



The Mystery of Dead End Manor

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

Detective: _____ Date: _____

The spooky annual dinner at Dead End Manor was going great until someone swiped the legendary Golden Urn! The suspect list is packed with unusual guests who have curiously morbid names and eerie powers.

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 Grave Robber is _____

Possible suspects

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

NAME	SIGNATURE TRICK	SECRET TALENT	HANDPRINT EVIDENCE	HAIR COLOR	MAJOR PHOBIA
Dusty Shovel	ghost summoning	soup poisoning	had bare hands	toxic green	loud music
Ella Vator	shadow melting	mist weaving	had bare hands	toxic green	loud music
Manny Bones	clock stopping	soup poisoning	wore thick gloves	toxic green	loud music
Hal E Tosis	wall walking	lock freezing	had bare hands	toxic green	bright flashlights
Luke Warm	sound muffling	mist weaving	had bare hands	cobweb gray	bright flashlights
Justin Case	wall walking	bat calling	wore thick gloves	cobweb gray	bright flashlights
Maura Bid	shadow melting	lock freezing	wore thick gloves	midnight black	bright flashlights
Barb Dwyer	sound muffling	mist weaving	had bare hands	cobweb gray	garlic spray
Dee Cay	shadow melting	bone rattling	had bare hands	cobweb gray	bright flashlights
Robin Banks	sound muffling	lock freezing	had bare hands	midnight black	loud music
Artie Choke	sound muffling	bat calling	had bare hands	cobweb gray	bright flashlights
Faye Tal	ghost summoning	bone rattling	had bare hands	toxic green	garlic spray
Paige Turner	clock stopping	soup poisoning	had bare hands	midnight black	loud music
Barry M Deep	clock stopping	bat calling	had bare hands	toxic green	garlic spray
Doug Grave	wall walking	bone rattling	wore thick gloves	midnight black	loud music
Sam Phibian	wall walking	bone rattling	wore thick gloves	cobweb gray	bright flashlights
Anita Coffin	sound muffling	bat calling	wore thick gloves	cobweb gray	garlic spray
Tim Ber	clock stopping	mist weaving	had bare hands	cobweb gray	bright flashlights
Terry Fy	clock stopping	lock freezing	had bare hands	cobweb gray	bright flashlights
Rusty Cage	sound muffling	lock freezing	wore thick gloves	cobweb gray	bright flashlights
Al B Back	wall walking	soup poisoning	wore thick gloves	toxic green	loud music

CLUE 1

5 34 26 39 125 37 37 75 125 25 50 58 26 100 25 58 5

34 75 39 26 123 75 5 17 75 37 37 125 25 15

legs 3 and 4, hypotenuse = → **T**

legs 28 and 96, hypotenuse = → **S**

legs 40 and 42, hypotenuse = →

legs 14 and 48, hypotenuse = → **D**

legs 27 and 120, hypotenuse = → **B**

legs 15 and 36, hypotenuse = →

legs 9 and 12, hypotenuse = → **G**

legs 12 and 35, hypotenuse = $\rightarrow$ **L**

legs 16 and 30, hypotenuse = → **H**

legs 21 and 72, hypotenuse = → **A**

legs 35 and 120, hypotenuse = $\rightarrow$

legs 7 and 24, hypotenuse = → **N**

legs 10 and 24, hypotenuse = → **E**

legs 8 and 15, hypotenuse = → **C**

Scratch space:

CLUE 2 Square roots

The detective finds a square grid of shattered floor tiles near the display case. Finding the square root of the total broken tiles reveals the suspect's secret gate number.

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

T			T								T							
9	6	5	9	6	21	5	2	23	5	2	9	22	16	11	25	13	5	22
		T																
18	21	9	6	12	24	10	5	6	24	14	25	22						

$\sqrt{81} = \square \rightarrow \boxed{\text{T}}$

$\sqrt{100} = \square \rightarrow \boxed{\text{R}}$

$\sqrt{324} = \square \rightarrow \boxed{\text{W}}$

$\sqrt{196} = \square \rightarrow \boxed{\text{N}}$

$\sqrt{4} = \square \rightarrow \boxed{\text{F}}$

$\sqrt{529} = \square \rightarrow \boxed{\text{L}}$

$\sqrt{576} = \square \rightarrow \boxed{\text{A}}$

$\sqrt{121} = \square \rightarrow \boxed{\text{U}}$

$\sqrt{625} = \square \rightarrow \boxed{\text{D}}$

$\sqrt{484} = \square \rightarrow \boxed{\text{S}}$

$\sqrt{441} = \square \rightarrow \boxed{\text{I}}$

$\sqrt{256} = \square \rightarrow \boxed{\text{M}}$

$\sqrt{144} = \square \rightarrow \boxed{\text{B}}$

$\sqrt{169} = \square \rightarrow \boxed{\text{G}}$

$\sqrt{36} = \square \rightarrow \boxed{\text{H}}$

$\sqrt{25} = \square \rightarrow \boxed{\text{E}}$

Scratch space:

CLUE 3 Exponents

The security system locks down using an exponential password lock. To view the camera logs, we must calculate the power of the lock's base number.

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

T																	
81	400	9	343	36	8	8	128	36	225	216	128	225	512	216	484	49	
					T										T		
16	216	36	144	400	81	512	8	128	196	400	8	36	144	400	81	196	

$3^4 = \square \rightarrow$ T	$15^2 = \square \rightarrow$ N	$6^2 = \square \rightarrow$ I	$14^2 = \square \rightarrow$ S
$20^2 = \square \rightarrow$ H	$12^2 = \square \rightarrow$ G	$22^2 = \square \rightarrow$ O	$3^2 = \square \rightarrow$ E
$2^3 = \square \rightarrow$ L	$2^7 = \square \rightarrow$ A	$7^3 = \square \rightarrow$ V	$7^2 = \square \rightarrow$ M
$2^9 = \square \rightarrow$ F	$6^3 = \square \rightarrow$ R	$2^4 = \square \rightarrow$ B	

Scratch space:

CLUE 4

Order of operations

A torn note shows a chaotic sequence of steps left by the thief. Using the correct order of operations reveals the precise time the thief sneaked past the guards.

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

C																
58	19	28	9	120	28	95	23	55	15	49	74	23	55	18	85	49

C													
58	32	82	18	95	74	19	74	35	120	9	55	32	32

$52 + 3 \times 2 = \square \rightarrow \text{C}$

$5 \times 11 - 6 = \square \rightarrow \text{S}$

$13 + 3 \times 2 = \square \rightarrow \text{O}$

$64 + 5 \times 2 = \square \rightarrow \text{T}$

$1 + 2 \times 7 = \square \rightarrow \text{Y}$

$11 \times 9 - 17 = \square \rightarrow \text{U}$

$23 + 3 \times 3 = \square \rightarrow \text{L}$

$49 + 4 \times 9 = \square \rightarrow \text{D}$

$11 + 6 \times 4 = \square \rightarrow \text{H}$

$11 \times 11 - 1 = \square \rightarrow \text{E}$

$5 \times 9 - 22 = \square \rightarrow \text{R}$

$9 \times 4 - 8 = \square \rightarrow \text{B}$

$1 + 4 \times 2 = \square \rightarrow \text{W}$

$39 + 7 \times 8 = \square \rightarrow \text{G}$

$5 \times 7 - 17 = \square \rightarrow \text{N}$

$8 \times 7 - 1 = \square \rightarrow \text{A}$

Scratch space:

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

The thief's muddy footprints are arranged in a large square block on the rug. Calculating the square root of the total footprints reveals the size of their boots.

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:

$\text{sqrt}(25) = \boxed{}$

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

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

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

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

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

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

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

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

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

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

Step 2 - cross out the sentence with each answer:

1. The villain summoned a wall of howling spirits, then called down a swarm of screeching bats.
2. The villain froze the grand grandfather clock solid, then slipped a sleeping potion into the pumpkin soup.
3. The villain slithered through the cold floor shadows, then spun a thick freezing mist around the room.
4. The villain froze the grand grandfather clock solid, then rattled a pile of display skeleton bones.
5. The villain slithered through the cold floor shadows, then rattled a pile of display skeleton bones.
6. The villain silenced the entire banquet hall, then spun a thick freezing mist around the room.
7. The villain drifted straight through the solid stone walls, then slipped a sleeping potion into the pumpkin soup.
8. The villain silenced the entire banquet hall, then rattled a pile of display skeleton bones.
9. The villain summoned a wall of howling spirits, then rattled a pile of display skeleton bones.
10. The villain froze the grand grandfather clock solid, then spun a thick freezing mist around the room.
11. The villain slithered through the cold floor shadows, then slipped a sleeping potion into the pumpkin soup.
12. The villain froze the grand grandfather clock solid, then iced over the brass locks on the display case.

Answer Key

The Mystery of Dead End Manor

Culprit: Terry Fy

clock stopping · lock freezing · had bare hands · cobweb gray · bright flashlights

Trail: Start 21 → Clue 1 17 → Clue 2 11 → Clue 3 5 → Clue 4 4 → Clue 5 1

Clue 1 (Pythagorean theorem): "THE VILLAIN DOES NOT HAVE BAT CALLING"

legs 3 and 4, hypotenuse = 5 (T) · legs 28 and 96, hypotenuse = 100 (S) · legs 40 and 42, hypotenuse = 58 (O) · legs 14 and 48, hypotenuse = 50 (D) · legs 27 and 120, hypotenuse = 123 (B) · legs 15 and 36, hypotenuse = 39 (V) · legs 9 and 12, hypotenuse = 15 (G) · legs 12 and 35, hypotenuse = 37 (L) · legs 16 and 30, hypotenuse = 34 (H) · legs 21 and 72, hypotenuse = 75 (A) · legs 35 and 120, hypotenuse = 125 (I) · legs 7 and 24, hypotenuse = 25 (N) · legs 10 and 24, hypotenuse = 26 (E) · legs 8 and 15, hypotenuse = 17 (C)

Clue 2 (Square roots): "THE THIEF LEFT SMUDGES WITH BARE HANDS"

$\sqrt{81} = 9$ (T) · $\sqrt{100} = 10$ (R) · $\sqrt{324} = 18$ (W) · $\sqrt{196} = 14$ (N) · $\sqrt{4} = 2$ (F) · $\sqrt{529} = 23$ (L) · $\sqrt{576} = 24$ (A) · $\sqrt{121} = 11$ (U) · $\sqrt{625} = 25$ (D) · $\sqrt{484} = 22$ (S) · $\sqrt{441} = 21$ (I) · $\sqrt{256} = 16$ (M) · $\sqrt{144} = 12$ (B) · $\sqrt{169} = 13$ (G) · $\sqrt{36} = 6$ (H) · $\sqrt{25} = 5$ (E)

Clue 3 (Exponents): "THE VILLAIN RAN FROM BRIGHT FLASHLIGHTS"

$3^4 = 81$ (T) · $15^2 = 225$ (N) · $6^2 = 36$ (I) · $14^2 = 196$ (S) · $20^2 = 400$ (H) · $12^2 = 144$ (G) · $22^2 = 484$ (O) · $3^2 = 9$ (E) · $2^3 = 8$ (L) · $2^7 = 128$ (A) · $7^3 = 343$ (V) · $7^2 = 49$ (M) · $2^9 = 512$ (F) · $6^3 = 216$ (R) · $2^4 = 16$ (B)

Clue 4 (Order of operations): "COBWEB GRAY STRANDS CLUNG TO THE WALL"

$52 + 3 \times 2 = 58$ (C) · $5 \times 11 - 6 = 49$ (S) · $13 + 3 \times 2 = 19$ (O) · $64 + 5 \times 2 = 74$ (T) · $1 + 2 \times 7 = 15$ (Y) · $11 \times 9 - 17 = 82$ (U) · $23 + 3 \times 3 = 32$ (L) · $49 + 4 \times 9 = 85$ (D) · $11 + 6 \times 4 = 35$ (H) · $11 \times 11 - 1 = 120$ (E) · $5 \times 9 - 22 = 23$ (R) · $9 \times 4 - 8 = 28$ (B) · $1 + 4 \times 2 = 9$ (W) · $39 + 7 \times 8 = 95$ (G) · $5 \times 7 - 17 = 18$ (N) · $8 \times 7 - 1 = 55$ (A)

Clue 5 (Square roots): surviving statement is box 12 → Terry Fy

$\sqrt{25} = 5$ · $\sqrt{36} = 6$ · $\sqrt{100} = 10$ · $\sqrt{121} = 11$ · $\sqrt{1} = 1$ · $\sqrt{64} = 8$ · $\sqrt{81} = 9$ · $\sqrt{9} = 3$ · $\sqrt{4} = 2$ · $\sqrt{16} = 4$ · $\sqrt{49} = 7$