



The Lunar Base Mystery

Grade 5 math · Multiplication, Word problems, Fractions of a number, Order of operations, Division · Reading level grades 3-4

Detective: _____ Date: _____

Someone tampered with the lunar base oxygen tanks! Space Detective Leo must inspect the evidence to find 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 Rogue Astronaut is _____

Possible suspects

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

NAME	PRIMARY TOOL	GADGET	GLOVE HAND	HELMET STYLE	COUNTER TOOL
Guion Bluford	Jetpack Dash	Oxygen Drain	Right Handed	Gold Helmet	Freezer Beam
Neil Armstrong	Sonic Pulse	Gravity Warp	Right Handed	Silver Helmet	Strobe Light
Sunita Williams	Sonic Pulse	Oxygen Drain	Right Handed	Gold Helmet	Freezer Beam
Eileen Collins	Sonic Pulse	Radar Jammer	Right Handed	Red Helmet	Freezer Beam
Sally Ride	Laser Cutter	Oxygen Drain	Left Handed	Red Helmet	Magnet Trap
Bernard Harris	Plasma Torch	Shield Bubble	Left Handed	Gold Helmet	Strobe Light
Peggy Whitson	Sonic Pulse	Gravity Warp	Right Handed	Red Helmet	Strobe Light
John Glenn	Plasma Torch	Oxygen Drain	Right Handed	Gold Helmet	Magnet Trap
Alan Shepard	Plasma Torch	Gravity Warp	Right Handed	Red Helmet	Strobe Light
Mark Kelly	Jetpack Dash	Radar Jammer	Left Handed	Gold Helmet	Strobe Light
Kalpana Chawla	Grav Boots	Oxygen Drain	Right Handed	Red Helmet	Freezer Beam
Buzz Aldrin	Plasma Torch	Solar Flash	Left Handed	Red Helmet	Freezer Beam
Scott Kelly	Plasma Torch	Solar Flash	Right Handed	Red Helmet	Freezer Beam
Mae Jemison	Grav Boots	Solar Flash	Left Handed	Gold Helmet	Strobe Light
Maeve Vance	Plasma Torch	Shield Bubble	Left Handed	Red Helmet	Magnet Trap
Christina Koch	Sonic Pulse	Radar Jammer	Right Handed	Gold Helmet	Strobe Light
Leland Melvin	Plasma Torch	Oxygen Drain	Right Handed	Red Helmet	Magnet Trap
Jessica Meir	Grav Boots	Gravity Warp	Right Handed	Red Helmet	Freezer Beam
Victor Glover	Laser Cutter	Gravity Warp	Left Handed	Gold Helmet	Strobe Light
Michael Collins	Sonic Pulse	Shield Bubble	Right Handed	Red Helmet	Freezer Beam
Chris Hadfield	Plasma Torch	Oxygen Drain	Left Handed	Red Helmet	Freezer Beam

CLUE 1

Multiplication facts (1-12)

You count the supply crates stored in grid rows.

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

T									T						T			
77	70	6	11	96	11	33	6	99	77	81	50	81	18	40	77	96	11	6
					T													
49	9	1	66	50	77	63	2	1	9	33								

$11 \times 7 =$

→ T

$5 \times 10 =$

→ I

$3 \times 11 =$

→ P

$7 \times 9 =$

→ Y

$7 \times 7 =$

→ G

$4 \times 10 =$

→ O

$6 \times 3 =$

→ N

$8 \times 12 =$

→ U

$1 \times 1 =$

→ A

$11 \times 9 =$

→ C

$11 \times 1 =$

→ S

$9 \times 1 =$

→ R

$3 \times 2 =$

→ E

$6 \times 11 =$

→ V

$9 \times 9 =$

→ D

$2 \times 1 =$

→ W

$7 \times 10 =$

→ H

Scratch space:

CLUE 2

Word problems

Commander Vance needs help tallying research items.

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

A witness saw the villain was R D E D .

34 30 61 116 46 116 105 111

Space Cadet found 12 moon rocks yesterday and 22 more today. How many moon rocks in all?

Answer: → R

There were 92 moon rocks. 31 were used up. How many moon rocks are left?

Answer: → G

Space Cadet lined up 6 rows of 5 space pods. How many space pods in all?

Answer: → I

There were 144 star maps. 33 were used up. How many star maps are left?

Answer: → N

There were 139 moon rocks. 34 were used up. How many moon rocks are left?

Answer: → A

There were 73 oxygen tanks. 27 were used up. How many oxygen tanks are left?

Answer: → T

There were 136 solar panels. 20 were used up. How many solar panels are left?

Answer: → H

Scratch space:

Fractions of a number

You figure out what fraction of solar power is left.

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

37 35 22 23 7 10 10 3 7 21 33 3 27 27 37 24 39 39 22 8

32 11 14 30 22 22 4 22 30 32 22 3 17

$$1/5 \text{ of } 185 = \boxed{} \rightarrow \boxed{\text{T}}$$

5/10 of 46 = → **V**

$$\frac{1}{2} \text{ of } 48 = \boxed{} \rightarrow \boxed{0}$$

$$2/6 \text{ of } 21 = \boxed{} \rightarrow \boxed{\text{I}}$$

$3/8$ of 88 = $\rightarrow$ **W**

$$3/6 \text{ of } 44 = \boxed{} \rightarrow \boxed{\text{E}}$$

$$5/10 \text{ of } 70 = \boxed{} \rightarrow \boxed{\text{H}}$$

$1/2$ of 8 = $\rightarrow$ **Z**

$$4/8 \text{ of } 78 = \boxed{} \rightarrow \boxed{\text{P}}$$

$\frac{1}{4}$ of 44 = $\rightarrow$ **Y**

7/10 of 20 = → **F**

$2/4$ of 42 = $\rightarrow$ **N**

$$1/8 \text{ of } 80 = \boxed{} \rightarrow \boxed{\text{L}}$$

3/10 of 100 = → **R**

$\frac{1}{4}$ of 68 = $\rightarrow$ **M**

$4/10$ of 20 = $\rightarrow$ **D**

$$6/8 \text{ of } 36 = \boxed{} \rightarrow \boxed{\text{S}}$$

$\frac{1}{6}$ of 18 = $\rightarrow$ **A**

$\frac{4}{5}$ of 40 = $\rightarrow$ **B**

Scratch space:

CLUE 4

Order of operations

You run the launch computer sequence in exact order.

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

R												R						
44	18	37	14	18	73	78	18	46	16	53	44	28	46	53	14	18	16	

		R						
71	18	44	18	40	38	36	13	37

$5 \times 9 - 1 = \square \rightarrow \text{R}$

$5 \times 12 - 23 = \square \rightarrow \text{D}$

$5 + 4 \times 2 = \square \rightarrow \text{N}$

$9 \times 6 - 16 = \square \rightarrow \text{O}$

$35 + 2 \times 9 = \square \rightarrow \text{C}$

$12 \times 8 - 23 = \square \rightarrow \text{L}$

$10 + 9 \times 4 = \square \rightarrow \text{T}$

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

$16 + 8 \times 3 = \square \rightarrow \text{F}$

$5 \times 7 - 19 = \square \rightarrow \text{S}$

$60 + 2 \times 9 = \square \rightarrow \text{M}$

$28 + 2 \times 4 = \square \rightarrow \text{U}$

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

$51 + 4 \times 5 = \square \rightarrow \text{W}$

$1 + 3 \times 9 = \square \rightarrow \text{A}$

Scratch space:

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

You divide the radio signal code evenly into pods.

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:

$35 \div 5 = \boxed{}$

$70 \div 7 = \boxed{}$

$72 \div 9 = \boxed{}$

$18 \div 2 = \boxed{}$

$20 \div 4 = \boxed{}$

$54 \div 9 = \boxed{}$

$16 \div 8 = \boxed{}$

$9 \div 9 = \boxed{}$

$3 \div 1 = \boxed{}$

$22 \div 2 = \boxed{}$

$12 \div 3 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain blasted the door lock, then warped local gravity.
2. The villain turned off gravity, then flashed solar light.
3. The villain sliced the air lock, then turned on a radar jammer.
4. The villain cut the power cable, then activated a shield bubble.
5. The villain cut the power cable, then drained oxygen tanks.
6. The villain turned off gravity, then turned on a radar jammer.
7. The villain blasted the door lock, then turned on a radar jammer.
8. The villain cut the power cable, then flashed solar light.
9. The villain zoomed across the bay, then warped local gravity.
10. The villain turned off gravity, then drained oxygen tanks.
11. The villain sliced the air lock, then activated a shield bubble.
12. The villain blasted the door lock, then activated a shield bubble.

Answer Key

The Lunar Base Mystery

Culprit: Michael Collins

Sonic Pulse · Shield Bubble · Right Handed · Red Helmet · Freezer Beam

Trail: Start 21 → Clue 1 16 → Clue 2 9 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Multiplication facts (1-12)): "THE SUSPECT DID NOT USE GRAVITY WARP"

$11 \times 7 = 77$ (T) · $5 \times 10 = 50$ (I) · $3 \times 11 = 33$ (P) · $7 \times 9 = 63$ (Y) · $7 \times 7 = 49$ (G) · $4 \times 10 = 40$ (O) · $6 \times 3 = 18$ (N) · $8 \times 12 = 96$ (U) · $1 \times 1 = 1$ (A) · $11 \times 9 = 99$ (C) · $11 \times 1 = 11$ (S) · $9 \times 1 = 9$ (R) · $3 \times 2 = 6$ (E) · $6 \times 11 = 66$ (V) · $9 \times 9 = 81$ (D) · $2 \times 1 = 2$ (W) · $7 \times 10 = 70$ (H)

Clue 2 (Word problems): "RIGHT HANDED"

Space Cadet found 12 moon rocks yesterday and 22 more today. How many moon rocks in all? = 34 (R) · There were 92 moon rocks. 31 were used up. How many moon rocks are left? = 61 (G) · Space Cadet lined up 6 rows of 5 space pods. How many space pods in all? = 30 (I) · There were 144 star maps. 33 were used up. How many star maps are left? = 111 (N) · There were 139 moon rocks. 34 were used up. How many moon rocks are left? = 105 (A) · There were 73 oxygen tanks. 27 were used up. How many oxygen tanks are left? = 46 (T) · There were 136 solar panels. 20 were used up. How many solar panels are left? = 116 (H)

Clue 3 (Fractions of a number): "THE VILLAIN WAS STOPPED BY FREEZER BEAM"

$1/5$ of 185 = 37 (T) · $5/10$ of 46 = 23 (V) · $1/2$ of 48 = 24 (O) · $2/6$ of 21 = 7 (I) · $3/8$ of 88 = 33 (W) · $3/6$ of 44 = 22 (E) · $5/10$ of 70 = 35 (H) · $1/2$ of 8 = 4 (Z) · $4/8$ of 78 = 39 (P) · $1/4$ of 44 = 11 (Y) · $7/10$ of 20 = 14 (F) · $2/4$ of 42 = 21 (N) · $1/8$ of 80 = 10 (L) · $3/10$ of 100 = 30 (R) · $1/4$ of 68 = 17 (M) · $4/10$ of 20 = 8 (D) · $6/8$ of 36 = 27 (S) · $1/6$ of 18 = 3 (A) · $4/5$ of 40 = 32 (B)

Clue 4 (Order of operations): "RED HELMET SCRATCHES WERE FOUND"

$5 \times 9 - 1 = 44$ (R) · $5 \times 12 - 23 = 37$ (D) · $5 + 4 \times 2 = 13$ (N) · $9 \times 6 - 16 = 38$ (O) · $35 + 2 \times 9 = 53$ (C) · $12 \times 8 - 23 = 73$ (L) · $10 + 9 \times 4 = 46$ (T) · $5 + 3 \times 3 = 14$ (H) · $16 + 8 \times 3 = 40$ (F) · $5 \times 7 - 19 = 16$ (S) · $60 + 2 \times 9 = 78$ (M) · $28 + 2 \times 4 = 36$ (U) · $9 + 3 \times 3 = 18$ (E) · $51 + 4 \times 5 = 71$ (W) · $1 + 3 \times 9 = 28$ (A)

Clue 5 (Division facts (1-12)): surviving statement is box 12 → Michael Collins

$35 \div 5 = 7$ · $70 \div 7 = 10$ · $72 \div 9 = 8$ · $18 \div 2 = 9$ · $20 \div 4 = 5$ · $54 \div 9 = 6$ · $16 \div 8 = 2$ · $9 \div 9 = 1$ · $3 \div 1 = 3$ · $22 \div 2 = 11$ · $12 \div 3 = 4$