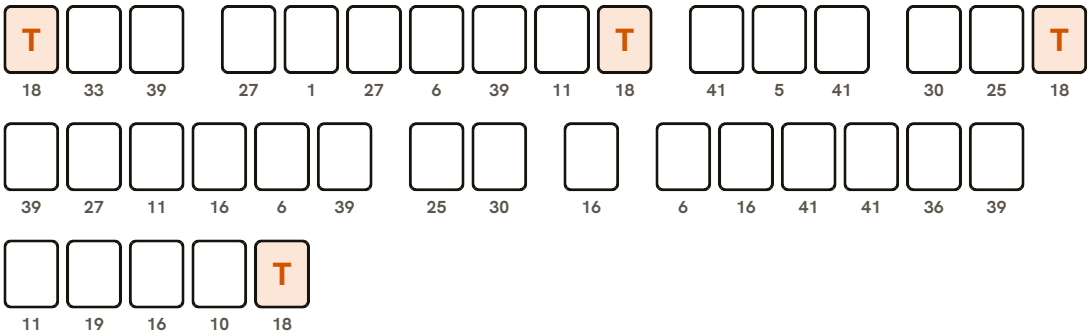
NAME	GEAR GADGET	SUBMERSIBLE VEHICLE	OBSERVATION HABIT	WETSUIT HOOD COLOR	DISTRACTION ITEM
Dr Nadia Patel	Algae Cannon	Paddle Craft	Left-Handed Grip	Cobalt Blue Hood	Crinkly Seagrass Snack
Tech Jonah Vance	Thermal Camera	Propeller Sled	Left-Handed Grip	Neon Yellow Hood	Squeaky Toy Sound
Officer Paige Miller	Hydro Scooter	Propeller Sled	Left-Handed Grip	Neon Yellow Hood	High Pitched Whistle
Scientist Iris DuPont	Thermal Camera	Mini Submarine	Left-Handed Grip	Neon Yellow Hood	Squeaky Toy Sound
Officer Liam Connor	Thermal Camera	Paddle Craft	Right-Handed Grip	Cobalt Blue Hood	Squeaky Toy Sound
Diver Owen Mercer	Thermal Camera	Hydrofoil Board	Right-Handed Grip	Neon Yellow Hood	Crinkly Seagrass Snack
Diver Aaron Blake	Acoustic Beacon	Propeller Sled	Left-Handed Grip	Bright Orange Hood	Squeaky Toy Sound
Chief Valerie Vance	Thermal Camera	Propeller Sled	Right-Handed Grip	Cobalt Blue Hood	Squeaky Toy Sound
Officer Sam Brooks	Algae Cannon	Diving Bell	Right-Handed Grip	Cobalt Blue Hood	Crinkly Seagrass Snack
Ranger Maya Lin	Acoustic Beacon	Paddle Craft	Left-Handed Grip	Neon Yellow Hood	Squeaky Toy Sound
Dr Julian Wade	Thermal Camera	Diving Bell	Right-Handed Grip	Neon Yellow Hood	Crinkly Seagrass Snack
Biologist Tara Singh	Acoustic Beacon	Diving Bell	Left-Handed Grip	Neon Yellow Hood	Squeaky Toy Sound
Professor Clara Wu	Algae Cannon	Mini Submarine	Right-Handed Grip	Neon Yellow Hood	Squeaky Toy Sound
Chief Elena Rostova	Acoustic Beacon	Hydrofoil Board	Right-Handed Grip	Bright Orange Hood	Crinkly Seagrass Snack
Scientist Chloe Bennett	Thermal Camera	Diving Bell	Right-Handed Grip	Neon Yellow Hood	Squeaky Toy Sound
Tech Marcus Reed	Acoustic Beacon	Mini Submarine	Left-Handed Grip	Cobalt Blue Hood	High Pitched Whistle
Captain Hugo Frost	Sonar Mapper	Paddle Craft	Right-Handed Grip	Cobalt Blue Hood	Squeaky Toy Sound
Professor Leo Cruz	Hydro Scooter	Hydrofoil Board	Left-Handed Grip	Cobalt Blue Hood	Crinkly Seagrass Snack
Diver Kai Sterling	Sonar Mapper	Mini Submarine	Right-Handed Grip	Bright Orange Hood	Squeaky Toy Sound
Ranger Seth Harper	Acoustic Beacon	Hydrofoil Board	Left-Handed Grip	Neon Yellow Hood	Squeaky Toy Sound
Ranger Silas Thorne	Algae Cannon	Mini Submarine	Left-Handed Grip	Cobalt Blue Hood	High Pitched Whistle

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CLUE 1 Percentages

> The sanctuary telemetry screen displays the percentage of restored satellite telemetry channels needed to decode the first lead.

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



5% of 360 = ☐ → T	75% of 52 = ☐ → E	50% of 50 = ☐ → O
10% of 50 = ☐ → I	50% of 22 = ☐ → C	25% of 4 = ☐ → U
60% of 45 = ☐ → S	75% of 48 = ☐ → L	50% of 82 = ☐ → D
20% of 80 = ☐ → A	20% of 50 = ☐ → F	25% of 132 = ☐ → H
60% of 50 = ☐ → N	5% of 120 = ☐ → P	50% of 38 = ☐ → R

Scratch space:

CLUE 2 Exponents

Analyzing the exponential decay of the intruder hydrophone frequencies reveals the next encryption key.

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

W											W								
9	27	289	225	36	144	144	36	144	144	256	9	256	400	36	361	289			
169	256	225	16	36	16	216	49	27	81	125	225	289	169	36					
400	256	289	243	169															

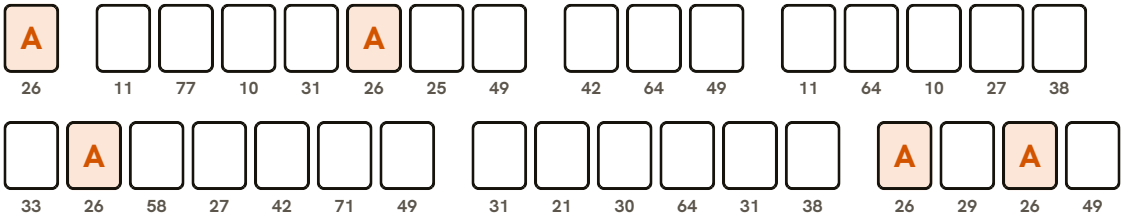
3^2 = ☐ → W	13^2 = ☐ → H	3^3 = ☐ → I	12^2 = ☐ → S
2^4 = ☐ → D	5^3 = ☐ → O	3^5 = ☐ → C	19^2 = ☐ → F
15^2 = ☐ → N	9^2 = ☐ → P	16^2 = ☐ → A	6^2 = ☐ → E
20^2 = ☐ → L	6^3 = ☐ → G	17^2 = ☐ → T	7^2 = ☐ → R

Scratch space:

CLUE 3 Order of operations

Solving the multi-step water quality order of operations reveals a hidden camera log entry.

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



6 × 8 - 22 = ☐ → A

8 × 8 - 22 = ☐ → T

3 × 11 - 6 = ☐ → N

9 × 3 - 2 = ☐ → K

8 × 5 - 9 = ☐ → E

11 + 9 × 2 = ☐ → W

33 + 5 × 5 = ☐ → I

10 × 10 - 29 = ☐ → L

12 × 6 - 23 = ☐ → Y

24 + 3 × 3 = ☐ → F

4 × 7 - 7 = ☐ → C

6 × 6 - 26 = ☐ → U

7 + 2 × 2 = ☐ → S

10 × 10 - 23 = ☐ → Q

9 + 7 × 3 = ☐ → H

8 × 11 - 24 = ☐ → O

26 + 6 × 2 = ☐ → D

Scratch space:

CLUE 4 Multiplication facts (1-12)

Multiplying the counted feed bundles stored in each lagoon bay pinpoints the suspect transit corridor.

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

S					S																		
96	66	15	11	42	96	72	2	11	99	1	72	99	21	1	63	63	72	77	6	72	72	10	77	1	15	1	2	72	88	99	10

8 × 12 = ☐ → S

7 × 11 = ☐ → W

3 × 2 = ☐ → H

9 × 11 = ☐ → N

6 × 11 = ☐ → C

12 × 6 = ☐ → O

3 × 7 = ☐ → Y

5 × 3 = ☐ → R

6 × 7 = ☐ → P

1 × 2 = ☐ → F

1 × 1 = ☐ → E

11 × 8 = ☐ → U

10 × 1 = ☐ → D

11 × 1 = ☐ → A

7 × 9 = ☐ → L

Scratch space:

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

Dividing the remaining tracking tags evenly among patrol skiffs decrypts the final location report.

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:

60 ÷ 10 = ☐ | 11 ÷ 11 = ☐ | 4 ÷ 2 = ☐ | 42 ÷ 6 = ☐ | 55 ÷ 11 = ☐

36 ÷ 12 = ☐ | 9 ÷ 1 = ☐ | 40 ÷ 5 = ☐ | 48 ÷ 12 = ☐ | 55 ÷ 5 = ☐

100 ÷ 10 = ☐

Step 2 - cross out the sentence with each answer:

1. The villain activated an acoustic beacon to confuse sensors, then submerged using a diving bell.
2. The villain switched on a thermal camera in the dark, then fled inside a mini submarine.
3. The villain blasted an algae cannon across the bay, then fled inside a mini submarine.
4. The villain used a sonar mapper to locate the nursery, then skimmed the reef on a hydrofoil board.
5. The villain used a sonar mapper to locate the nursery, then steered off using a paddle craft.
6. The villain switched on a thermal camera in the dark, then zoomed away on a propeller sled.
7. The villain blasted an algae cannon across the bay, then steered off using a paddle craft.
8. The villain blasted an algae cannon across the bay, then zoomed away on a propeller sled.
9. The villain blasted an algae cannon across the bay, then submerged using a diving bell.
10. The villain activated an acoustic beacon to confuse sensors, then zoomed away on a propeller sled.
11. The villain used a sonar mapper to locate the nursery, then fled inside a mini submarine.
12. The villain activated an acoustic beacon to confuse sensors, then skimmed the reef on a hydrofoil board.

TEACHER / PARENT

Answer Key

The Mystery of the Missing Sea Grass Sanctuary

Culprit: Ranger Seth Harper

Acoustic Beacon · Hydrofoil Board · Left-Handed Grip · Neon Yellow Hood · Squeaky Toy Sound

Trail: Start 21 → Clue 1 17 → Clue 2 9 → Clue 3 5 → Clue 4 4 → Clue 5 1

Clue 1 (Percentages): "THE SUSPECT DID NOT ESCAPE ON A PADDLE CRAFT"

5% of 360 = 18 (T) · 75% of 52 = 39 (E) · 50% of 50 = 25 (O) · 10% of 50 = 5 (I) · 50% of 22 = 11 (C) · 25% of 4 = 1 (U) · 60% of 45 = 27 (S) · 75% of 48 = 36 (L) · 50% of 82 = 41 (D) · 20% of 80 = 16 (A) · 20% of 50 = 10 (F) · 25% of 132 = 33 (H) · 60% of 50 = 30 (N) · 5% of 120 = 6 (P) · 50% of 38 = 19 (R)

Clue 2 (Exponents): "WITNESSES SAW A LEFT HANDED GRIP ON THE LATCH"

3^2 = 9 (W) · 13^2 = 169 (H) · 3^3 = 27 (I) · 12^2 = 144 (S) · 2^4 = 16 (D) · 5^3 = 125 (O) · 3^5 = 243 (C) · 19^2 = 361 (F) · 15^2 = 225 (N) · 9^2 = 81 (P) · 16^2 = 256 (A) · 6^2 = 36 (E) · 20^2 = 400 (L) · 6^3 = 216 (G) · 17^2 = 289 (T) · 7^2 = 49 (R)

Clue 3 (Order of operations): "A SQUEAKY TOY SOUND FAINTLY ECHOED AWAY"

6 × 8 - 22 = 26 (A) · 8 × 8 - 22 = 42 (T) · 3 × 11 - 6 = 27 (N) · 9 × 3 - 2 = 25 (K) · 8 × 5 - 9 = 31 (E) · 11 + 9 × 2 = 29 (W) · 33 + 5 × 5 = 58 (I) · 10 × 10 - 29 = 71 (L) · 12 × 6 - 23 = 49 (Y) · 24 + 3 × 3 = 33 (F) · 4 × 7 - 7 = 21 (C) · 6 × 6 - 26 = 10 (U) · 7 + 2 × 2 = 11 (S) · 10 × 10 - 23 = 77 (Q) · 9 + 7 × 3 = 30 (H) · 8 × 11 - 24 = 64 (O) · 26 + 6 × 2 = 38 (D)

Clue 4 (Multiplication facts (1-12)): "SCRAPS OF A NEON YELLOW HOOD WERE FOUND"

8 × 12 = 96 (S) · 7 × 11 = 77 (W) · 3 × 2 = 6 (H) · 9 × 11 = 99 (N) · 6 × 11 = 66 (C) · 12 × 6 = 72 (O) · 3 × 7 = 21 (Y) · 5 × 3 = 15 (R) · 6 × 7 = 42 (P) · 1 × 2 = 2 (F) · 1 × 1 = 1 (E) · 11 × 8 = 88 (U) · 10 × 1 = 10 (D) · 11 × 1 = 11 (A) · 7 × 9 = 63 (L)

Clue 5 (Division facts (1-12)): surviving statement is box 12 → Ranger Seth Harper

60 ÷ 10 = 6 · 11 ÷ 11 = 1 · 4 ÷ 2 = 2 · 42 ÷ 6 = 7 · 55 ÷ 11 = 5 · 36 ÷ 12 = 3 · 9 ÷ 1 = 9 · 40 ÷ 5 = 8 · 48 ÷ 12 = 4 · 55 ÷ 5 = 11 · 100 ÷ 10 = 10