The Case of the Midnight Phantom

Grade 5 math · Place value, Word problems, Fractions of a number, Bar models, Missing addends · Reading level grades 5-6

Detective: _____ **Date:** _____

An eerie chill swept through Whispering Pines Manor when the ancient silver clock vanished right before midnight. Shadows lurk in every hall, and one sneaky phantom left behind strange clues. Decode the hints to unmask the culprit!

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 spook is _____

Possible suspects

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

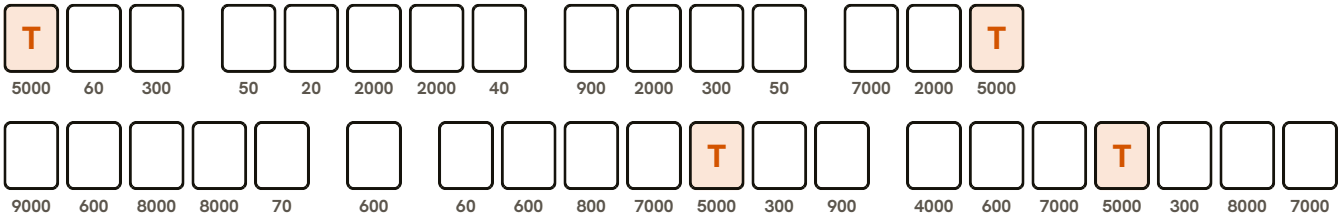
NAME	GHOSTLY POWER	SPOOKY GEAR	HABIT	SPECTRAL GLOW	VULNERABILITY
Wednesday Addams	Levitation	Pocket Watch	Taps Right Foot	Silver Mist	Salt Dust
Barnabas Collins	Ecto Slime	Ancient Key	Taps Right Foot	Silver Mist	Iron Bell
Shirley Jackson	Invisibility	Ancient Key	Taps Right Foot	Green Fire	Salt Dust
Eliza Raven	Cold Aura	Ancient Key	Taps Left Foot	Cobweb Grey	Bright Light
Boris Karloff	Shadow Step	Rusty Chains	Taps Right Foot	Cobweb Grey	Iron Bell
Bram Stoker	Invisibility	Haunted Lantern	Taps Right Foot	Silver Mist	Salt Dust
Washington Irving	Invisibility	Rusty Chains	Taps Right Foot	Green Fire	Salt Dust
Robert Stine	Invisibility	Rusty Chains	Taps Left Foot	Cobweb Grey	Iron Bell
Alfred Hitchcock	Levitation	Rusty Chains	Taps Right Foot	Cobweb Grey	Salt Dust
Morticia Addams	Invisibility	Pocket Watch	Taps Right Foot	Green Fire	Bright Light
Vincent Price	Shadow Step	Creaky Boots	Taps Right Foot	Green Fire	Salt Dust
Stephen King	Levitation	Ancient Key	Taps Left Foot	Silver Mist	Salt Dust
Bela Lugosi	Cold Aura	Pocket Watch	Taps Right Foot	Silver Mist	Bright Light
Silas Black	Cold Aura	Haunted Lantern	Taps Left Foot	Cobweb Grey	Iron Bell
Mary Shelley	Levitation	Creaky Boots	Taps Right Foot	Silver Mist	Bright Light
Agatha Christie	Ecto Slime	Haunted Lantern	Taps Right Foot	Green Fire	Salt Dust
Norman Bates	Cold Aura	Rusty Chains	Taps Left Foot	Green Fire	Salt Dust
Edgar Poe	Levitation	Pocket Watch	Taps Right Foot	Green Fire	Salt Dust
Gomez Addams	Shadow Step	Pocket Watch	Taps Right Foot	Silver Mist	Salt Dust
Coraline Jones	Ecto Slime	Ancient Key	Taps Left Foot	Cobweb Grey	Salt Dust
Arthur Pendelton	Ecto Slime	Creaky Boots	Taps Right Foot	Silver Mist	Salt Dust

make your own at mathcrackers.com

CLUE 1 Place value

You examine an old digit code on the locked manor safe to narrow down the gear list.

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



What is the value of the 5 in 35,210? ☐ → **T**

What is the value of the 3 in 99,325? ☐ → **E**

What is the value of the 6 in 35,678? ☐ → **A**

What is the value of the 8 in 78,514? ☐ → **R**

What is the value of the 6 in 52,863? ☐ → **H**

What is the value of the 8 in 465,867? ☐ → **U**

What is the value of the 4 in 784,170? ☐ → **L**

What is the value of the 7 in 45,076? ☐ → **Y**

What is the value of the 5 in 668,050? ☐ → **S**

What is the value of the 2 in 74,829? ☐ → **P**

What is the value of the 9 in 305,905? ☐ → **D**

What is the value of the 7 in 557,102? ☐ → **N**

What is the value of the 2 in 772,819? ☐ → **O**

What is the value of the 9 in 59,677? ☐ → **C**

What is the value of the 4 in 29,149? ☐ → **K**

Scratch space:

CLUE 2 Word problems

The head housekeeper gives you a ledger of missing items around the creepy manor.

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

A witness saw the villain was

T							H	T	F	O	O	T	.
79	73	117	33	84	101	24		79				79	

Caretaker found 5 glowing skulls yesterday and 74 more today. How many glowing skulls in all?

Answer: ☐ → **T**

There were 155 glowing skulls. 38 were used up. How many glowing skulls are left?

Answer: ☐ → **P**

Caretaker lined up 12 rows of 7 creaky doors. How many creaky doors in all?

Answer: ☐ → **R**

Caretaker lined up 3 rows of 11 creaky doors. How many creaky doors in all?

Answer: ☐ → **S**

Caretaker found 14 spooky candles yesterday and 87 more today. How many spooky candles in all?

Answer: ☐ → **I**

Caretaker lined up 4 rows of 6 glowing skulls. How many glowing skulls in all?

Answer: ☐ → **G**

Caretaker found 42 creaky doors yesterday and 31 more today. How many creaky doors in all?

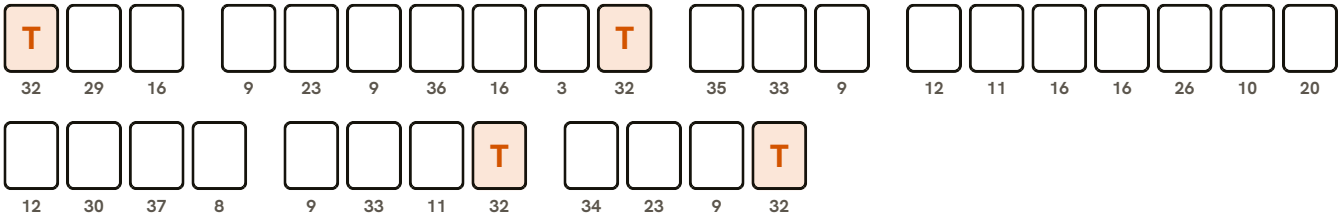
Answer: ☐ → **A**

Scratch space:

CLUE 3 Fractions of a number

> You inspect a glass vial where only a fraction of the glowing liquid remains.

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



2/8 of 128 = ☐ → T	3/6 of 32 = ☐ → E	1/6 of 138 = ☐ → U
3/8 of 88 = ☐ → A	1/2 of 52 = ☐ → I	5/10 of 24 = ☐ → F
5/10 of 70 = ☐ → W	1/8 of 24 = ☐ → C	1/5 of 145 = ☐ → H
2/8 of 36 = ☐ → S	2/8 of 148 = ☐ → O	1/2 of 22 = ☐ → L
5/8 of 32 = ☐ → G	2/10 of 40 = ☐ → M	5/10 of 72 = ☐ → P
6/8 of 40 = ☐ → R	2/6 of 30 = ☐ → N	3/6 of 68 = ☐ → D

Scratch space:

CLUE 4 Bar model word problems

You compare the lengths of spooky tracks recorded on the manor dust chart.

Draw a bar model to solve each word problem, then write its letter in the boxes to fill in the missing word.

A strand of

G									
61	40	8	8	67	6	109	40	8	

hair turned up at the scene.

Caretaker has 122 creaky doors, packed 2 to a bag. How many bags can be filled?

draw a bar model

Answer: ☐ → G

Caretaker shares 88 cursed amulets equally among 11 teams. How many cursed amulets does each team get?

draw a bar model

Answer: ☐ → E

Caretaker used 1/3 of the glowing skulls on the first day. The other 4 glowing skulls were used the next day. How many glowing skulls were there in all?

draw a bar model

Answer: ☐ → F

Caretaker has 218 glowing skulls, packed 2 to a bag. How many bags can be filled?

draw a bar model

Answer: ☐ → I

Caretaker has 5 times as many haunted mirrors as a teammate. The teammate has 8 haunted mirrors. How many haunted mirrors does caretaker have?

draw a bar model

Answer: ☐ → R

The red team has 85 glowing skulls and the blue team has 18 glowing skulls. How many more glowing skulls does the red team have?

draw a bar model

Answer: ☐ → N

CLUE 5 Missing addends - the last clue

You balance the total weight of silver items left behind on the antique scale.

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:

23 + ___ = 26 ☐	28 + ___ = 40 ☐	28 + ___ = 33 ☐	15 + ___ = 17 ☐
15 + ___ = 16 ☐	19 + ___ = 26 ☐	22 + ___ = 26 ☐	22 + ___ = 32 ☐
33 + ___ = 44 ☐	23 + ___ = 29 ☐	1 + ___ = 10 ☐	

Step 2 - cross out the sentence with each answer:

1. The villain chilled the grand hallway, then unlocked the secret attic door.
2. The villain chilled the grand hallway, then checked an old pocket watch.
3. The villain vanished into thin air, then rattled rusty chains.
4. The villain vanished into thin air, then stamped creaky boots on the stairs.
5. The villain stepped through solid walls, then stamped creaky boots on the stairs.
6. The villain stepped through solid walls, then lit a flickering haunted lantern.
7. The villain stepped through solid walls, then checked an old pocket watch.
8. The villain vanished into thin air, then unlocked the secret attic door.
9. The villain left a slimy trail behind, then checked an old pocket watch.
10. The villain floated across the foyer, then lit a flickering haunted lantern.
11. The villain left a slimy trail behind, then lit a flickering haunted lantern.
12. The villain floated across the foyer, then checked an old pocket watch.

TEACHER / PARENT

Answer Key

The Case of the Midnight Phantom

Culprit: Shirley Jackson

Invisibility · Ancient Key · Taps Right Foot · Green Fire · Salt Dust

Trail: Start 21 → Clue 1 18 → Clue 2 13 → Clue 3 8 → Clue 4 4 → Clue 5 1

Clue 1 (Place value): "THE SPOOK DOES NOT CARRY A HAUNTED LANTERN"

What is the value of the 5 in 35,210? = 5000 (T) · What is the value of the 3 in 99,325? = 300 (E) · What is the value of the 6 in 35,678? = 600 (A) · What is the value of the 8 in 78,514? = 8000 (R) · What is the value of the 6 in 52,863? = 60 (H) · What is the value of the 8 in 465,867? = 800 (U) · What is the value of the 4 in 784,170? = 4000 (L) · What is the value of the 7 in 45,076? = 70 (Y) · What is the value of the 5 in 668,050? = 50 (S) · What is the value of the 2 in 74,829? = 20 (P) · What is the value of the 9 in 305,905? = 900 (D) · What is the value of the 7 in 557,102? = 7000 (N) · What is the value of the 2 in 772,819? = 2000 (O) · What is the value of the 9 in 59,677? = 9000 (C) · What is the value of the 4 in 29,149? = 40 (K)

Clue 2 (Word problems): "TAPS RIGHT FOOT"

Caretaker found 5 glowing skulls yesterday and 74 more today. How many glowing skulls in all? = 79 (T) · There were 155 glowing skulls. 38 were used up. How many glowing skulls are left? = 117 (P) · Caretaker lined up 12 rows of 7 creaky doors. How many creaky doors in all? = 84 (R) · Caretaker lined up 3 rows of 11 creaky doors. How many creaky doors in all? = 33 (S) · Caretaker found 14 spooky candles yesterday and 87 more today. How many spooky candles in all? = 101 (I) · Caretaker lined up 4 rows of 6 glowing skulls. How many glowing skulls in all? = 24 (G) · Caretaker found 42 creaky doors yesterday and 31 more today. How many creaky doors in all? = 73 (A)

Clue 3 (Fractions of a number): "THE SUSPECT WAS FLEEING FROM SALT DUST"

2/8 of 128 = 32 (T) · 3/6 of 32 = 16 (E) · 1/6 of 138 = 23 (U) · 3/8 of 88 = 33 (A) · 1/2 of 52 = 26 (I) · 5/10 of 24 = 12 (F) · 5/10 of 70 = 35 (W) · 1/8 of 24 = 3 (C) · 1/5 of 145 = 29 (H) · 2/8 of 36 = 9 (S) · 2/8 of 148 = 37 (O) · 1/2 of 22 = 11 (L) · 5/8 of 32 = 20 (G) · 2/10 of 40 = 8 (M) · 5/10 of 72 = 36 (P) · 6/8 of 40 = 30 (R) · 2/6 of 30 = 10 (N) · 3/6 of 68 = 34 (D)

Clue 4 (Bar model word problems): "GREEN FIRE"

Caretaker has 122 creaky doors, packed 2 to a bag. How many bags can be filled? = 61 (G) · Caretaker shares 88 cursed amulets equally among 11 teams. How many cursed amulets does each team get? = 8 (E) · Caretaker used 1/3 of the glowing skulls on the first day. The other 4 glowing skulls were used the next day. How many glowing skulls were there in all? = 6 (F) · Caretaker has 218 glowing skulls, packed 2 to a bag. How many bags can be filled? = 109 (I) · Caretaker has 5 times as many haunted mirrors as a teammate. The teammate has 8 haunted mirrors. How many haunted mirrors does caretaker have? = 40 (R) · The red team has 85 glowing skulls and the blue team has 18 glowing skulls. How many more glowing skulls does the red team have? = 67 (N)

Clue 5 (Missing addends): surviving statement is box 8 → Shirley Jackson

23 + ___ = 26 = 3 · 28 + ___ = 40 = 12 · 28 + ___ = 33 = 5 · 15 + ___ = 17 = 2 · 15 + ___ = 16 = 1 · 19 + ___ = 26 = 7 · 22 + ___ = 26 = 4 · 22 + ___ = 32 = 10 · 33 + ___ = 44 = 11 · 23 + ___ = 29 = 6 · 1 + ___ = 10 = 9