



The Mystery of Blackwood Manor

Grade 5 math · Fractions of a number, Order of operations, Multiplication, Rounding, Division · Reading level grades 7-9

Detective: _____ **Date:** _____

Lord Blackwood's rare diamond has been stolen from the study during a sudden power outage. Only twenty-four distinguished guests were present. As the lead detective, you must examine the evidence, question the suspects, and crack the case before the morning train departs.

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 master thief is _____

Possible suspects

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

NAME	DISGUISE STYLE	CALLING CARD	DOMINANT HAND	WIG COLOR	SCENT PROFILE
Harriet Vane	Beaded Vintage Gown	Ornate Brass Key	Right-handed Writer	Auburn Red Hair	Smell of Lavender Tea
Joe Hardy	Velvet Opera Cloak	Poison-tipped Quill	Left-handed Writer	Auburn Red Hair	Smell of Peppermint Oil
Cordelia Gray	Silk Tuxedo Jacket	Monogrammed Handkerchief	Left-handed Writer	Silver Gray Hair	Smell of Lavender Tea
Frank Hardy	Feathered Venetian Mask	Monogrammed Handkerchief	Right-handed Writer	Auburn Red Hair	Smell of Lavender Tea
Phryne Fisher	Silk Tuxedo Jacket	Poison-tipped Quill	Left-handed Writer	Auburn Red Hair	Smell of Lavender Tea
Sam Spade	Velvet Opera Cloak	Ornate Brass Key	Right-handed Writer	Silver Gray Hair	Smell of Lavender Tea
Lord Peter Wimsey	Tweed Detective Trench	Monogrammed Handkerchief	Left-handed Writer	Auburn Red Hair	Smell of Lavender Tea
Sherlock Holmes	Feathered Venetian Mask	Ornate Brass Key	Left-handed Writer	Auburn Red Hair	Smell of Lavender Tea
Mycroft Holmes	Feathered Venetian Mask	Poison-tipped Quill	Right-handed Writer	Silver Gray Hair	Smell of Pipe Tobacco
Perry Mason	Tweed Detective Trench	Wax-sealed Envelope	Left-handed Writer	Auburn Red Hair	Smell of Lavender Tea
Arsene Lupin	Beaded Vintage Gown	Silver Pocketwatch	Left-handed Writer	Silver Gray Hair	Smell of Lavender Tea
Arthur Hastings	Silk Tuxedo Jacket	Ornate Brass Key	Right-handed Writer	Jet Black Hair	Smell of Pipe Tobacco
Reginald Jeeves	Tweed Detective Trench	Monogrammed Handkerchief	Left-handed Writer	Auburn Red Hair	Smell of Peppermint Oil
John Watson	Feathered Venetian Mask	Wax-sealed Envelope	Right-handed Writer	Jet Black Hair	Smell of Peppermint Oil
Hercule Poirot	Silk Tuxedo Jacket	Wax-sealed Envelope	Right-handed Writer	Silver Gray Hair	Smell of Peppermint Oil
Agatha Christie	Velvet Opera Cloak	Silver Pocketwatch	Right-handed Writer	Silver Gray Hair	Smell of Pipe Tobacco
Nancy Drew	Beaded Vintage Gown	Monogrammed Handkerchief	Right-handed Writer	Jet Black Hair	Smell of Lavender Tea
Nero Wolfe	Feathered Venetian Mask	Poison-tipped Quill	Left-handed Writer	Jet Black Hair	Smell of Peppermint Oil
Roderick Glossop	Tweed Detective Trench	Silver Pocketwatch	Right-handed Writer	Auburn Red Hair	Smell of Pipe Tobacco
C Auguste Dupin	Tweed Detective Trench	Ornate Brass Key	Left-handed Writer	Silver Gray Hair	Smell of Peppermint Oil
Irene Adler	Feathered Venetian Mask	Silver Pocketwatch	Left-handed Writer	Auburn Red Hair	Smell of Lavender Tea

CLUE 1
Fractions of a number

We found a partially burned list of dinner guests in the fireplace, but only a fraction of the name cards survived the flames.

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

T			T										T					
4	7	9	4	7	6	9	14	15	6	15	23	16	4	33	9	21	19	9
													T			T		
21	24	6	33	19	9	31	37	16	10	30	9	4	11	21	4	10	7	

$1/2 \text{ of } 8 = \square \rightarrow \text{T}$

$5/6 \text{ of } 36 = \square \rightarrow \text{K}$

$5/10 \text{ of } 46 = \square \rightarrow \text{N}$

$2/6 \text{ of } 45 = \square \rightarrow \text{D}$

$4/8 \text{ of } 38 = \square \rightarrow \text{V}$

$3/6 \text{ of } 74 = \square \rightarrow \text{P}$

$2/10 \text{ of } 35 = \square \rightarrow \text{H}$

$6/10 \text{ of } 35 = \square \rightarrow \text{A}$

$2/6 \text{ of } 93 = \square \rightarrow \text{R}$

$4/8 \text{ of } 32 = \square \rightarrow \text{O}$

$1/8 \text{ of } 112 = \square \rightarrow \text{F}$

$1/3 \text{ of } 27 = \square \rightarrow \text{E}$

$1/3 \text{ of } 18 = \square \rightarrow \text{I}$

$1/5 \text{ of } 165 = \square \rightarrow \text{L}$

$2/10 \text{ of } 55 = \square \rightarrow \text{W}$

$2/5 \text{ of } 25 = \square \rightarrow \text{C}$

$5/10 \text{ of } 48 = \square \rightarrow \text{S}$

Scratch space:

CLUE 2

Order of operations

The heavy iron lockbox on the desk requires us to twist the dials in a strict order of mathematical operations to reveal its secrets.

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

S										S			S			
43	7	19	76	35	19	15	59	22	31	43	76	17	43	78	58	19
78	58	59	19	42	59	S	60	19	42	78	58	76	22	15	19	15

$33 + 5 \times 2 = \square \rightarrow \text{S}$

$34 + 4 \times 6 = \square \rightarrow \text{H}$

$8 + 3 \times 9 = \square \rightarrow \text{R}$

$25 + 3 \times 2 = \square \rightarrow \text{K}$

$8 \times 6 - 26 = \square \rightarrow \text{N}$

$5 + 3 \times 4 = \square \rightarrow \text{Y}$

$6 + 9 \times 4 = \square \rightarrow \text{F}$

$52 + 4 \times 2 = \square \rightarrow \text{L}$

$7 + 6 \times 2 = \square \rightarrow \text{E}$

$7 \times 6 - 27 = \square \rightarrow \text{D}$

$6 \times 11 - 7 = \square \rightarrow \text{I}$

$2 \times 10 - 13 = \square \rightarrow \text{M}$

$8 \times 11 - 10 = \square \rightarrow \text{T}$

$22 + 6 \times 9 = \square \rightarrow \text{A}$

Scratch space:

Multiplication facts (1-12)

To estimate the value of the missing silver, we counted the rows of empty velvet slots in the display case.

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

The diagram consists of three rows of boxes. Each box contains either a number or the letter 'T'. The boxes are arranged in a grid-like fashion, with some boxes missing, creating gaps in the sequence.

Row 1: [T, 81, 25, 84, 50, 36, 36, 81, 50, 54, 84, 35, 35, 50]

Row 2: [50, T, 81, 32, 36, 22, 77, 35, 10, 36, 90, 35, 11, 108, 84, 22, 96, 84, 32]

Row 3: [T, 81, 84, 11]

$9 \times 9 = \boxed{} \rightarrow \boxed{\text{T}}$

$$2 \times 11 = \boxed{} \rightarrow \boxed{\mathbf{N}}$$

$$11 \times 1 = \boxed{} \rightarrow \boxed{\mathbf{A}}$$

$9 \times 4 = \boxed{} \rightarrow \boxed{0}$

$$4 \times 8 = \boxed{} \rightarrow \boxed{\mathbf{R}}$$

$$7 \times 5 = \boxed{} \rightarrow \boxed{\text{L}}$$

$9 \times 6 = \boxed{} \rightarrow \boxed{\text{M}}$

$$8 \times 12 = \boxed{} \rightarrow \boxed{\mathbf{D}}$$

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

$11 \times 7 = \boxed{} \rightarrow \boxed{\mathbf{G}}$

$7 \times 12 = \boxed{} \rightarrow \boxed{\text{E}}$

$1 \times 10 = \boxed{} \rightarrow \boxed{\text{Y}}$

$9 \times 10 = \boxed{} \rightarrow \boxed{\text{F}}$

$$5 \times 10 = \boxed{} \rightarrow \boxed{\mathbf{S}}$$

$$9 \times 12 = \boxed{} \rightarrow \boxed{\mathbf{V}}$$

Scratch space:

CLUE 4
Rounding

The grandfather clock was damaged during the escape, so its broken gear only chimed the nearest hour.

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

W													
3000	7000	290	1100	2300	300	30	5000	170	3700	300	90	370	7000

5000	2300	110	2300	20	300	20	7000	30	1700	5000	3700	20	170	700	20

Round 3,389 to the nearest thousand → **W**

Round 89 to the nearest ten → **G**

Round 1,703 to the nearest hundred → **H**

Round 2,278 to the nearest hundred → **U**

Round 6,633 to the nearest thousand → **E**

Round 107 to the nearest ten → **B**

Round 30 to the nearest ten → **D**

Round 3,731 to the nearest hundred → **I**

Round 327 to the nearest hundred → **N**

Round 366 to the nearest ten → **L**

Round 743 to the nearest hundred → **T**

Round 292 to the nearest ten → **F**

Round 167 to the nearest ten → **S**

Round 19 to the nearest ten → **R**

Round 1,110 to the nearest hundred → **O**

Round 5,073 to the nearest thousand → **A**

Scratch space:

CLUE 5**Division facts (1-12) - the last clue**

To search the sprawling estate systematically, we divided our team of investigators evenly across the different floors.

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:

$66 \div 6 = \boxed{}$

$63 \div 7 = \boxed{}$

$8 \div 4 = \boxed{}$

$3 \div 3 = \boxed{}$

$40 \div 5 = \boxed{}$

$72 \div 12 = \boxed{}$

$5 \div 1 = \boxed{}$

$24 \div 8 = \boxed{}$

$72 \div 6 = \boxed{}$

$56 \div 8 = \boxed{}$

$20 \div 2 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain swished their velvet opera cloak, then dropped an ornate brass key.
2. The villain fastened their tweed detective trench, then dropped a wax-sealed envelope.
3. The villain adjusted their beaded vintage gown, then dropped a silver pocketwatch.
4. The villain buttoned their silk tuxedo jacket, then dropped a poison-tipped quill.
5. The villain swished their velvet opera cloak, then dropped a poison-tipped quill.
6. The villain buttoned their silk tuxedo jacket, then dropped a wax-sealed envelope.
7. The villain secured their feathered venetian mask, then dropped a monogrammed handkerchief.
8. The villain adjusted their beaded vintage gown, then dropped an ornate brass key.
9. The villain fastened their tweed detective trench, then dropped a monogrammed handkerchief.
10. The villain fastened their tweed detective trench, then dropped a poison-tipped quill.
11. The villain secured their feathered venetian mask, then dropped an ornate brass key.
12. The villain fastened their tweed detective trench, then dropped an ornate brass key.

Answer Key

The Mystery of Blackwood Manor

Culprit: Phryne Fisher

Silk Tuxedo Jacket · Poison-tipped Quill · Left-handed Writer · Auburn Red Hair · Smell of Lavender Tea

Trail: Start 21 → Clue 1 17 → Clue 2 9 → Clue 3 5 → Clue 4 4 → Clue 5 1

Clue 1 (Fractions of a number): "THE THIEF DID NOT LEAVE A SILVER POCKETWATCH"

$\frac{1}{2}$ of 8 = 4 (T) · $\frac{5}{6}$ of 36 = 30 (K) · $\frac{5}{10}$ of 46 = 23 (N) · $\frac{2}{6}$ of 45 = 15 (D) · $\frac{4}{8}$ of 38 = 19 (V) · $\frac{3}{6}$ of 74 = 37 (P) · $\frac{2}{10}$ of 35 = 7 (H) · $\frac{6}{10}$ of 35 = 21 (A) · $\frac{2}{6}$ of 93 = 31 (R) · $\frac{4}{8}$ of 32 = 16 (O) · $\frac{1}{8}$ of 112 = 14 (F) · $\frac{1}{3}$ of 27 = 9 (E) · $\frac{1}{3}$ of 18 = 6 (I) · $\frac{1}{5}$ of 165 = 33 (L) · $\frac{2}{10}$ of 55 = 11 (W) · $\frac{2}{5}$ of 25 = 10 (C) · $\frac{5}{10}$ of 48 = 24 (S)

Clue 2 (Order of operations): "SMEARED INK SAYS THE THIEF IS LEFT HANDED"

$33 + 5 \times 2 = 43$ (S) · $34 + 4 \times 6 = 58$ (H) · $8 + 3 \times 9 = 35$ (R) · $25 + 3 \times 2 = 31$ (K) · $8 \times 6 - 26 = 22$ (N) · $5 + 3 \times 4 = 17$ (Y) · $6 + 9 \times 4 = 42$ (F) · $52 + 4 \times 2 = 60$ (L) · $7 + 6 \times 2 = 19$ (E) · $7 \times 6 - 27 = 15$ (D) · $6 \times 11 - 7 = 59$ (I) · $2 \times 10 - 13 = 7$ (M) · $8 \times 11 - 10 = 78$ (T) · $22 + 6 \times 9 = 76$ (A)

Clue 3 (Multiplication facts (1-12)): "THE SOOT SMELLS STRONGLY OF LAVENDER TEA"

$9 \times 9 = 81$ (T) · $2 \times 11 = 22$ (N) · $11 \times 1 = 11$ (A) · $9 \times 4 = 36$ (O) · $4 \times 8 = 32$ (R) · $7 \times 5 = 35$ (L) · $9 \times 6 = 54$ (M) · $8 \times 12 = 96$ (D) · $5 \times 5 = 25$ (H) · $11 \times 7 = 77$ (G) · $7 \times 12 = 84$ (E) · $1 \times 10 = 10$ (Y) · $9 \times 10 = 90$ (F) · $5 \times 10 = 50$ (S) · $9 \times 12 = 108$ (V)

Clue 4 (Rounding): "WE FOUND A SINGLE AUBURN RED HAIR STRAND"

Round 3,389 to the nearest thousand = 3000 (W) · Round 89 to the nearest ten = 90 (G) · Round 1,703 to the nearest hundred = 1700 (H) · Round 2,278 to the nearest hundred = 2300 (U) · Round 6,633 to the nearest thousand = 7000 (E) · Round 107 to the nearest ten = 110 (B) · Round 30 to the nearest ten = 30 (D) · Round 3,731 to the nearest hundred = 3700 (I) · Round 327 to the nearest hundred = 300 (N) · Round 366 to the nearest ten = 370 (L) · Round 743 to the nearest hundred = 700 (T) · Round 292 to the nearest ten = 290 (F) · Round 167 to the nearest ten = 170 (S) · Round 19 to the nearest ten = 20 (R) · Round 1,110 to the nearest hundred = 1100 (O) · Round 5,073 to the nearest thousand = 5000 (A)

Clue 5 (Division facts (1-12)): surviving statement is box 4 → Phryne Fisher

$66 \div 6 = 11$ · $63 \div 7 = 9$ · $8 \div 4 = 2$ · $3 \div 3 = 1$ · $40 \div 5 = 8$ · $72 \div 12 = 6$ · $5 \div 1 = 5$ · $24 \div 8 = 3$ · $72 \div 6 = 12$ · $56 \div 8 = 7$ · $20 \div 2 = 10$