



The Theft of the Golden Astrolabe

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

Detective: _____ Date: _____

A historical emergency has struck! A sneaky rogue has snuck into the high-security archives and swiped the priceless Golden Astrolabe, an ancient artifact used by early star-mappers to navigate the solar system. The perpetrator fled into deep space, leaving behind a trail of weird energy and scrambled computer logs. It is up to you to decode the telemetry data, solve the navigational math puzzles, and identify the thief before they vanish into a wormhole!

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 Space Bandit is _____

Possible suspects

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

NAME	PRIMARY NAVIGATION TOOL	SECONDARY JETPACK FUEL	DOMINANT WRITING HAND	HELMET HAIR STYLE	NAVIGATIONAL DISLIKE
Ada Lovelace	GPS Glove	Liquid Neon	Right Handed	Cropped Gray	Magnetic Storms
Dorothy Vaughan	Star Tracker	Plasma Spark	Left Handed	Cropped Gray	Dust Clouds
Charles Lindbergh	Radar Compass	Liquid Neon	Right Handed	Cropped Gray	Dust Clouds
Mary Jackson	Sextant	Comet Ice	Right Handed	Braided Brown	Solar Flares
Yuri Gagarin	Sextant	Plasma Spark	Right Handed	Spiky Red	Solar Flares
Buzz Aldrin	GPS Glove	Comet Ice	Left Handed	Braided Brown	Dust Clouds
Matthew Henson	Sextant	Helium Three	Right Handed	Cropped Gray	Dust Clouds
Marco Polo	Astrolabe	Solar Dust	Left Handed	Cropped Gray	Dust Clouds
Neil Armstrong	GPS Glove	Plasma Spark	Left Handed	Braided Brown	Dust Clouds
Mae Jemison	Sextant	Liquid Neon	Right Handed	Braided Brown	Solar Flares
Galileo Galilei	GPS Glove	Helium Three	Right Handed	Spiky Red	Magnetic Storms
Ibn Battuta	Radar Compass	Liquid Neon	Right Handed	Spiky Red	Dust Clouds
Sally Ride	Astrolabe	Plasma Spark	Right Handed	Cropped Gray	Dust Clouds
Michael Collins	GPS Glove	Comet Ice	Left Handed	Spiky Red	Magnetic Storms
Valentina Tereshkova	Sextant	Liquid Neon	Left Handed	Cropped Gray	Dust Clouds
Ellen Ochoa	Sextant	Liquid Neon	Right Handed	Spiky Red	Dust Clouds
Roald Amundsen	Star Tracker	Helium Three	Right Handed	Cropped Gray	Dust Clouds
Sacagawea	Astrolabe	Comet Ice	Right Handed	Cropped Gray	Solar Flares
John Glenn	Astrolabe	Liquid Neon	Left Handed	Braided Brown	Magnetic Storms
Nicolaus Copernicus	Radar Compass	Solar Dust	Right Handed	Cropped Gray	Dust Clouds
Guion Bluford	Radar Compass	Comet Ice	Right Handed	Braided Brown	Magnetic Storms

CLUE 1 Fractions of a number

To unlock the first log of the historic orbital map, we must calculate the exact fraction of solar panels that remained active during the ancient storm.

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

9 25 29 28 35 3 6 33 9 6 16 29 4 3 16 9 27 4 29

3/10 of 30 = → **T**

5/6 of 42 = → **A**

$$2/8 \text{ of } 124 = \boxed{} \rightarrow \mathbf{R}$$

5/6 of 18 = → **M**

$$2/5 \text{ of } 95 = \boxed{} \rightarrow \boxed{\text{K}}$$

$$2/10 \text{ of } 125 = \boxed{} \rightarrow \boxed{\text{H}}$$

$$2/10 \text{ of } 200 = \boxed{} \rightarrow \mathbf{P}$$

4/10 of 50 = → **L**

$\frac{1}{4}$ of 108 = $\rightarrow$ **U**

4/6 of 24 = → **O**

$\frac{3}{4}$ of 44 = $\rightarrow$

$2/10$ of $30 = \boxed{} \rightarrow \boxed{\text{D}}$

$2/5$ of 70 = $\rightarrow$ **B**

2/6 of 87 = → **E**

$$1/10 \text{ of } 30 = \boxed{} \rightarrow \boxed{\text{N}}$$

4/10 of 10 = → **S**

Scratch space:

CLUE 2

Order of operations

The security console requires us to input the correct sequence of launch steps, carefully following the priority rules of operations to avoid a lock.

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

W																	
25	49	13	69	15	38	77	67	16	33	64	30	64	8	38	77	49	77
33	67	16	27	65	8	67	39	74	69	38	30	64	49	74	8	13	49

$10 \times 3 - 5 = \square \rightarrow \boxed{\text{W}}$

$41 + 8 \times 3 = \square \rightarrow \boxed{\text{M}}$

$4 \times 10 - 1 = \square \rightarrow \boxed{\text{K}}$

$4 \times 11 - 11 = \square \rightarrow \boxed{\text{G}}$

$9 \times 3 - 19 = \square \rightarrow \boxed{\text{A}}$

$6 + 2 \times 5 = \square \rightarrow \boxed{\text{I}}$

$4 \times 8 - 17 = \square \rightarrow \boxed{\text{U}}$

$12 \times 2 - 11 = \square \rightarrow \boxed{\text{F}}$

$45 + 8 \times 4 = \square \rightarrow \boxed{\text{D}}$

$8 \times 9 - 5 = \square \rightarrow \boxed{\text{R}}$

$19 + 2 \times 4 = \square \rightarrow \boxed{\text{P}}$

$37 + 8 \times 4 = \square \rightarrow \boxed{\text{O}}$

$11 \times 5 - 17 = \square \rightarrow \boxed{\text{N}}$

$8 \times 7 - 26 = \square \rightarrow \boxed{\text{T}}$

$46 + 7 \times 4 = \square \rightarrow \boxed{\text{S}}$

$5 \times 12 - 11 = \square \rightarrow \boxed{\text{E}}$

$28 + 6 \times 6 = \square \rightarrow \boxed{\text{H}}$

Scratch space:

Multiplication facts (1-12)

We trace the runaway rocket's path by calculating the total weight of the telescope cargo across multiple identical shipping bays.

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

Diagram illustrating the sequence of numbers and the placement of 'T' markers:

18	1	15	96	22	2	90	24	18	64	1	77	2	64	18	1	24	80	110
90	77	64	18	80	3	7	77	90	64									

The 'T' markers are placed above the 18s in the first and third rows, and above the 18 in the second row.

$2 \times 9 = \boxed{} \rightarrow \boxed{\text{T}}$

$8 \times 10 = \boxed{} \rightarrow \boxed{\text{C}}$

$$2 \times 1 = \boxed{} \rightarrow \boxed{\mathbf{N}}$$

$12 \times 2 = \boxed{} \rightarrow \boxed{}$

$8 \times 8 =$ $\rightarrow$ **S**

$3 \times 1 = \boxed{} \rightarrow \boxed{\text{L}}$

$11 \times 10 = \boxed{} \rightarrow \boxed{\text{K}}$

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

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

$3 \times 5 = \boxed{} \rightarrow \boxed{\text{E}}$

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

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

$$7 \times 1 = \boxed{} \rightarrow \boxed{0}$$

$$1 \times 1 = \boxed{} \rightarrow \boxed{\mathbf{H}}$$

Scratch space:

CLUE 4 Rounding

The long-range radar only shows coarse estimations, so we must round the distances to the nearest thousand kilometers to find the bandit's flight vector.

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

W																		
430	30	300	170	70	290	5000	110	1100	170	370	370	30	5000	9000	1100	900	2900	
130	900	700	1100	900	20	20	130	30	3700	110	30	290	30					

Round 432 to the nearest ten → **W**

Round 132 to the nearest ten → **H**

Round 8,568 to the nearest thousand → **G**

Round 3,726 to the nearest hundred → **S**

Round 4,648 to the nearest thousand → **D**

Round 166 to the nearest ten → **O**

Round 341 to the nearest hundred → **F**

Round 2,866 to the nearest hundred → **Y**

Round 66 to the nearest ten → **U**

Round 1,090 to the nearest hundred → **R**

Round 373 to the nearest ten → **P**

Round 897 to the nearest hundred → **A**

Round 30 to the nearest ten → **E**

Round 290 to the nearest ten → **N**

Round 707 to the nearest hundred → **I**

Round 113 to the nearest ten → **C**

Round 20 to the nearest ten → **T**

Scratch space:

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

To power up our pursuit thrusters, we need to divide the remaining liquid fuel cells equally among our ship's primary engines.

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:

$72 \div 6 = \boxed{}$

$44 \div 4 = \boxed{}$

$6 \div 1 = \boxed{}$

$20 \div 5 = \boxed{}$

$90 \div 10 = \boxed{}$

$49 \div 7 = \boxed{}$

$10 \div 2 = \boxed{}$

$7 \div 7 = \boxed{}$

$20 \div 10 = \boxed{}$

$9 \div 3 = \boxed{}$

$20 \div 2 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain polishes the brass sextant, then ignites a bright plasma spark.
2. The villain adjusts the radar compass display, then charges up the helium three core.
3. The villain boots up the glove coordinates, then blasts off with a solar dust trail.
4. The villain polishes the brass sextant, then blasts off with a solar dust trail.
5. The villain aligns the star tracker, then blasts off with a solar dust trail.
6. The villain polishes the brass sextant, then charges up the helium three core.
7. The villain polishes the brass sextant, then leaves behind a trace of comet ice.
8. The villain aligns the star tracker, then charges up the helium three core.
9. The villain boots up the glove coordinates, then charges up the helium three core.
10. The villain aligns the star tracker, then ignites a bright plasma spark.
11. The villain adjusts the radar compass display, then blasts off with a solar dust trail.
12. The villain adjusts the radar compass display, then leaks a puddle of liquid neon.

Answer Key

The Theft of the Golden Astrolabe

Culprit: Roald Amundsen

Star Tracker · Helium Three · Right Handed · Cropped Gray · Dust Clouds

Trail: Start 21 → Clue 1 17 → Clue 2 12 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Fractions of a number): "THE BANDIT DOES NOT USE PLASMA SPARK"

$3/10$ of 30 = 9 (T) · $5/6$ of 42 = 35 (A) · $2/8$ of 124 = 31 (R) · $5/6$ of 18 = 15 (M) · $2/5$ of 95 = 38 (K) · $2/10$ of 125 = 25 (H) · $2/10$ of 200 = 40 (P) · $4/10$ of 50 = 20 (L) · $1/4$ of 108 = 27 (U) · $4/6$ of 24 = 16 (O) · $3/4$ of 44 = 33 (I) · $2/10$ of 30 = 6 (D) · $2/5$ of 70 = 28 (B) · $2/6$ of 87 = 29 (E) · $1/10$ of 30 = 3 (N) · $4/10$ of 10 = 4 (S)

Clue 2 (Order of operations): "WE FOUND RIGHT HANDED GRIP MARKS ON THE SAFE"

$10 \times 3 - 5 = 25$ (W) · $41 + 8 \times 3 = 65$ (M) · $4 \times 10 - 1 = 39$ (K) · $4 \times 11 - 11 = 33$ (G) · $9 \times 3 - 19 = 8$ (A) · $6 + 2 \times 5 = 16$ (I) · $4 \times 8 - 17 = 15$ (U) · $12 \times 2 - 11 = 13$ (F) · $45 + 8 \times 4 = 77$ (D) · $8 \times 9 - 5 = 67$ (R) · $19 + 2 \times 4 = 27$ (P) · $37 + 8 \times 4 = 69$ (O) · $11 \times 5 - 17 = 38$ (N) · $8 \times 7 - 26 = 30$ (T) · $46 + 7 \times 4 = 74$ (S) · $5 \times 12 - 11 = 49$ (E) · $28 + 6 \times 6 = 64$ (H)

Clue 3 (Multiplication facts (1-12)): "THE BANDIT SHUNS THICK DUST CLOUDS"

$2 \times 9 = 18$ (T) · $8 \times 10 = 80$ (C) · $2 \times 1 = 2$ (N) · $12 \times 2 = 24$ (I) · $8 \times 8 = 64$ (S) · $3 \times 1 = 3$ (L) · $11 \times 10 = 110$ (K) · $11 \times 2 = 22$ (A) · $7 \times 11 = 77$ (U) · $3 \times 5 = 15$ (E) · $8 \times 12 = 96$ (B) · $9 \times 10 = 90$ (D) · $7 \times 1 = 7$ (O) · $1 \times 1 = 1$ (H)

Clue 4 (Rounding): "WE FOUND CROPPED GRAY HAIR AT THE SCENE"

Round 432 to the nearest ten = 430 (W) · Round 132 to the nearest ten = 130 (H) · Round 8,568 to the nearest thousand = 9000 (G) · Round 3,726 to the nearest hundred = 3700 (S) · Round 4,648 to the nearest thousand = 5000 (D) · Round 166 to the nearest ten = 170 (O) · Round 341 to the nearest hundred = 300 (F) · Round 2,866 to the nearest hundred = 2900 (Y) · Round 66 to the nearest ten = 70 (U) · Round 1,090 to the nearest hundred = 1100 (R) · Round 373 to the nearest ten = 370 (P) · Round 897 to the nearest hundred = 900 (A) · Round 30 to the nearest ten = 30 (E) · Round 290 to the nearest ten = 290 (N) · Round 707 to the nearest hundred = 700 (I) · Round 113 to the nearest ten = 110 (C) · Round 20 to the nearest ten = 20 (T)

Clue 5 (Division facts (1-12)): surviving statement is box 8 → Roald Amundsen

$72 \div 6 = 12$ · $44 \div 4 = 11$ · $6 \div 1 = 6$ · $20 \div 5 = 4$ · $90 \div 10 = 9$ · $49 \div 7 = 7$ · $10 \div 2 = 5$ · $7 \div 7 = 1$ · $20 \div 10 = 2$ · $9 \div 3 = 3$ · $20 \div 2 = 10$