



Mystery of the Sapphire Idol

Grade 4 math · Fractions of a number, Multiplication, Place value, Rounding · Reading level grades 5-6

Detective: _____ Date: _____

The golden idol has been swiped from the central chamber! Deep inside the ruins, trail markers and broken traps reveal how the suspect moved through the ancient corridors.

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 artifact snatcher 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	SPECIAL GADGET	DOMINANT HAND	HAIRSTYLE	VULNERABILITY
Digger Dan	smoke bomb	force shield	left handed	braided ponytail	bright sunlight
Scholar Sadie	climbing claws	force shield	left handed	slicked back	bright sunlight
Curator Cole	flash lantern	map compass	right handed	slicked back	bright sunlight
Professor Vance	grappling hook	ancient key	left handed	slicked back	bright sunlight
Navigator Nash	climbing claws	decoding lens	left handed	messy curls	bright sunlight
Surveyor Sam	grappling hook	decoding lens	right handed	braided ponytail	bright sunlight
Voyager Vince	smoke bomb	force shield	right handed	braided ponytail	loud gongs
Tracker Maya	climbing claws	ancient key	left handed	slicked back	loud gongs
Rover Ross	grappling hook	map compass	left handed	slicked back	bright sunlight
Pioneer Pete	grappling hook	ancient key	right handed	messy curls	loud gongs
Indiana Drake	jet boots	ancient key	right handed	messy curls	bright sunlight
Outrider Owen	flash lantern	decoding lens	right handed	slicked back	loud gongs
Dr Amelia Frost	climbing claws	force shield	right handed	messy curls	sticky honey
Lara Stone	grappling hook	force shield	right handed	messy curls	loud gongs
Scout Cooper	smoke bomb	sonic whistle	left handed	slicked back	bright sunlight
Captain Knox	smoke bomb	force shield	left handed	slicked back	bright sunlight
Agent Sterling	grappling hook	map compass	left handed	messy curls	sticky honey
Trekker Tess	grappling hook	sonic whistle	right handed	braided ponytail	loud gongs
Sleuth Skye	flash lantern	ancient key	left handed	messy curls	bright sunlight
Explorer Evie	flash lantern	decoding lens	left handed	messy curls	loud gongs
Hunter Hugo	jet boots	decoding lens	left handed	messy curls	sticky honey

CLUE 1
Fractions of a number

To decode the first vault door, we must calculate what fraction of the expedition supplies were recovered from the river.

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

T																T
24	33	20	17	34	32	32	38	34	19	6	25	20	2	19	25	24
														T		
27	2	20	38	2	25	19	34	9	36	33	34	2	24	32	20	

$1/5 \text{ of } 120 = \square \rightarrow \text{T}$

$6/8 \text{ of } 48 = \square \rightarrow \text{W}$

$1/5 \text{ of } 170 = \square \rightarrow \text{I}$

$2/6 \text{ of } 75 = \square \rightarrow \text{O}$

$1/6 \text{ of } 192 = \square \rightarrow \text{L}$

$6/8 \text{ of } 12 = \square \rightarrow \text{C}$

$3/5 \text{ of } 55 = \square \rightarrow \text{H}$

$6/8 \text{ of } 8 = \square \rightarrow \text{D}$

$1/10 \text{ of } 200 = \square \rightarrow \text{E}$

$2/6 \text{ of } 6 = \square \rightarrow \text{S}$

$1/3 \text{ of } 57 = \square \rightarrow \text{N}$

$1/6 \text{ of } 102 = \square \rightarrow \text{V}$

$1/6 \text{ of } 162 = \square \rightarrow \text{U}$

$2/8 \text{ of } 152 = \square \rightarrow \text{A}$

Scratch space:

CLUE 2
Multiplication facts (1-12)

The main tomb is lined with identical stone pillars set in matching rows and columns that we need to multiply.

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

A									A								
45	50	80	70	120	49	6	6	6	45	50	70	25	49				
													A				
22	81	77	35	36	80	70	81	6	49	77	49	99	70	25	45	120	21

$9 \times 5 = \square \rightarrow \text{A}$

$12 \times 10 = \square \rightarrow \text{N}$

$5 \times 5 = \square \rightarrow \text{H}$

$9 \times 9 = \square \rightarrow \text{U}$

$1 \times 6 = \square \rightarrow \text{S}$

$7 \times 7 = \square \rightarrow \text{E}$

$10 \times 7 = \square \rightarrow \text{T}$

$7 \times 11 = \square \rightarrow \text{L}$

$8 \times 10 = \square \rightarrow \text{I}$

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

$9 \times 11 = \square \rightarrow \text{F}$

$5 \times 10 = \square \rightarrow \text{W}$

$9 \times 4 = \square \rightarrow \text{R}$

$7 \times 5 = \square \rightarrow \text{P}$

$7 \times 3 = \square \rightarrow \text{D}$

Scratch space:

CLUE 3 Place value

A secret stone dial requires setting the exact digit in the hundreds place to unlock the next secret passage.

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

T																	
30	400	3000	600	20	3000	300	200	90	4000	20	600	300	100	300	700		
60	90	50	900	5000	90	6000	9000	400	30	600	4000	20	10	6000	9000	400	30

What is the value of the 3 in 431? → **T**

What is the value of the 4 in 458? → **H**

What is the value of the 7 in 765? → **Y**

What is the value of the 3 in 306? → **A**

What is the value of the 9 in 9,765? → **G**

What is the value of the 6 in 6,734? → **I**

What is the value of the 1 in 4,165? → **W**

What is the value of the 9 in 935? → **M**

What is the value of the 1 in 413? → **L**

What is the value of the 6 in 2,863? → **F**

What is the value of the 6 in 643? → **S**

What is the value of the 4 in 64,965? → **U**

What is the value of the 3 in 3,870? → **E**

What is the value of the 5 in 7,259? → **O**

What is the value of the 2 in 8,285? → **K**

What is the value of the 9 in 3,791? → **R**

What is the value of the 5 in 5,983? → **B**

What is the value of the 2 in 6,124? → **N**

Scratch space:

CLUE 4 Rounding

The ancient altitude gauge only gives approximate heights, so we must round the distances to the nearest hundred.

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

S								S						
1300	170	30	300	370	290	170	300	1300	500	110	2000	5000	1100	

S																
1300	200	90	370	2900	170	1100	9000	30	370	2900	290	30	90	300	30	20

S				
1300	370	170	5000	170

Round 1,333 to the nearest hundred → **S**

Round 31 to the nearest ten → **A**

Round 8,646 to the nearest thousand → **B**

Round 24 to the nearest ten → **T**

Round 539 to the nearest hundred → **F**

Round 369 to the nearest ten → **C**

Round 2,889 to the nearest hundred → **K**

Round 112 to the nearest ten → **O**

Round 344 to the nearest hundred → **R**

Round 293 to the nearest ten → **H**

Round 86 to the nearest ten → **I**

Round 5,415 to the nearest thousand → **N**

Round 173 to the nearest ten → **E**

Round 200 to the nearest hundred → **L**

Round 1,983 to the nearest thousand → **U**

Round 1,096 to the nearest hundred → **D**

Scratch space:

CLUE 5**Fractions of a number - the last clue**

We found a broken map divided into equal parchment scraps, and calculating the remaining fraction reveals our 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:

$1/5 \text{ of } 45 = \boxed{}$

$3/10 \text{ of } 10 = \boxed{}$

$1/4 \text{ of } 44 = \boxed{}$

$1/5 \text{ of } 50 = \boxed{}$

$1/6 \text{ of } 30 = \boxed{}$

$5/10 \text{ of } 16 = \boxed{}$

$1/4 \text{ of } 28 = \boxed{}$

$1/10 \text{ of } 120 = \boxed{}$

$1/4 \text{ of } 4 = \boxed{}$

$2/4 \text{ of } 8 = \boxed{}$

$4/10 \text{ of } 15 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain swung across the canyon with a grappling hook, then scanned the stone tiles with a decoding lens.
2. The villain swung across the canyon with a grappling hook, then unlocked the vault using an ancient key.
3. The villain scaled the stone temple using climbing claws, then blocked the dart traps using a force shield.
4. The villain zipped over the pit using jet boots, then unlocked the vault using an ancient key.
5. The villain zipped over the pit using jet boots, then navigated the maze with a map compass.
6. The villain vanished into thin air using a smoke bomb, then navigated the maze with a map compass.
7. The villain swung across the canyon with a grappling hook, then blocked the dart traps using a force shield.
8. The villain blinded the guards with a flash lantern, then unlocked the vault using an ancient key.
9. The villain swung across the canyon with a grappling hook, then navigated the maze with a map compass.
10. The villain vanished into thin air using a smoke bomb, then signaled the camp using a sonic whistle.
11. The villain vanished into thin air using a smoke bomb, then blocked the dart traps using a force shield.
12. The villain blinded the guards with a flash lantern, then blocked the dart traps using a force shield.

Answer Key

Mystery of the Sapphire Idol

Culprit: Professor Vance

grappling hook · ancient key · left handed · slicked back · bright sunlight

Trail: Start 21 → Clue 1 19 → Clue 2 11 → Clue 3 7 → Clue 4 4 → Clue 5 1

Clue 1 (Fractions of a number): "THE VILLAIN DOES NOT USE A SONIC WHISTLE"

$\frac{1}{5}$ of 120 = 24 (T) · $\frac{6}{8}$ of 48 = 36 (W) · $\frac{1}{5}$ of 170 = 34 (I) · $\frac{2}{6}$ of 75 = 25 (O) · $\frac{1}{6}$ of 192 = 32 (L) · $\frac{6}{8}$ of 12 = 9 (C) · $\frac{3}{5}$ of 55 = 33 (H) · $\frac{6}{8}$ of 8 = 6 (D) · $\frac{1}{10}$ of 200 = 20 (E) · $\frac{2}{6}$ of 6 = 2 (S) · $\frac{1}{3}$ of 57 = 19 (N) · $\frac{1}{6}$ of 102 = 17 (V) · $\frac{1}{6}$ of 162 = 27 (U) · $\frac{2}{8}$ of 152 = 38 (A)

Clue 2 (Multiplication facts (1-12)): "A WITNESS SAW THE CULPRIT USE LEFT HAND"

$9 \times 5 = 45$ (A) · $12 \times 10 = 120$ (N) · $5 \times 5 = 25$ (H) · $9 \times 9 = 81$ (U) · $1 \times 6 = 6$ (S) · $7 \times 7 = 49$ (E) · $10 \times 7 = 70$ (T) · $7 \times 11 = 77$ (L) · $8 \times 10 = 80$ (I) · $11 \times 2 = 22$ (C) · $9 \times 11 = 99$ (F) · $5 \times 10 = 50$ (W) · $9 \times 4 = 36$ (R) · $7 \times 5 = 35$ (P) · $7 \times 3 = 21$ (D)

Clue 3 (Place value): "THE SNEAK RUNS AWAY FROM BRIGHT SUNLIGHT"

What is the value of the 3 in 431? = 30 (T) · What is the value of the 4 in 458? = 400 (H) · What is the value of the 7 in 765? = 700 (Y) · What is the value of the 3 in 306? = 300 (A) · What is the value of the 9 in 9,765? = 9000 (G) · What is the value of the 6 in 6,734? = 6000 (I) · What is the value of the 1 in 4,165? = 100 (W) · What is the value of the 9 in 935? = 900 (M) · What is the value of the 1 in 413? = 10 (L) · What is the value of the 6 in 2,863? = 60 (F) · What is the value of the 6 in 643? = 600 (S) · What is the value of the 4 in 64,965? = 4000 (U) · What is the value of the 3 in 3,870? = 3000 (E) · What is the value of the 5 in 7,259? = 50 (O) · What is the value of the 2 in 8,285? = 200 (K) · What is the value of the 9 in 3,791? = 90 (R) · What is the value of the 5 in 5,983? = 5000 (B) · What is the value of the 2 in 6,124? = 20 (N)

Clue 4 (Rounding): "SEARCHERS FOUND SLICKED BACK HAIR AT SCENE"

Round 1,333 to the nearest hundred = 1300 (S) · Round 31 to the nearest ten = 30 (A) · Round 8,646 to the nearest thousand = 9000 (B) · Round 24 to the nearest ten = 20 (T) · Round 539 to the nearest hundred = 500 (F) · Round 369 to the nearest ten = 370 (C) · Round 2,889 to the nearest hundred = 2900 (K) · Round 112 to the nearest ten = 110 (O) · Round 344 to the nearest hundred = 300 (R) · Round 293 to the nearest ten = 290 (H) · Round 86 to the nearest ten = 90 (I) · Round 5,415 to the nearest thousand = 5000 (N) · Round 173 to the nearest ten = 170 (E) · Round 200 to the nearest hundred = 200 (L) · Round 1,983 to the nearest thousand = 2000 (U) · Round 1,096 to the nearest hundred = 1100 (D)

Clue 5 (Fractions of a number): surviving statement is box 2 → Professor Vance

$\frac{1}{5}$ of 45 = 9 · $\frac{3}{10}$ of 10 = 3 · $\frac{1}{4}$ of 44 = 11 · $\frac{1}{5}$ of 50 = 10 · $\frac{1}{6}$ of 30 = 5 · $\frac{5}{10}$ of 16 = 8 · $\frac{1}{4}$ of 28 = 7 · $\frac{1}{10}$ of 120 = 12 · $\frac{1}{4}$ of 4 = 1 · $\frac{2}{4}$ of 8 = 4 · $\frac{4}{10}$ of 15 = 6