The Sunstone Temple Heist

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

Detective: _____ **Date:** _____

During a jungle expedition on Isla Mistica, an unknown relic raider snuck into the camp vault and stole the ancient Golden Sunstone. By solving mathematical clues found along the trail, the expedition team can eliminate suspects and unmask the 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 relic raider is _____

Possible suspects

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

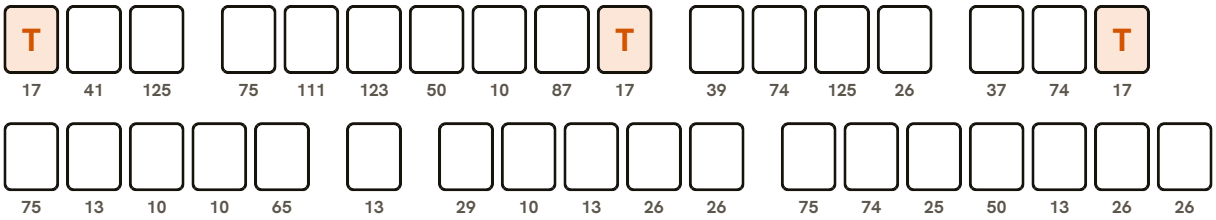
NAME	GEAR TOOL	CARRIED ITEM	DOMINANT HAND	ACCESSORY	DETERRENT
Wren Harper	Grappling Hook	Night Goggles	Left Handed	Braided Cord	Whistle Blast
Xander Blade	Climbing Claws	Pocket Decoder	Right Handed	Leather Strap	Water Splash
Piper Finch	Climbing Claws	Night Goggles	Left Handed	Leather Strap	Flashlight Beam
Gideon Drake	Grappling Hook	Encrypted Map	Right Handed	Leather Strap	Water Splash
Hannah Frost	Torch Whistle	Steel Machete	Right Handed	Leather Strap	Water Splash
Ethan Hunt	Grappling Hook	Brass Compass	Right Handed	Leather Strap	Water Splash
Una Brooks	Torch Whistle	Night Goggles	Right Handed	Leather Strap	Whistle Blast
Nadia Ray	Grappling Hook	Encrypted Map	Left Handed	Leather Strap	Water Splash
Dara Stone	Torch Whistle	Night Goggles	Right Handed	Braided Cord	Water Splash
Luna Sky	Torch Whistle	Encrypted Map	Left Handed	Braided Cord	Water Splash
Ian Sterling	Grappling Hook	Encrypted Map	Right Handed	Leather Strap	Flashlight Beam
Cyrus Vance	Grappling Hook	Encrypted Map	Left Handed	Feather Charm	Whistle Blast
Fiona Glen	Smoke Bomb	Steel Machete	Left Handed	Braided Cord	Flashlight Beam
Owen Cross	Climbing Claws	Brass Compass	Right Handed	Leather Strap	Whistle Blast
Rafael Silva	Grappling Hook	Brass Compass	Right Handed	Feather Charm	Water Splash
Sienna West	Glider Wings	Pocket Decoder	Left Handed	Feather Charm	Flashlight Beam
Marcus Thorne	Smoke Bomb	Encrypted Map	Right Handed	Leather Strap	Water Splash
Victor Knight	Glider Wings	Night Goggles	Right Handed	Braided Cord	Flashlight Beam
Bianca Cruz	Smoke Bomb	Encrypted Map	Right Handed	Braided Cord	Flashlight Beam
Tariq Khan	Glider Wings	Pocket Decoder	Right Handed	Braided Cord	Water Splash
Kaelen Voss	Smoke Bomb	Encrypted Map	Left Handed	Braided Cord	Flashlight Beam

make your own at mathcrackers.com

CLUE 1 Pythagorean theorem

> To measure the diagonal escape distance across the triangular ravine floor, the scouts calculate the direct path using perpendicular trail lengths.

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



legs 8 and 15, hypotenuse = ☐ → T

legs 36 and 105, hypotenuse = ☐ → U

legs 35 and 120, hypotenuse = ☐ → E

legs 5 and 12, hypotenuse = ☐ → A

legs 24 and 70, hypotenuse = ☐ → O

legs 20 and 21, hypotenuse = ☐ → B

legs 21 and 72, hypotenuse = ☐ → C

legs 27 and 120, hypotenuse = ☐ → L

legs 6 and 8, hypotenuse = ☐ → R

legs 60 and 63, hypotenuse = ☐ → I

legs 10 and 24, hypotenuse = ☐ → S

legs 15 and 36, hypotenuse = ☐ → D

legs 14 and 48, hypotenuse = ☐ → P

legs 25 and 60, hypotenuse = ☐ → Y

legs 9 and 40, hypotenuse = ☐ → H

legs 15 and 20, hypotenuse = ☐ → M

legs 12 and 35, hypotenuse = ☐ → N

Scratch space:

CLUE 2 Square roots

> The vault floor is paved with a square grid pattern of stone tiles, requiring the team to find the side length from the total floor area.

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

T										T													
8	22	16	14	2	20	20	13	11	19	8	13	21	22	16	3	9	21	22	12	20	21	9	
T					T									T									
8	13	21	3	22	22	3	17	13	8	13	16	23	9										

sqrt(64) = ☐ → T

sqrt(144) = ☐ → U

sqrt(529) = ☐ → N

sqrt(169) = ☐ → H

sqrt(256) = ☐ → A

sqrt(4) = ☐ → K

sqrt(361) = ☐ → W

sqrt(289) = ☐ → G

sqrt(484) = ☐ → R

sqrt(441) = ☐ → E

sqrt(81) = ☐ → D

sqrt(196) = ☐ → C

sqrt(121) = ☐ → O

sqrt(9) = ☐ → I

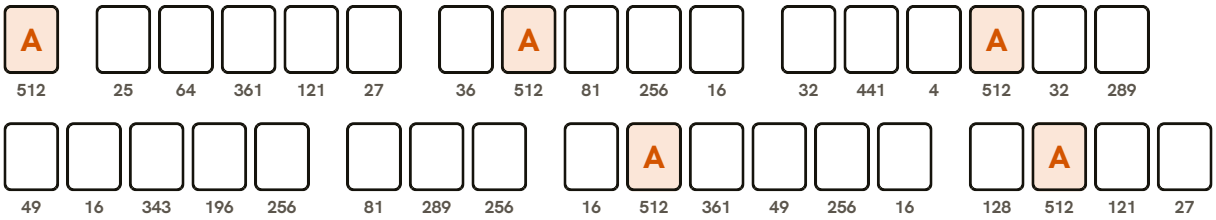
sqrt(400) = ☐ → S

Scratch space:

CLUE 3 Exponents

> An ancient acoustic alarm amplifies its volume exponentially across chambers, requiring calculation of the final power level.

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



2^9 = ☐ → A

19^2 = ☐ → I

14^2 = ☐ → V

4^3 = ☐ → U

7^2 = ☐ → D

6^2 = ☐ → W

2^2 = ☐ → L

5^2 = ☐ → Q

2^7 = ☐ → B

3^4 = ☐ → T

17^2 = ☐ → H

2^5 = ☐ → S

21^2 = ☐ → P

2^8 = ☐ → E

11^2 = ☐ → C

7^3 = ☐ → O

4^2 = ☐ → R

3^3 = ☐ → K

Scratch space:

CLUE 4 Order of operations

> Unlocking the stone door cipher requires solving a multi step numerical sequence in the precise order of precedence.

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



14 + 2 × 6 = ☐ → A

10 × 12 - 6 = ☐ → S

10 × 12 - 5 = ☐ → P

14 + 5 × 9 = ☐ → B

4 + 2 × 7 = ☐ → E

3 × 10 - 13 = ☐ → H

12 × 10 - 25 = ☐ → R

12 × 5 - 25 = ☐ → W

11 × 11 - 14 = ☐ → M

15 + 5 × 6 = ☐ → T

32 + 7 × 3 = ☐ → D

47 + 2 × 4 = ☐ → I

9 × 12 - 5 = ☐ → O

10 × 5 - 8 = ☐ → L

Scratch space:

CLUE 5 Square roots - the last clue

> To locate the hidden pedestal inside the square chamber, the team calculates the length of one side using the area.

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:

sqrt(36) = ☐ sqrt(16) = ☐ sqrt(49) = ☐ sqrt(25) = ☐ sqrt(81) = ☐

sqrt(4) = ☐ sqrt(64) = ☐ sqrt(1) = ☐ sqrt(9) = ☐ sqrt(100) = ☐

sqrt(144) = ☐

Step 2 - cross out the sentence with each answer:

1. The villain signaled accomplices across the canyon, then followed secret paths marked on a map.
2. The villain swung across the high chasm, then navigated through total darkness.
3. The villain soared past the watchtower on wings, then followed secret paths marked on a map.
4. The villain vanished into a cloud of smoke, then followed secret paths marked on a map.
5. The villain scaled the sheer limestone cliff, then cleared dense vines blocking the exit.
6. The villain signaled accomplices across the canyon, then cleared dense vines blocking the exit.
7. The villain swung across the high chasm, then followed secret paths marked on a map.
8. The villain signaled accomplices across the canyon, then unlocked the ancient mechanical gate.
9. The villain soared past the watchtower on wings, then cleared dense vines blocking the exit.
10. The villain signaled accomplices across the canyon, then checked direction with a magnetic needle.
11. The villain scaled the sheer limestone cliff, then unlocked the ancient mechanical gate.
12. The villain swung across the high chasm, then unlocked the ancient mechanical gate.

TEACHER / PARENT

Answer Key

The Sunstone Temple Heist

Culprit: Xander Blade

Climbing Claws · Pocket Decoder · Right Handed · Leather Strap · Water Splash

Trail: Start 21 → Clue 1 18 → Clue 2 10 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Pythagorean theorem): "THE CULPRIT DOES NOT CARRY A BRASS COMPASS"

legs 8 and 15, hypotenuse = 17 (T) · legs 36 and 105, hypotenuse = 111 (U) · legs 35 and 120, hypotenuse = 125 (E) · legs 5 and 12, hypotenuse = 13 (A) · legs 24 and 70, hypotenuse = 74 (O) · legs 20 and 21, hypotenuse = 29 (B) · legs 21 and 72, hypotenuse = 75 (C) · legs 27 and 120, hypotenuse = 123 (L) · legs 6 and 8, hypotenuse = 10 (R) · legs 60 and 63, hypotenuse = 87 (I) · legs 10 and 24, hypotenuse = 26 (S) · legs 15 and 36, hypotenuse = 39 (D) · legs 14 and 48, hypotenuse = 50 (P) · legs 25 and 60, hypotenuse = 65 (Y) · legs 9 and 40, hypotenuse = 41 (H) · legs 15 and 20, hypotenuse = 25 (M) · legs 12 and 35, hypotenuse = 37 (N)

Clue 2 (Square roots): "TRACKS SHOW THE RAIDER USED THEIR RIGHT HAND"

sqrt(64) = 8 (T) · sqrt(144) = 12 (U) · sqrt(529) = 23 (N) · sqrt(169) = 13 (H) · sqrt(256) = 16 (A) · sqrt(4) = 2 (K) · sqrt(361) = 19 (W) · sqrt(289) = 17 (G) · sqrt(484) = 22 (R) · sqrt(441) = 21 (E) · sqrt(81) = 9 (D) · sqrt(196) = 14 (C) · sqrt(121) = 11 (O) · sqrt(9) = 3 (I) · sqrt(400) = 20 (S)

Clue 3 (Exponents): "A QUICK WATER SPLASH DROVE THE RAIDER BACK"

2^9 = 512 (A) · 19^2 = 361 (I) · 14^2 = 196 (V) · 4^3 = 64 (U) · 7^2 = 49 (D) · 6^2 = 36 (W) · 2^2 = 4 (L) · 5^2 = 25 (Q) · 2^7 = 128 (B) · 3^4 = 81 (T) · 17^2 = 289 (H) · 2^5 = 32 (S) · 21^2 = 441 (P) · 2^8 = 256 (E) · 11^2 = 121 (C) · 7^3 = 343 (O) · 4^2 = 16 (R) · 3^3 = 27 (K)

Clue 4 (Order of operations): "A LEATHER STRAP WAS DROPPED BESIDE THE MAPS"

14 + 2 × 6 = 26 (A) · 10 × 12 - 6 = 114 (S) · 10 × 12 - 5 = 115 (P) · 14 + 5 × 9 = 59 (B) · 4 + 2 × 7 = 18 (E) · 3 × 10 - 13 = 17 (H) · 12 × 10 - 25 = 95 (R) · 12 × 5 - 25 = 35 (W) · 11 × 11 - 14 = 107 (M) · 15 + 5 × 6 = 45 (T) · 32 + 7 × 3 = 53 (D) · 47 + 2 × 4 = 55 (I) · 9 × 12 - 5 = 103 (O) · 10 × 5 - 8 = 42 (L)

Clue 5 (Square roots): surviving statement is box 11 → Xander Blade

sqrt(36) = 6 · sqrt(16) = 4 · sqrt(49) = 7 · sqrt(25) = 5 · sqrt(81) = 9 · sqrt(4) = 2 · sqrt(64) = 8 · sqrt(1) = 1 · sqrt(9) = 3 · sqrt(100) = 10 · sqrt(144) = 12