The Grand Map Theft of Pax Imperium

Grade 5 math · Fractions of a number, Multiplication, Addition, Order of operations · Reading level grades 5-6

Detective: _____ **Date:** _____

The Pax Empire is in total chaos. The legendary Golden Globe of Emperor Alexander has been stolen from the Grand Library. This precious artifact contains the coordinates of the Lost Oasis. The Grand Archivist has sealed the city gates. We must analyze the geographical clues left behind to catch the Rogue Cartographer before they sail away with the empire's greatest treasure.

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 Rogue Cartographer is _____

Possible suspects

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

NAME	FAVORITE MAP TOOL	EMPIRE OF ORIGIN	DOMINANT HAND	INK STAIN COLOR	SCENT OF REGIONAL SPICE
Ada Lovelace	Dividing Caliper	Rome	Right-Handed Writer	Charcoal Dust Stains	Scent of Cardamom
Copernicus	Brass Sextant	Babylon	Right-Handed Writer	Charcoal Dust Stains	Scent of Cardamom
Brahe	Sun-Shadow Gnomon	Rome	Right-Handed Writer	Charcoal Dust Stains	Scent of Cardamom
Hypatia	Golden Astrolabe	Babylon	Left-Handed Writer	Sepia Ink Stains	Scent of Cloves
Sacagawea	Scribing Compass	Carthage	Left-Handed Writer	Charcoal Dust Stains	Scent of Cardamom
Herschel	Golden Astrolabe	Carthage	Right-Handed Writer	Indigo Ink Stains	Scent of Cinnamon
Zheng He	Brass Sextant	Persia	Right-Handed Writer	Charcoal Dust Stains	Scent of Cardamom
Marco Polo	Brass Sextant	Carthage	Left-Handed Writer	Indigo Ink Stains	Scent of Cardamom
Magellan	Golden Astrolabe	Alexandria	Right-Handed Writer	Charcoal Dust Stains	Scent of Cloves
Ibn Battuta	Dividing Caliper	Persia	Left-Handed Writer	Charcoal Dust Stains	Scent of Cardamom
Fibonacci	Brass Sextant	Persia	Right-Handed Writer	Charcoal Dust Stains	Scent of Cinnamon
Kepler	Golden Astrolabe	Babylon	Left-Handed Writer	Charcoal Dust Stains	Scent of Cardamom
Vespucci	Sun-Shadow Gnomon	Babylon	Left-Handed Writer	Indigo Ink Stains	Scent of Cloves
Ptolemy	Scribing Compass	Persia	Right-Handed Writer	Sepia Ink Stains	Scent of Cardamom
Strabo	Brass Sextant	Persia	Left-Handed Writer	Indigo Ink Stains	Scent of Cloves
Cartier	Dividing Caliper	Persia	Left-Handed Writer	Sepia Ink Stains	Scent of Cardamom
Eratosthenes	Brass Sextant	Persia	Right-Handed Writer	Indigo Ink Stains	Scent of Cinnamon
Cabot	Golden Astrolabe	Alexandria	Right-Handed Writer	Charcoal Dust Stains	Scent of Cardamom
Pythagoras	Dividing Caliper	Alexandria	Right-Handed Writer	Charcoal Dust Stains	Scent of Cardamom
Al-Khwarizmi	Scribing Compass	Babylon	Right-Handed Writer	Sepia Ink Stains	Scent of Cardamom
Fermat	Sun-Shadow Gnomon	Rome	Right-Handed Writer	Sepia Ink Stains	Scent of Cinnamon

CLUE 1 Fractions of a number

> To unlock the first vault, the Grand Archivist must calculate a fraction of the total library map scrolls. This math reveals where the thief was spotted.

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

T									T						T									
9	37	35	13	14	13	10	35	28	9	24	13	11	36	9		30	25	36	38					
																				32	34	35	26	32
																				11	20	25	24	32

2/10 of 45 = ☐ → T

2/4 of 26 = ☐ → S

1/4 of 148 = ☐ → H

4/8 of 52 = ☐ → X

2/3 of 54 = ☐ → O

1/5 of 125 = ☐ → R

2/10 of 140 = ☐ → C

8/10 of 25 = ☐ → D

2/4 of 22 = ☐ → N

1/8 of 192 = ☐ → I

4/10 of 80 = ☐ → A

4/6 of 57 = ☐ → M

2/6 of 30 = ☐ → P

2/3 of 51 = ☐ → L

5/6 of 42 = ☐ → E

2/5 of 75 = ☐ → F

4/6 of 21 = ☐ → U

Scratch space:

CLUE 2 Multiplication facts (1-12)

The guards found several cargo crates near the eastern harbor. By multiplying the rows of crates by the items inside, we can uncover a clue about the thief's dominant hand.

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

P																	
8	72	90	33	25	30	27	16	12	48	25	90	1	27	54	70	54	16	72

10	25	1	16	54	70	144	54	16	72	21	72	27	81

4 × 2 = ☐ → **P**

12 × 12 = ☐ → **F**

9 × 9 = ☐ → **K**

7 × 10 = ☐ → **O**

9 × 10 = ☐ → **N**

6 × 9 = ☐ → **T**

1 × 1 = ☐ → **G**

3 × 7 = ☐ → **D**

3 × 9 = ☐ → **S**

10 × 3 = ☐ → **L**

1 × 10 = ☐ → **R**

8 × 9 = ☐ → **E**

5 × 5 = ☐ → **I**

11 × 3 = ☐ → **C**

8 × 6 = ☐ → **V**

2 × 6 = ☐ → **A**

2 × 8 = ☐ → **H**

Scratch space:

CLUE 3 Addition

A trail of dropped supplies led to the market. Adding up the weight of all the recovered items helps the team find a clue about the scent left behind.

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

A		A							A														
7769	9156	7769	5608	2481	5433	5433	3865	7769	5608	4249	6205	9156	3827	3865	5605	2063	4302	2451	5903	3827	7769	3865	5903	7769	5989	6205	5989	2046	6205	5903	2063

5195 + 2574 = ☐ → A

2508 + 1357 = ☐ → R

3467 + 2522 = ☐ → M

5369 + 3787 = ☐ → F

1270 + 793 = ☐ → S

3622 + 1811 = ☐ → T

1170 + 876 = ☐ → P

1207 + 1244 = ☐ → E

818 + 1663 = ☐ → N

2103 + 3800 = ☐ → D

1742 + 2085 = ☐ → C

4296 + 1909 = ☐ → O

2884 + 2721 = ☐ → U

2206 + 3402 = ☐ → I

2691 + 1611 = ☐ → H

2508 + 1741 = ☐ → L

Scratch space:

CLUE 4 Order of operations

The thief locked a secret map cabinet with a tricky equation lock. Solving the puzzle in the correct order of operations reveals a clue about the ink stains.

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

D																	
67	63	57	24	74	8	63	42	24	42	15	63	57	42	50	63	8	

D											
67	43	73	22	50	32	22	15	20	57	43	17

7 × 10 - 3 = ☐ → D	62 + 3 × 4 = ☐ → B	2 × 12 - 4 = ☐ → E
6 × 2 - 4 = ☐ → L	5 × 11 - 5 = ☐ → O	7 × 12 - 27 = ☐ → R
11 × 4 - 22 = ☐ → T	8 × 6 - 24 = ☐ → K	27 + 9 × 4 = ☐ → A
33 + 3 × 3 = ☐ → C	11 × 4 - 27 = ☐ → G	11 × 3 - 1 = ☐ → N
12 × 6 - 29 = ☐ → U	10 + 7 × 9 = ☐ → S	3 + 2 × 6 = ☐ → H

Scratch space:

CLUE 5 Fractions of a number - the last clue

> We intercepted a coded messenger pigeon. Figuring out the fraction of the scroll that contains true map coordinates points us directly to the thief's empire of origin.

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:

2/3 of 3 = ☐

2/10 of 15 = ☐

1/6 of 24 = ☐

2/6 of 33 = ☐

1/10 of 70 = ☐

2/5 of 25 = ☐

5/8 of 8 = ☐

1/5 of 5 = ☐

6/10 of 15 = ☐

2/10 of 60 = ☐

5/10 of 12 = ☐

Step 2 - cross out the sentence with each answer:

1. The villain plotted coordinates using a golden astrolabe, then slipped into the bazaars of Persia.
2. The villain measured sea routes with a brass sextant, then vanished along the Euphrates near Babylon.
3. The villain measured sea routes with a brass sextant, then slipped into the bazaars of Persia.
4. The villain tracked the midday sun using a sun-shadow gnomon, then fled toward the ports of Rome.
5. The villain calculated scale distances with a dividing caliper, then boarded a vessel bound for Carthage.
6. The villain plotted coordinates using a golden astrolabe, then boarded a vessel bound for Carthage.
7. The villain sketched boundary lines with a scribing compass, then escaped to the lighthouse of Alexandria.
8. The villain calculated scale distances with a dividing caliper, then fled toward the ports of Rome.
9. The villain calculated scale distances with a dividing caliper, then slipped into the bazaars of Persia.
10. The villain plotted coordinates using a golden astrolabe, then fled toward the ports of Rome.
11. The villain sketched boundary lines with a scribing compass, then vanished along the Euphrates near Babylon.
12. The villain sketched boundary lines with a scribing compass, then boarded a vessel bound for Carthage.

TEACHER / PARENT

Answer Key

The Grand Map Theft of Pax Imperium

Culprit: Ada Lovelace

Dividing Caliper · Rome · Right-Handed Writer · Charcoal Dust Stains · Scent of Cardamom

Trail: Start 21 → Clue 1 18 → Clue 2 10 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Fractions of a number): "THE SUSPECT IS NOT FROM ALEXANDRIA"

2/10 of 45 = 9 (T) · 2/4 of 26 = 13 (S) · 1/4 of 148 = 37 (H) · 4/8 of 52 = 26 (X) · 2/3 of 54 = 36 (O) · 1/5 of 125 = 25 (R) · 2/10 of 140 = 28 (C) · 8/10 of 25 = 20 (D) · 2/4 of 22 = 11 (N) · 1/8 of 192 = 24 (I) · 4/10 of 80 = 32 (A) · 4/6 of 57 = 38 (M) · 2/6 of 30 = 10 (P) · 2/3 of 51 = 34 (L) · 5/6 of 42 = 35 (E) · 2/5 of 75 = 30 (F) · 4/6 of 21 = 14 (U)

Clue 2 (Multiplication facts (1-12)): "PENCIL SHAVINGS TO THE RIGHT OF THE DESK"

4 × 2 = 8 (P) · 12 × 12 = 144 (F) · 9 × 9 = 81 (K) · 7 × 10 = 70 (O) · 9 × 10 = 90 (N) · 6 × 9 = 54 (T) · 1 × 1 = 1 (G) · 3 × 7 = 21 (D) · 3 × 9 = 27 (S) · 10 × 3 = 30 (L) · 1 × 10 = 10 (R) · 8 × 9 = 72 (E) · 5 × 5 = 25 (I) · 11 × 3 = 33 (C) · 8 × 6 = 48 (V) · 2 × 6 = 12 (A) · 2 × 8 = 16 (H)

Clue 3 (Addition): "A FAINT TRAIL OF CRUSHED CARDAMOM PODS"

5195 + 2574 = 7769 (A) · 2508 + 1357 = 3865 (R) · 3467 + 2522 = 5989 (M) · 5369 + 3787 = 9156 (F) · 1270 + 793 = 2063 (S) · 3622 + 1811 = 5433 (T) · 1170 + 876 = 2046 (P) · 1207 + 1244 = 2451 (E) · 818 + 1663 = 2481 (N) · 2103 + 3800 = 5903 (D) · 1742 + 2085 = 3827 (C) · 4296 + 1909 = 6205 (O) · 2884 + 2721 = 5605 (U) · 2206 + 3402 = 5608 (I) · 2691 + 1611 = 4302 (H) · 2508 + 1741 = 4249 (L)

Clue 4 (Order of operations): "DARK BLACK CHARCOAL DUST ON THE RUG"

7 × 10 - 3 = 67 (D) · 62 + 3 × 4 = 74 (B) · 2 × 12 - 4 = 20 (E) · 6 × 2 - 4 = 8 (L) · 5 × 11 - 5 = 50 (O) · 7 × 12 - 27 = 57 (R) · 11 × 4 - 22 = 22 (T) · 8 × 6 - 24 = 24 (K) · 27 + 9 × 4 = 63 (A) · 33 + 3 × 3 = 42 (C) · 11 × 4 - 27 = 17 (G) · 11 × 3 - 1 = 32 (N) · 12 × 6 - 29 = 43 (U) · 10 + 7 × 9 = 73 (S) · 3 + 2 × 6 = 15 (H)

Clue 5 (Fractions of a number): surviving statement is box 8 → Ada Lovelace

2/3 of 3 = 2 · 2/10 of 15 = 3 · 1/6 of 24 = 4 · 2/6 of 33 = 11 · 1/10 of 70 = 7 · 2/5 of 25 = 10 · 5/8 of 8 = 5 · 1/5 of 5 = 1 · 6/10 of 15 = 9 · 2/10 of 60 = 12 · 5/10 of 12 = 6