



The Case of the Missing Golden Anchor

Grade 8 math · Exponents, Word problems, Square roots, Pythagorean theorem, Two-step equations · Reading level grades 3-4

Detective: _____ Date: _____

Someone stole the Golden Anchor from the Captain cabin! We must search Scurvy Cove and crack the codes to catch the sneaky sailor before they sail away with the treasure. Use your math skills to find the pirate thief!

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 pirate 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 PIRATE SKILL	SECONDARY PIRATE SKILL	HOOK PLACEMENT	BEARD OR HAIR COLOR	SECRET WEAKNESS
Blind Pew	map decoding	rope swinging	right hand hook	black beard	scared of frogs
Cannonball Kate	ship steering	loud shouting	left hand hook	braided gray	afraid of parrots
Blackbeard	sword dueling	loud shouting	left hand hook	braided gray	ticklish wooden leg
Scurvy Sam	ship steering	loud shouting	left hand hook	black beard	scared of frogs
Goldie Grog	map decoding	coin counting	right hand hook	braided gray	scared of frogs
Barnaby Red	map decoding	rope swinging	left hand hook	braided gray	scared of frogs
Jolly Roger	sword dueling	rope swinging	right hand hook	braided gray	ticklish wooden leg
Salty Sue	ship steering	coin counting	left hand hook	braided gray	afraid of parrots
Sharky McSnarl	cannon blasting	loud shouting	left hand hook	red bandana	afraid of parrots
Long John	map decoding	rope swinging	right hand hook	braided gray	ticklish wooden leg
Captain Flint	kraken calling	treasure sniffing	right hand hook	braided gray	ticklish wooden leg
Grace OMalley	kraken calling	coin counting	left hand hook	black beard	ticklish wooden leg
Black Bart	sword dueling	quick climbing	right hand hook	black beard	ticklish wooden leg
Barrel Buster	ship steering	loud shouting	right hand hook	black beard	scared of frogs
Mary Read	ship steering	coin counting	right hand hook	braided gray	ticklish wooden leg
Pegleg Pete	kraken calling	quick climbing	right hand hook	red bandana	afraid of parrots
Henry Morgan	cannon blasting	rope swinging	right hand hook	braided gray	ticklish wooden leg
Billy Bones	map decoding	treasure sniffing	left hand hook	braided gray	scared of frogs
Anne Bonny	ship steering	quick climbing	right hand hook	red bandana	afraid of parrots
Captain Kidd	map decoding	loud shouting	right hand hook	braided gray	scared of frogs
Silver Tooth	sword dueling	rope swinging	left hand hook	braided gray	ticklish wooden leg

CLUE 1 Exponents

We need to count our supplies. Help Quartermaster Barney check the barrel of hardtack biscuit boxes and rope bundles so we can plan our next move.

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

T								T									T
4	9	216	289	8	256	32	4	216	121	64	216	144	625	64	4		

					T							
144	625	8	729	729	4	256	216	32	144	169	256	216

$2^2 = \square \rightarrow \text{T}$	$13^2 = \square \rightarrow \text{U}$	$3^2 = \square \rightarrow \text{H}$	$2^5 = \square \rightarrow \text{A}$
$5^4 = \square \rightarrow \text{N}$	$11^2 = \square \rightarrow \text{D}$	$4^4 = \square \rightarrow \text{R}$	$17^2 = \square \rightarrow \text{P}$
$3^6 = \square \rightarrow \text{F}$	$4^3 = \square \rightarrow \text{O}$	$6^3 = \square \rightarrow \text{E}$	$12^2 = \square \rightarrow \text{S}$
$2^3 = \square \rightarrow \text{I}$			

Scratch space:

CLUE 2

Word problems

The gold coins are multiplying fast in the magic chest. It doubles every minute, and we need to find the power of the chest to unlock the clue.

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

A witness saw the villain was R D O O K .

74 39 64 47 22 47 99 66 47

Quartermaster Barney found 13 gold coin yesterday and 61 more today. How many gold coin in all?

Answer: → R

Quartermaster Barney lined up 11 rows of 6 cannonball. How many cannonball in all?

Answer: → N

Quartermaster Barney lined up 11 rows of 2 map scroll. How many map scroll in all?

Answer: → T

Quartermaster Barney found 16 map scroll yesterday and 31 more today. How many map scroll in all?

Answer: → H

Quartermaster Barney lined up 9 rows of 11 gold coin. How many gold coin in all?

Answer: → A

Quartermaster Barney lined up 8 rows of 8 spyglass. How many spyglass in all?

Answer: → G

There were 56 gold coin. 17 were used up. How many gold coin are left?

Answer: → I

Scratch space:

CLUE 3

The captain wants to tile the captain cabin floor. To find the secret code, we must calculate the side length of this perfect square rug.

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 letter 'F' in the first box, followed by empty boxes with numbers 4, 19, 14, 23, 24, 19, 18, 22, 23, 12, 5, 3, 2, 19, 6, 23, 24, 19, 12, 18. The bottom row contains empty boxes with numbers 25, 13, 13, 6, 19, 10, 2, 19, 9, 19, 14, 22, 8.

sqrt(16) = → **F**

sqrt(36) = → **D**

sqrt(576) = → **H**

sqrt(64) = → **Y**

sqrt(484) = → **S**

sqrt(529) = → **T**

sqrt(25) = → **C**

sqrt(324) = → **R**

sqrt(361) = → **E**

sqrt(100) = → **N**

sqrt(196) = → **A**

sqrt(169) = → **0**

sqrt(9) = → **K**

sqrt(625) = → **W**

sqrt(4) = → **L**

sqrt(81) = → **G**

sqrt(144) = →

Scratch space:

CLUE 4

Pythagorean theorem

We must sail diagonally across the cove to avoid the reef. Help the navigator find the shortest path between the two rocky docks.

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

S																			
20	40	52	75	87	17	58	29	10	17	58	34	65	75	65	41	58	34	17	
39	15	51	82	87	74	40	58	82	58	34	15								

legs 12 and 16, hypotenuse = → **S**

legs 20 and 48, hypotenuse = → **M**

legs 25 and 60, hypotenuse = → **D**

legs 24 and 32, hypotenuse = → **O**

legs 60 and 63, hypotenuse = → **G**

legs 24 and 45, hypotenuse = → **U**

legs 9 and 40, hypotenuse = → **H**

legs 8 and 15, hypotenuse = → **R**

legs 6 and 8, hypotenuse = → **B**

legs 9 and 12, hypotenuse = → **L**

legs 16 and 30, hypotenuse = → **I**

legs 18 and 80, hypotenuse = → **N**

legs 24 and 70, hypotenuse = → **T**

legs 40 and 42, hypotenuse = → **A**

legs 20 and 21, hypotenuse = → **Y**

legs 21 and 72, hypotenuse = → **E**

legs 15 and 36, hypotenuse = → **C**

Scratch space:

CLUE 5**Two-step equations - the last clue**

We have two heavy chests of iron balls and a loose weight on the scale. Find the mystery weight of one chest so we can balance the ship.

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:

$5x + 3 = 23, x = \boxed{}$

$2x + 2 = 12, x = \boxed{}$

$4x + 9 = 45, x = \boxed{}$

$6x + 3 = 21, x = \boxed{}$

$4x + 3 = 35, x = \boxed{}$

$6x + 1 = 37, x = \boxed{}$

$4x + 7 = 11, x = \boxed{}$

$4x + 2 = 46, x = \boxed{}$

$2x + 7 = 31, x = \boxed{}$

$6x + 1 = 13, x = \boxed{}$

$2x + 2 = 22, x = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain blasts the ship cannons, then counts the shiny gold coins.
2. The villain summons the mighty kraken, then sniffs out the hidden chest.
3. The villain reads the secret map, then counts the shiny gold coins.
4. The villain blasts the ship cannons, then swings on a thick rope.
5. The villain steers the pirate galleon, then counts the shiny gold coins.
6. The villain summons the mighty kraken, then climbs up the tall sails.
7. The villain fences with a shiny sword, then swings on a thick rope.
8. The villain steers the pirate galleon, then climbs up the tall sails.
9. The villain reads the secret map, then swings on a thick rope.
10. The villain blasts the ship cannons, then shouts a loud pirate song.
11. The villain blasts the ship cannons, then climbs up the tall sails.
12. The villain fences with a shiny sword, then sniffs out the hidden chest.

Answer Key

The Case of the Missing Golden Anchor

Culprit: Jolly Roger

sword dueling · rope swinging · right hand hook · braided gray · ticklish wooden leg

Trail: Start 21 → Clue 1 19 → Clue 2 11 → Clue 3 5 → Clue 4 4 → Clue 5 1

Clue 1 (Exponents): "THE PIRATE DOES NOT SNIFF TREASURE"

$2^2 = 4$ (T) · $13^2 = 169$ (U) · $3^2 = 9$ (H) · $2^5 = 32$ (A) · $5^4 = 625$ (N) · $11^2 = 121$ (D) · $4^4 = 256$ (R) · $17^2 = 289$ (P) · $3^6 = 729$ (F) · $4^3 = 64$ (O) · $6^3 = 216$ (E) · $12^2 = 144$ (S) · $2^3 = 8$ (I)

Clue 2 (Word problems): "RIGHT HAND HOOK"

Quartermaster Barney found 13 gold coin yesterday and 61 more today. How many gold coin in all? = 74 (R) · Quartermaster Barney lined up 11 rows of 6 cannonball. How many cannonball in all? = 66 (N) · Quartermaster Barney lined up 11 rows of 2 map scroll. How many map scroll in all? = 22 (T) · Quartermaster Barney found 16 map scroll yesterday and 31 more today. How many map scroll in all? = 47 (H) · Quartermaster Barney lined up 9 rows of 11 gold coin. How many gold coin in all? = 99 (A) · Quartermaster Barney lined up 8 rows of 8 spyglass. How many spyglass in all? = 64 (G) · There were 56 gold coin. 17 were used up. How many gold coin are left? = 39 (I)

Clue 3 (Square roots): "FEATHERS TICKLED THEIR WOODEN LEG EASY"

$\sqrt{16} = 4$ (F) · $\sqrt{36} = 6$ (D) · $\sqrt{576} = 24$ (H) · $\sqrt{64} = 8$ (Y) · $\sqrt{484} = 22$ (S) · $\sqrt{529} = 23$ (T) · $\sqrt{25} = 5$ (C) · $\sqrt{324} = 18$ (R) · $\sqrt{361} = 19$ (E) · $\sqrt{100} = 10$ (N) · $\sqrt{196} = 14$ (A) · $\sqrt{169} = 13$ (O) · $\sqrt{9} = 3$ (K) · $\sqrt{625} = 25$ (W) · $\sqrt{4} = 2$ (L) · $\sqrt{81} = 9$ (G) · $\sqrt{144} = 12$ (I)

Clue 4 (Pythagorean theorem): "SOME GRAY BRAIDED HAIR CLUNG TO A NAIL"

legs 12 and 16, hypotenuse = 20 (S) · legs 20 and 48, hypotenuse = 52 (M) · legs 25 and 60, hypotenuse = 65 (D) · legs 24 and 32, hypotenuse = 40 (O) · legs 60 and 63, hypotenuse = 87 (G) · legs 24 and 45, hypotenuse = 51 (U) · legs 9 and 40, hypotenuse = 41 (H) · legs 8 and 15, hypotenuse = 17 (R) · legs 6 and 8, hypotenuse = 10 (B) · legs 9 and 12, hypotenuse = 15 (L) · legs 16 and 30, hypotenuse = 34 (I) · legs 18 and 80, hypotenuse = 82 (N) · legs 24 and 70, hypotenuse = 74 (T) · legs 40 and 42, hypotenuse = 58 (A) · legs 20 and 21, hypotenuse = 29 (Y) · legs 21 and 72, hypotenuse = 75 (E) · legs 15 and 36, hypotenuse = 39 (C)

Clue 5 (Two-step equations): surviving statement is box 7 → Jolly Roger

$5x + 3 = 23$, $x = 4$ · $2x + 2 = 12$, $x = 5$ · $4x + 9 = 45$, $x = 9$ · $6x + 3 = 21$, $x = 3$ · $4x + 3 = 35$, $x = 8$ · $6x + 1 = 37$, $x = 6$ · $4x + 7 = 11$, $x = 1$ · $4x + 2 = 46$, $x = 11$ · $2x + 7 = 31$, $x = 12$ · $6x + 1 = 13$, $x = 2$ · $2x + 2 = 22$, $x = 10$