The Mystery of Black Cove

Grade 9 math · Two-step equations, Exponents, Square roots, Integers · Reading level grades 5-6

Detective: _____ **Date:** _____

Someone snuck onto the flagship at midnight and stole the Golden Quadrant! The Harbor Master called upon all deckhands to solve the clues, track down the rogue pirate, and restore order to Black Cove.

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 pirate is _____

Possible suspects

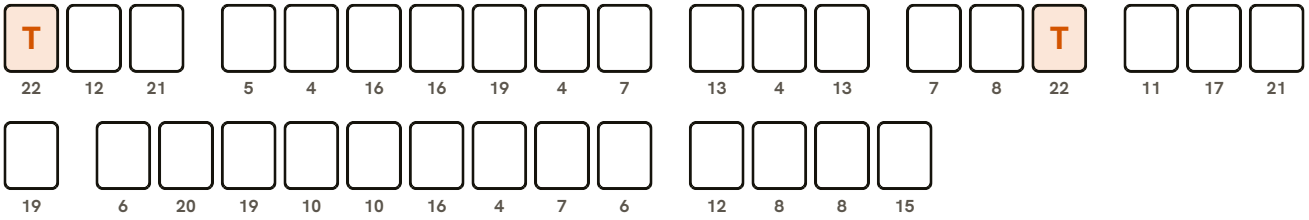
Cross off a row as each clue rules it out. The one left at the end is the culprit.

NAME	COMBAT MOVE	ESCAPE GEAR	DOMINANT HAND	BEARD OR HAIR	SECRET VULNERABILITY
William Kidd	Anchor Drop	Flare Signal	Right Handed	Red Braids	Compass Magnet
Francois lOlonnais	Hook Swipe	Smoke Bomb	Right Handed	Black Beard	Seagull Whistle
Thomas Tew	Pistol Shot	Grappling Hook	Right Handed	Black Beard	Seagull Whistle
Stede Bonnet	Cannon Blast	Net Trap	Left Handed	Black Beard	Seagull Whistle
Christopher Condent	Pistol Shot	Flare Signal	Right Handed	Red Braids	Seagull Whistle
Grace OMalley	Pistol Shot	Smoke Bomb	Right Handed	Red Braids	Seagull Whistle
Ching Shih	Cannon Blast	Smoke Bomb	Left Handed	Black Beard	Seagull Whistle
Samuel Bellamy	Hook Swipe	Net Trap	Right Handed	Black Beard	Seagull Whistle
Woodes Rogers	Cannon Blast	Grappling Hook	Right Handed	Red Braids	Citrus Juice
Edward Low	Cannon Blast	Flare Signal	Right Handed	Black Beard	Seagull Whistle
Charles Vane	Cutlass Slash	Smoke Bomb	Right Handed	Red Braids	Compass Magnet
Howell Davis	Cannon Blast	Net Trap	Right Handed	Black Beard	Compass Magnet
Cheung Po Tsai	Cutlass Slash	Smoke Bomb	Right Handed	Silver Locks	Citrus Juice
Bartholomew Roberts	Cutlass Slash	Grappling Hook	Right Handed	Red Braids	Compass Magnet
Calico Jack	Pistol Shot	Powder Keg	Left Handed	Silver Locks	Seagull Whistle
Blackbeard	Cutlass Slash	Net Trap	Left Handed	Black Beard	Citrus Juice
Anne Bonny	Pistol Shot	Flare Signal	Right Handed	Black Beard	Compass Magnet
John Evans	Hook Swipe	Smoke Bomb	Right Handed	Red Braids	Seagull Whistle
Mary Read	Hook Swipe	Grappling Hook	Right Handed	Red Braids	Seagull Whistle
John Rackham	Hook Swipe	Grappling Hook	Left Handed	Red Braids	Compass Magnet
Benjamin Hornigold	Cannon Blast	Smoke Bomb	Right Handed	Black Beard	Seagull Whistle

CLUE 1 Two-step equations

To unlock the quartermaster's chest, solve this two-step equation balance.

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



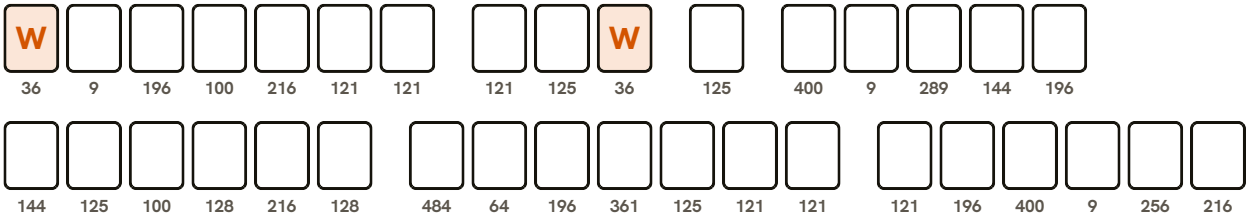
6x + 2 = 134, x = ☐ → T	5x + 3 = 53, x = ☐ → P	6x + 9 = 105, x = ☐ → L
7x + 7 = 126, x = ☐ → S	8x + 5 = 45, x = ☐ → V	5x + 9 = 44, x = ☐ → N
9x + 5 = 122, x = ☐ → D	2x + 7 = 29, x = ☐ → U	3x + 9 = 69, x = ☐ → R
6x + 9 = 81, x = ☐ → H	9x + 7 = 196, x = ☐ → E	8x + 2 = 50, x = ☐ → G
7x + 4 = 109, x = ☐ → K	2x + 12 = 50, x = ☐ → A	3x + 11 = 23, x = ☐ → I
4x + 12 = 44, x = ☐ → O		

Scratch space:

CLUE 2 Exponents

The supply crates double each hour. Evaluate this exponent to check the total.

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



6^2 = ☐ → W

6^3 = ☐ → E

14^2 = ☐ → T

11^2 = ☐ → S

19^2 = ☐ → L

5^3 = ☐ → A

22^2 = ☐ → C

3^2 = ☐ → I

16^2 = ☐ → K

20^2 = ☐ → R

12^2 = ☐ → H

17^2 = ☐ → G

10^2 = ☐ → N

8^2 = ☐ → U

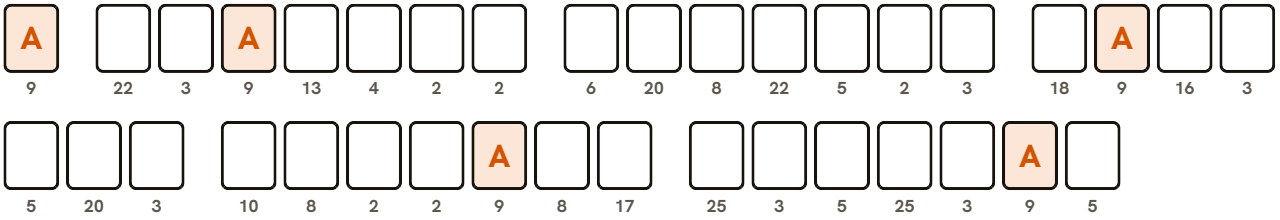
2^7 = ☐ → D

Scratch space:

CLUE 3 Square roots

> The square treasure grid hides a code. Find the square root to reveal it.

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



sqrt(81) = ☐ → A

sqrt(400) = ☐ → H

sqrt(100) = ☐ → V

sqrt(324) = ☐ → M

sqrt(484) = ☐ → S

sqrt(9) = ☐ → E

sqrt(64) = ☐ → I

sqrt(289) = ☐ → N

sqrt(16) = ☐ → U

sqrt(169) = ☐ → G

sqrt(625) = ☐ → R

sqrt(25) = ☐ → T

sqrt(36) = ☐ → W

sqrt(4) = ☐ → L

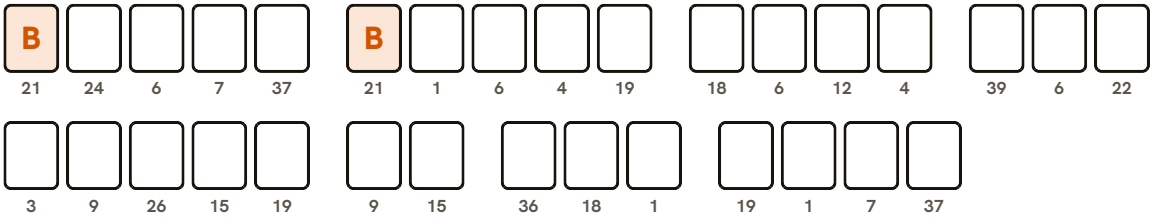
sqrt(256) = ☐ → D

Scratch space:

CLUE 4 Integers

The tide mark drops and rises. Use integers to calculate the final depth.

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



8 - (-13) = ☐ → **B**

(-12) + 21 = ☐ → **O**

(-7) + 33 = ☐ → **U**

(-8) + 32 = ☐ → **L**

(-2) + 21 = ☐ → **D**

(-8) + 15 = ☐ → **C**

38 - (-1) = ☐ → **W**

(-8) + 14 = ☐ → **A**

(-3) + 15 = ☐ → **I**

(-10) + 13 = ☐ → **F**

(-7) + 11 = ☐ → **R**

28 - (-8) = ☐ → **T**

(-11) + 33 = ☐ → **S**

(-9) + 46 = ☐ → **K**

(-11) + 26 = ☐ → **N**

(-14) + 32 = ☐ → **H**

(-10) + 11 = ☐ → **E**

Scratch space:

CLUE 5 Two-step equations - the last clue

Decipher this two-step equation from the ship's ledger to locate the final clue.

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:

3x + 9 = 30, x = ☐	2x + 6 = 24, x = ☐	4x + 9 = 21, x = ☐	2x + 9 = 21, x = ☐
8x + 2 = 10, x = ☐	9x + 11 = 119, x = ☐	8x + 3 = 83, x = ☐	4x + 10 = 26, x = ☐
2x + 4 = 26, x = ☐	7x + 1 = 15, x = ☐	3x + 8 = 23, x = ☐	

Step 2 - cross out the sentence with each answer:

1. The villain fired a cannon blast, then cast a heavy net trap.
2. The villain swung a sharp cutlass, then tossed a steel grappling hook.
3. The villain swiped an iron hook, then threw a dense smoke bomb.
4. The villain swiped an iron hook, then lit an explosive powder keg.
5. The villain shot a flintlock pistol, then threw a dense smoke bomb.
6. The villain fired a cannon blast, then tossed a steel grappling hook.
7. The villain fired a cannon blast, then threw a dense smoke bomb.
8. The villain swiped an iron hook, then cast a heavy net trap.
9. The villain fired a cannon blast, then launched a bright flare signal.
10. The villain swung a sharp cutlass, then launched a bright flare signal.
11. The villain dropped a heavy anchor, then launched a bright flare signal.
12. The villain dropped a heavy anchor, then tossed a steel grappling hook.

TEACHER / PARENT

Answer Key

The Mystery of Black Cove

Culprit: Samuel Bellamy

Hook Swipe · Net Trap · Right Handed · Black Beard · Seagull Whistle

Trail: Start 21 → Clue 1 16 → Clue 2 12 → Clue 3 7 → Clue 4 4 → Clue 5 1

Clue 1 (Two-step equations): "THE VILLAIN DID NOT USE A GRAPPLING HOOK"

6x + 2 = 134, x = 22 (T) · 5x + 3 = 53, x = 10 (P) · 6x + 9 = 105, x = 16 (L) · 7x + 7 = 126, x = 17 (S) · 8x + 5 = 45, x = 5 (V) · 5x + 9 = 44, x = 7 (N) · 9x + 5 = 122, x = 13 (D) · 2x + 7 = 29, x = 11 (U) · 3x + 9 = 69, x = 20 (R) · 6x + 9 = 81, x = 12 (H) · 9x + 7 = 196, x = 21 (E) · 8x + 2 = 50, x = 6 (G) · 7x + 4 = 109, x = 15 (K) · 2x + 12 = 50, x = 19 (A) · 3x + 11 = 23, x = 4 (I) · 4x + 12 = 44, x = 8 (O)

Clue 2 (Exponents): "WITNESS SAW A RIGHT HANDED CUTLASS STRIKE"

6^2 = 36 (W) · 6^3 = 216 (E) · 14^2 = 196 (T) · 11^2 = 121 (S) · 19^2 = 361 (L) · 5^3 = 125 (A) · 22^2 = 484 (C) · 3^2 = 9 (I) · 16^2 = 256 (K) · 20^2 = 400 (R) · 12^2 = 144 (H) · 17^2 = 289 (G) · 10^2 = 100 (N) · 8^2 = 64 (U) · 2^7 = 128 (D)

Clue 3 (Square roots): "A SEAGULL WHISTLE MADE THE VILLAIN RETREAT"

sqrt(81) = 9 (A) · sqrt(400) = 20 (H) · sqrt(100) = 10 (V) · sqrt(324) = 18 (M) · sqrt(484) = 22 (S) · sqrt(9) = 3 (E) · sqrt(64) = 8 (I) · sqrt(289) = 17 (N) · sqrt(16) = 4 (U) · sqrt(169) = 13 (G) · sqrt(625) = 25 (R) · sqrt(25) = 5 (T) · sqrt(36) = 6 (W) · sqrt(4) = 2 (L) · sqrt(256) = 16 (D)

Clue 4 (Integers): "BLACK BEARD HAIR WAS FOUND ON THE DECK"

8 - (-13) = 21 (B) · (-12) + 21 = 9 (O) · (-7) + 33 = 26 (U) · (-8) + 32 = 24 (L) · (-2) + 21 = 19 (D) · (-8) + 15 = 7 (C) · 38 - (-1) = 39 (W) · (-8) + 14 = 6 (A) · (-3) + 15 = 12 (I) · (-10) + 13 = 3 (F) · (-7) + 11 = 4 (R) · 28 - (-8) = 36 (T) · (-11) + 33 = 22 (S) · (-9) + 46 = 37 (K) · (-11) + 26 = 15 (N) · (-14) + 32 = 18 (H) · (-10) + 11 = 1 (E)

Clue 5 (Two-step equations): surviving statement is box 8 → Samuel Bellamy

3x + 9 = 30, x = 7 · 2x + 6 = 24, x = 9 · 4x + 9 = 21, x = 3 · 2x + 9 = 21, x = 6 · 8x + 2 = 10, x = 1 · 9x + 11 = 119, x = 12 · 8x + 3 = 83, x = 10 · 4x + 10 = 26, x = 4 · 2x + 4 = 26, x = 11 · 7x + 1 = 15, x = 2 · 3x + 8 = 23, x = 5