



The Sunstone Idol Heist

Grade 10 math · Pythagorean theorem, Square roots, Exponents, Order of operations · Reading level grades 7-9

Detective: _____ **Date:** _____

Deep within the jungle, someone breached the central vault of Sunstone Temple. Unravel the math clues to identify the rogue explorer before they escape!

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 explorer is _____

Possible suspects

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

NAME	PRIMARY TOOL	ARTIFACT STOLEN	STANCE	BANDANA COLOR	TRICKED BY
Chloe Park	Climbing Claws	Ruby Mask	Right Handed	Emerald Bandana	Mirror Reflection
Sully Miller	Smoke Grenade	Golden Scarab	Right Handed	Emerald Bandana	Decoy Trap
Harrison Forde	Smoke Grenade	Crystal Skull	Right Handed	Crimson Bandana	Mirror Reflection
Chester Copper	Smoke Grenade	Ruby Mask	Left Handed	Crimson Bandana	Mirror Reflection
Nathan Stone	Smoke Grenade	Ruby Mask	Left Handed	Emerald Bandana	Decoy Trap
Marion Raven	Sonic Cutter	Jade Compass	Right Handed	Crimson Bandana	Mirror Reflection
Shorty Round	Grappling Hook	Crystal Skull	Left Handed	Crimson Bandana	Mirror Reflection
Lara Finch	Sonic Cutter	Jade Compass	Left Handed	Emerald Bandana	Mirror Reflection
Renato Bay	Grappling Hook	Crystal Skull	Right Handed	Emerald Bandana	Mirror Reflection
Rick Oconnell	Laser Compass	Crystal Skull	Right Handed	Emerald Bandana	Mirror Reflection
Belloq Thorne	Laser Compass	Crystal Skull	Left Handed	Cobalt Bandana	Decoy Trap
Elena Rivers	Grappling Hook	Golden Scarab	Right Handed	Emerald Bandana	Decoy Trap
Jonathan Carn	Climbing Claws	Silver Key	Right Handed	Emerald Bandana	Flashlight Beam
Satipo Cruz	Sonic Cutter	Silver Key	Right Handed	Emerald Bandana	Mirror Reflection
Wombat Jones	Grappling Hook	Crystal Skull	Right Handed	Cobalt Bandana	Mirror Reflection
Elsa Schneider	Climbing Claws	Silver Key	Right Handed	Cobalt Bandana	Decoy Trap
Evelyn Reed	Smoke Grenade	Golden Scarab	Right Handed	Emerald Bandana	Mirror Reflection
Indiana Drake	Climbing Claws	Ruby Mask	Right Handed	Emerald Bandana	Flashlight Beam
Amelia Croft	Laser Compass	Jade Compass	Right Handed	Cobalt Bandana	Mirror Reflection
Victor Cruz	Grappling Hook	Crystal Skull	Left Handed	Emerald Bandana	Mirror Reflection
Evie Carnahan	Smoke Grenade	Golden Scarab	Left Handed	Emerald Bandana	Mirror Reflection

Pythagorean theorem

To calculate the direct diagonal rope length across the temple chasm, you measure the straight walls and solve for the hypotenuse.

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

Diagram illustrating the memory layout for the first row of the matrix, showing the sequence of values stored in memory:

65	74	125	52	123	125	39	17	116	13	116	123	85	65	65	39	17	125
----	----	-----	----	-----	-----	----	----	-----	----	-----	-----	----	----	----	----	----	-----

Diagram illustrating the memory layout for the second row of the matrix, showing the sequence of values stored in memory:

65	74	125	25	100	68	5	111	39	52	17
----	----	-----	----	-----	----	---	-----	----	----	----

legs 25 and 60, hypotenuse = $\rightarrow$ **T**

legs 8 and 15, hypotenuse = $\rightarrow$ **K**

legs 15 and 20, hypotenuse = → **R**

legs 32 and 60, hypotenuse = → **B**

legs 20 and 48, hypotenuse = → **S**

legs 40 and 75, hypotenuse = $\rightarrow$ **0**

legs 35 and 120, hypotenuse = → **E**

legs 28 and 96, hypotenuse = $\rightarrow$ **U**

legs 24 and 70, hypotenuse = $\rightarrow$ **H**

legs 3 and 4, hypotenuse = $\rightarrow$ **Y**

legs 80 and 84, hypotenuse = → **D**

legs 27 and 120, hypotenuse = → **N**

legs 5 and 12, hypotenuse = $\rightarrow$

legs 36 and 105, hypotenuse = → **M**

legs 15 and 36, hypotenuse = $\rightarrow$ **A**

Scratch space:

CLUE 2

The ancient floor grid has a square area, so finding the side length requires taking a square root.

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

A number line from 0 to 21 with empty boxes for numbers. The numbers 21, 5, 4, 13, 14, 4, 3, 17, 19, 3, 13, 20, 7, 23, 5, and 21 are placed in the boxes. The boxes for 21 and 23 are highlighted in orange.

sqrt(441) = → **T**

sqrt(169) = → **S**

sqrt(4) = → **D**

$$\text{sqrt}(289) = \boxed{} \rightarrow \boxed{\text{K}}$$

sqrt(25) = → **H**

sqrt(9) = → **A**

sqrt(196) = → **N**

sqrt(529) = → **G**

sqrt(400) = → **R**

sqrt(16) = → **E**

sqrt(49) = →

$$\text{sqrt}(361) = \boxed{} \rightarrow \boxed{\text{W}}$$

Scratch space:

CLUE 3

Exponents

The puzzle lock door uses exponential growth codes that multiply power by factors of two.

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

A																
441	64	36	361	361	484	361	361	49	216	144	49	121	512	36	484	32
289	16	484	484	400	49	8	512	324	49	512	324	36	49	216		

$21^2 = \square \rightarrow \text{A}$

$20^2 = \square \rightarrow \text{K}$

$6^3 = \square \rightarrow \text{F}$

$8^2 = \square \rightarrow \text{M}$

$7^2 = \square \rightarrow \text{E}$

$19^2 = \square \rightarrow \text{R}$

$6^2 = \square \rightarrow \text{I}$

$8^3 = \square \rightarrow \text{T}$

$17^2 = \square \rightarrow \text{S}$

$12^2 = \square \rightarrow \text{L}$

$2^3 = \square \rightarrow \text{D}$

$4^2 = \square \rightarrow \text{P}$

$22^2 = \square \rightarrow \text{O}$

$11^2 = \square \rightarrow \text{C}$

$2^5 = \square \rightarrow \text{N}$

$18^2 = \square \rightarrow \text{H}$

Scratch space:

CLUE 4

Order of operations

To disarm the pressure trap, you follow the strict order of operations on the ancient stone dial.

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

E		E								E												
38	31	38	9	23	81	63	51	104	9	38	23	63	28	32	23	37	33	104	51			

				E						
54	39	51	104	38	81	23	51	32	104	

$30 + 2 \times 4 = \square \rightarrow \boxed{\text{E}}$

$22 + 4 \times 8 = \square \rightarrow \boxed{\text{O}}$

$6 \times 8 - 20 = \square \rightarrow \boxed{\text{S}}$

$56 + 8 \times 6 = \square \rightarrow \boxed{\text{H}}$

$10 \times 6 - 21 = \square \rightarrow \boxed{\text{N}}$

$42 + 3 \times 3 = \square \rightarrow \boxed{\text{T}}$

$9 + 9 \times 6 = \square \rightarrow \boxed{\text{D}}$

$11 \times 3 - 24 = \square \rightarrow \boxed{\text{R}}$

$14 + 6 \times 3 = \square \rightarrow \boxed{\text{C}}$

$53 + 7 \times 4 = \square \rightarrow \boxed{\text{L}}$

$9 \times 6 - 17 = \square \rightarrow \boxed{\text{U}}$

$15 + 9 \times 2 = \square \rightarrow \boxed{\text{G}}$

$10 \times 6 - 29 = \square \rightarrow \boxed{\text{M}}$

$4 \times 9 - 13 = \square \rightarrow \boxed{\text{A}}$

Scratch space:

CLUE 5**Square roots - the last clue**

The secret chamber floor is a perfect square, so calculating its boundary wall length means finding the square root.

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:

$\text{sqrt}(9) = \boxed{}$

$\text{sqrt}(100) = \boxed{}$

$\text{sqrt}(121) = \boxed{}$

$\text{sqrt}(16) = \boxed{}$

$\text{sqrt}(144) = \boxed{}$

$\text{sqrt}(49) = \boxed{}$

$\text{sqrt}(64) = \boxed{}$

$\text{sqrt}(36) = \boxed{}$

$\text{sqrt}(4) = \boxed{}$

$\text{sqrt}(1) = \boxed{}$

$\text{sqrt}(81) = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain mapped the laser grid, then grabbed the ruby mask.
2. The villain sliced the reinforced door, then grabbed the ruby mask.
3. The villain vanished in smoke, then swiped the golden scarab.
4. The villain vanished in smoke, then grabbed the ruby mask.
5. The villain sliced the reinforced door, then stole the silver key.
6. The villain vanished in smoke, then pocketed the crystal skull.
7. The villain mapped the laser grid, then stole the silver key.
8. The villain scaled the stone cliff, then pocketed the crystal skull.
9. The villain sliced the reinforced door, then swiped the golden scarab.
10. The villain hooked the high ledge, then pocketed the crystal skull.
11. The villain mapped the laser grid, then pocketed the crystal skull.
12. The villain scaled the stone cliff, then swiped the golden scarab.

Answer Key

The Sunstone Idol Heist

Culprit: Satipo Cruz

Sonic Cutter · Silver Key · Right Handed · Emerald Bandana · Mirror Reflection

Trail: Start 21 → Clue 1 17 → Clue 2 12 → Clue 3 8 → Clue 4 4 → Clue 5 1

Clue 1 (Pythagorean theorem): "THE SNEAK DID NOT TAKE THE RUBY MASK"

legs 25 and 60, hypotenuse = 65 (T) · legs 8 and 15, hypotenuse = 17 (K) · legs 15 and 20, hypotenuse = 25 (R) · legs 32 and 60, hypotenuse = 68 (B) · legs 20 and 48, hypotenuse = 52 (S) · legs 40 and 75, hypotenuse = 85 (O) · legs 35 and 120, hypotenuse = 125 (E) · legs 28 and 96, hypotenuse = 100 (U) · legs 24 and 70, hypotenuse = 74 (H) · legs 3 and 4, hypotenuse = 5 (Y) · legs 80 and 84, hypotenuse = 116 (D) · legs 27 and 120, hypotenuse = 123 (N) · legs 5 and 12, hypotenuse = 13 (I) · legs 36 and 105, hypotenuse = 111 (M) · legs 15 and 36, hypotenuse = 39 (A)

Clue 2 (Square roots): "THE SNEAK WAS RIGHT HANDED"

$\sqrt{441} = 21$ (T) · $\sqrt{169} = 13$ (S) · $\sqrt{4} = 2$ (D) · $\sqrt{289} = 17$ (K) · $\sqrt{25} = 5$ (H) · $\sqrt{9} = 3$ (A) · $\sqrt{196} = 14$ (N) · $\sqrt{529} = 23$ (G) · $\sqrt{400} = 20$ (R) · $\sqrt{16} = 4$ (E) · $\sqrt{49} = 7$ (I) · $\sqrt{361} = 19$ (W)

Clue 3 (Exponents): "A MIRROR REFLECTION SPOOKED THE THIEF"

$21^2 = 441$ (A) · $20^2 = 400$ (K) · $6^3 = 216$ (F) · $8^2 = 64$ (M) · $7^2 = 49$ (E) · $19^2 = 361$ (R) · $6^2 = 36$ (I) · $8^3 = 512$ (T) · $17^2 = 289$ (S) · $12^2 = 144$ (L) · $2^3 = 8$ (D) · $4^2 = 16$ (P) · $22^2 = 484$ (O) · $11^2 = 121$ (C) · $2^5 = 32$ (N) · $18^2 = 324$ (H)

Clue 4 (Order of operations): "EMERALD THREADS CAUGHT ON THE LATCH"

$30 + 2 \times 4 = 38$ (E) · $22 + 4 \times 8 = 54$ (O) · $6 \times 8 - 20 = 28$ (S) · $56 + 8 \times 6 = 104$ (H) · $10 \times 6 - 21 = 39$ (N) · $42 + 3 \times 3 = 51$ (T) · $9 + 9 \times 6 = 63$ (D) · $11 \times 3 - 24 = 9$ (R) · $14 + 6 \times 3 = 32$ (C) · $53 + 7 \times 4 = 81$ (L) · $9 \times 6 - 17 = 37$ (U) · $15 + 9 \times 2 = 33$ (G) · $10 \times 6 - 29 = 31$ (M) · $4 \times 9 - 13 = 23$ (A)

Clue 5 (Square roots): surviving statement is box 5 → Satipo Cruz

$\sqrt{9} = 3$ · $\sqrt{100} = 10$ · $\sqrt{121} = 11$ · $\sqrt{16} = 4$ · $\sqrt{144} = 12$ · $\sqrt{49} = 7$ · $\sqrt{64} = 8$ · $\sqrt{36} = 6$ · $\sqrt{4} = 2$ · $\sqrt{1} = 1$ · $\sqrt{81} = 9$