



The Mystery of the Great Archive

Grade 7 math · Fractions of a number, Multiplication, Multi-step word problems, Integers · Reading level grades 5-6

Detective: _____ Date: _____

Someone mixed up all the rare manuscripts in the Great Archive and blotted out the author signatures! Use your detective skills and solve the clues to catch the Ink Bandit before the literary festival begins.

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 Ink Bandit is _____

Possible suspects

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

NAME	LITERARY GENRE	BOOKMARK STYLE	WRITING HAND	INK STAIN COLOR	LITERARY FOIL
Harry Potter	Historical Saga	Dragon Tassel	Left Handed	Crimson Red	Loud Noise
Elizabeth Bennet	Poetry Verse	Neon Sticker	Left Handed	Midnight Blue	Harsh Sunlight
Nancy Drew	Poetry Verse	Leather Strap	Left Handed	Raven Black	Harsh Sunlight
Mary Poppins	Fantasy Lore	Neon Sticker	Right Handed	Crimson Red	Loud Noise
Hermione Granger	Sci-Fi Epic	Dragon Tassel	Right Handed	Crimson Red	Harsh Sunlight
Hercule Poirot	Sci-Fi Epic	Leather Strap	Left Handed	Midnight Blue	Harsh Sunlight
Katniss Everdeen	Mystery Fiction	Silver Ribbon	Left Handed	Midnight Blue	Harsh Sunlight
Tom Sawyer	Historical Saga	Neon Sticker	Right Handed	Crimson Red	Loud Noise
Augustus Bucket	Poetry Verse	Brass Clip	Left Handed	Raven Black	Fresh Glue
Percy Jackson	Historical Saga	Dragon Tassel	Left Handed	Crimson Red	Harsh Sunlight
Jay Gatsby	Mystery Fiction	Brass Clip	Right Handed	Raven Black	Loud Noise
Phileas Fogg	Sci-Fi Epic	Silver Ribbon	Left Handed	Raven Black	Harsh Sunlight
Captain Nemo	Poetry Verse	Leather Strap	Left Handed	Midnight Blue	Fresh Glue
Dorothy Gale	Poetry Verse	Dragon Tassel	Left Handed	Raven Black	Loud Noise
Bilbo Baggins	Poetry Verse	Dragon Tassel	Right Handed	Raven Black	Loud Noise
Atticus Finch	Fantasy Lore	Brass Clip	Right Handed	Midnight Blue	Fresh Glue
Holden Caulfield	Fantasy Lore	Brass Clip	Left Handed	Raven Black	Harsh Sunlight
Jo March	Poetry Verse	Silver Ribbon	Left Handed	Raven Black	Harsh Sunlight
Meg Murry	Sci-Fi Epic	Brass Clip	Left Handed	Raven Black	Loud Noise
Ebenezer Scrooge	Poetry Verse	Dragon Tassel	Left Handed	Raven Black	Harsh Sunlight
Huckleberry Finn	Mystery Fiction	Leather Strap	Right Handed	Raven Black	Harsh Sunlight

CLUE 1
Fractions of a number

The library assistant calculated that only a fraction of the damaged mystery manuscripts could be restored today.

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

T																T
50	52	31	21	24	20	20	35	24	47	38	37	31	60	47	37	50

										T						
2	60	31	35	38	58	35	23	37	47	50	35	60	60	31	20	

$3/6 \text{ of } 100 = \square \rightarrow \text{ T }$

$2/5 \text{ of } 50 = \square \rightarrow \text{ L }$

$1/6 \text{ of } 186 = \square \rightarrow \text{ E }$

$2/5 \text{ of } 145 = \square \rightarrow \text{ R }$

$3/10 \text{ of } 80 = \square \rightarrow \text{ I }$

$4/8 \text{ of } 74 = \square \rightarrow \text{ O }$

$2/8 \text{ of } 140 = \square \rightarrow \text{ A }$

$1/10 \text{ of } 20 = \square \rightarrow \text{ U }$

$2/8 \text{ of } 84 = \square \rightarrow \text{ V }$

$2/4 \text{ of } 94 = \square \rightarrow \text{ N }$

$3/6 \text{ of } 76 = \square \rightarrow \text{ D }$

$5/6 \text{ of } 72 = \square \rightarrow \text{ S }$

$3/6 \text{ of } 46 = \square \rightarrow \text{ G }$

$2/5 \text{ of } 130 = \square \rightarrow \text{ H }$

Scratch space:

CLUE 2

Multiplication facts (1-12)

The head investigator organized the recovered book stacks into equal rows to compute the total count.

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

A 2x10 grid of boxes. The top row contains the following sequence: an orange box with 'T', three empty boxes, an orange box with 'T', and seven empty boxes. The bottom row contains the following sequence: four empty boxes, an orange box with 'T', four empty boxes, an orange box with 'T', and five empty boxes.

T							T												
60	8	81	6	90	6	25	81	121	60	24	54	6	24	12	84	60	84	7	42
24	84	60	8	60	8	81	84	12	32	81	48	60	8	54	7	14			

$12 \times 5 = \square \rightarrow \text{T}$	$9 \times 9 = \square \rightarrow \text{E}$	$9 \times 10 = \square \rightarrow \text{U}$
$4 \times 3 = \square \rightarrow \text{R}$	$12 \times 7 = \square \rightarrow \text{I}$	$6 \times 9 = \square \rightarrow \text{A}$
$2 \times 12 = \square \rightarrow \text{W}$	$5 \times 5 = \square \rightarrow \text{P}$	$1 \times 7 = \square \rightarrow \text{N}$
$6 \times 1 = \square \rightarrow \text{S}$	$11 \times 11 = \square \rightarrow \text{C}$	$7 \times 6 = \square \rightarrow \text{G}$
$1 \times 8 = \square \rightarrow \text{H}$	$4 \times 8 = \square \rightarrow \text{L}$	$4 \times 12 = \square \rightarrow \text{F}$
		$2 \times 7 = \square \rightarrow \text{D}$

Scratch space:

CLUE 3

Multi-step word problems

To track down the culprit, the detective calculated the total budget spent on replacement covers minus the discount.

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

Someone scared the villain off with H H I G H T .

84 6 70 28 84 28 7 47 67 84

Archivist filled 7 boxes with 8 leather journals each, then found 28 more leather journals. How many leather journals are there in all?

Answer: → H

There were 297 leather journals in all. 29 leather journals were set aside. The rest were shared equally among 4 the Reading Guild. How many leather journals did each get?

Answer: → L

Archivist earned 6 magnifying glasses in each of 5 rounds, plus 23 bonus magnifying glasses. Then 6 magnifying glasses were lost. How many magnifying glasses are left?

Answer: → N

Archivist earned 3 quill pens in each of 5 rounds, plus 1 bonus quill pens. Then 9 quill pens were lost. How many quill pens are left?

Answer: → U

There were 170 quill pens in all. 30 quill pens were set aside. The rest were shared equally among 5 the Reading Guild. How many quill pens did each get?

Answer: → S

Archivist collected 27 bookmark tassels in the morning and 3 bookmark tassels in the afternoon, then split them equally among 5 the Reading Guild. How many bookmark tassels did each get?

Answer: → A

Archivist collected 202 bookmark tassels in the morning and 78 bookmark tassels in the afternoon, then split them equally among 4 the Reading Guild. How many bookmark tassels did each get?

Answer: → R

Scratch space:

CLUE 4 Integers

The archival thermometer tracked temperature changes in the vault above and below zero degrees.

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

A				A						A							A		
6	14	13	8	6	20	24	28	4	8	6	27	16	20	15	10	6	3	9	

	A				A							
18	6	26	8	17	6	14	4	28	30	20	24	

$(-12) + 18 = \square \rightarrow$ A	$(-11) + 19 = \square \rightarrow$ R	$6 - (-4) = \square \rightarrow$ L
$(-7) + 21 = \square \rightarrow$ S	$(-1) + 21 = \square \rightarrow$ N	$(-4) + 13 = \square \rightarrow$ K
$(-6) + 19 = \square \rightarrow$ T	$(-12) + 27 = \square \rightarrow$ B	$(-15) + 31 = \square \rightarrow$ E
$12 - (-14) = \square \rightarrow$ I	$18 - (-12) = \square \rightarrow$ U	$13 - (-15) = \square \rightarrow$ O
$14 - (-4) = \square \rightarrow$ H	$15 - (-12) = \square \rightarrow$ V	$(-15) + 18 = \square \rightarrow$ C
$1 - (-3) = \square \rightarrow$ F	$(-5) + 22 = \square \rightarrow$ W	$15 - (-9) = \square \rightarrow$ D

Scratch space:

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

A fraction of the remaining reference scrolls contained hidden marginal notes from the suspect.

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:

$1/3 \text{ of } 9 = \boxed{}$

$1/3 \text{ of } 24 = \boxed{}$

$1/8 \text{ of } 40 = \boxed{}$

$2/8 \text{ of } 16 = \boxed{}$

$1/5 \text{ of } 35 = \boxed{}$

$1/3 \text{ of } 18 = \boxed{}$

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

$3/5 \text{ of } 15 = \boxed{}$

$1/6 \text{ of } 60 = \boxed{}$

$6/8 \text{ of } 16 = \boxed{}$

$1/10 \text{ of } 110 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain rewrote the mystery finale, then decorated drafts with a dragon tassel.
2. The villain scrambled the rhyming stanzas, then marked pages with a silver ribbon.
3. The villain erased the sci-fi star map, then marked pages with a silver ribbon.
4. The villain rewrote the mystery finale, then tagged pages with a neon sticker.
5. The villain scrambled the fantasy spells, then clipped notes with a brass clip.
6. The villain altered the historical dates, then marked pages with a silver ribbon.
7. The villain altered the historical dates, then bound chapters with a leather strap.
8. The villain scrambled the rhyming stanzas, then bound chapters with a leather strap.
9. The villain erased the sci-fi star map, then bound chapters with a leather strap.
10. The villain erased the sci-fi star map, then decorated drafts with a dragon tassel.
11. The villain scrambled the rhyming stanzas, then clipped notes with a brass clip.
12. The villain erased the sci-fi star map, then clipped notes with a brass clip.

Answer Key

The Mystery of the Great Archive

Culprit: Jo March

Poetry Verse · Silver Ribbon · Left Handed · Raven Black · Harsh Sunlight

Trail: Start 21 → Clue 1 15 → Clue 2 10 → Clue 3 7 → Clue 4 4 → Clue 5 1

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

$\frac{3}{6}$ of 100 = 50 (T) · $\frac{2}{5}$ of 50 = 20 (L) · $\frac{1}{6}$ of 186 = 31 (E) · $\frac{2}{5}$ of 145 = 58 (R) · $\frac{3}{10}$ of 80 = 24 (I) · $\frac{4}{8}$ of 74 = 37 (O) · $\frac{2}{8}$ of 140 = 35 (A) · $\frac{1}{10}$ of 20 = 2 (U) · $\frac{2}{8}$ of 84 = 21 (V) · $\frac{2}{4}$ of 94 = 47 (N) · $\frac{3}{6}$ of 76 = 38 (D) · $\frac{5}{6}$ of 72 = 60 (S) · $\frac{3}{6}$ of 46 = 23 (G) · $\frac{2}{5}$ of 130 = 52 (H)

Clue 2 (Multiplication facts (1-12)): "THE SUSPECT WAS WRITING WITH THEIR LEFT HAND"

$12 \times 5 = 60$ (T) · $9 \times 9 = 81$ (E) · $9 \times 10 = 90$ (U) · $4 \times 3 = 12$ (R) · $12 \times 7 = 84$ (I) · $6 \times 9 = 54$ (A) · $2 \times 12 = 24$ (W) · $5 \times 5 = 25$ (P) · $1 \times 7 = 7$ (N) · $2 \times 7 = 14$ (D) · $6 \times 1 = 6$ (S) · $11 \times 11 = 121$ (C) · $7 \times 6 = 42$ (G) · $1 \times 8 = 8$ (H) · $4 \times 8 = 32$ (L) · $4 \times 12 = 48$ (F)

Clue 3 (Multi-step word problems): "HARSH SUNLIGHT"

Archivist filled 7 boxes with 8 leather journals each, then found 28 more leather journals. How many leather journals are there in all? = 84 (H) · There were 297 leather journals in all. 29 leather journals were set aside. The rest were shared equally among 4 the Reading Guild. How many leather journals did each get? = 67 (L) · Archivist earned 6 magnifying glasses in each of 5 rounds, plus 23 bonus magnifying glasses. Then 6 magnifying glasses were lost. How many magnifying glasses are left? = 47 (N) · Archivist earned 3 quill pens in each of 5 rounds, plus 1 bonus quill pens. Then 9 quill pens were lost. How many quill pens are left? = 7 (U) · There were 170 quill pens in all. 30 quill pens were set aside. The rest were shared equally among 5 the Reading Guild. How many quill pens did each get? = 28 (S) · Archivist collected 27 bookmark tassels in the morning and 3 bookmark tassels in the afternoon, then split them equally among 5 the Reading Guild. How many bookmark tassels did each get? = 6 (A) · Archivist collected 202 bookmark tassels in the morning and 78 bookmark tassels in the afternoon, then split them equally among 4 the Reading Guild. How many bookmark tassels did each get? = 70 (R)

Clue 4 (Integers): "A STRAND OF RAVEN BLACK HAIR WAS FOUND"

$(-12) + 18 = 6$ (A) · $(-11) + 19 = 8$ (R) · $6 - (-4) = 10$ (L) · $(-7) + 21 = 14$ (S) · $(-1) + 21 = 20$ (N) · $(-4) + 13 = 9$ (K) · $(-6) + 19 = 13$ (T) · $(-12) + 27 = 15$ (B) · $(-15) + 31 = 16$ (E) · $12 - (-14) = 26$ (I) · $18 - (-12) = 30$ (U) · $13 - (-15) = 28$ (O) · $14 - (-4) = 18$ (H) · $15 - (-12) = 27$ (V) · $(-15) + 18 = 3$ (C) · $1 - (-3) = 4$ (F) · $(-5) + 22 = 17$ (W) · $15 - (-9) = 24$ (D)

Clue 5 (Fractions of a number): surviving statement is box 2 → Jo March

$\frac{1}{3}$ of 9 = 3 · $\frac{1}{3}$ of 24 = 8 · $\frac{1}{8}$ of 40 = 5 · $\frac{2}{8}$ of 16 = 4 · $\frac{1}{5}$ of 35 = 7 · $\frac{1}{3}$ of 18 = 6 · $\frac{1}{4}$ of 4 = 1 · $\frac{3}{5}$ of 15 = 9 · $\frac{1}{6}$ of 60 = 10 · $\frac{6}{8}$ of 16 = 12 · $\frac{1}{10}$ of 110 = 11