The Moon Base Crystal Caper

Grade 5 math · Multiplication, Word problems, Place value, Rounding, Missing addends · Reading level grades 3-4

Detective: _____ **Date:** _____

A rogue star thief sneaked into Moon Base Orion and stole the Astro Crystal. Help Cadet Leo solve the clues and 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 Star Thief is _____

Possible suspects

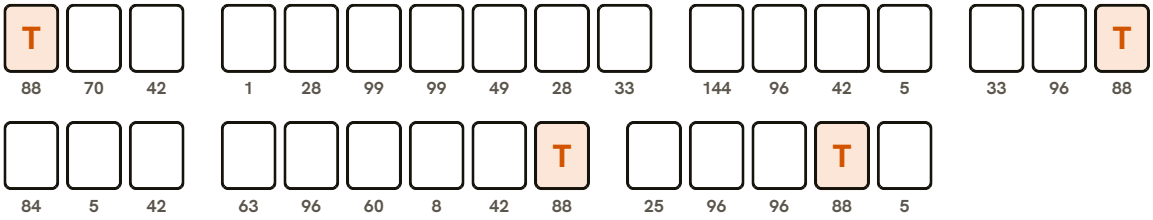
Cross off a row as each clue rules it out. The one left at the end is the culprit.

NAME	SPACE WEAPON	FLIGHT GEAR	DOMINANT HAND	HEADGEAR	COSMIC WEAKNESS
Mae Jemison	Starlight Shield	Thruster Pack	Right Handed	Gold Goggles	Solar Flares
Buzz Aldrin	Plasma Beam	Orbital Drone	Left Handed	Neon Visor	Space Dust
Bernard Harris	Laser Blast	Orbital Drone	Right Handed	Neon Visor	Magnet Pulse
Michael Collins	Starlight Shield	Rocket Boots	Right Handed	Neon Visor	Solar Flares
Sunita Williams	Laser Blast	Thruster Pack	Right Handed	Silver Helmet	Space Dust
Christina Koch	Laser Blast	Solar Panel	Left Handed	Silver Helmet	Solar Flares
Yuri Gagarin	Laser Blast	Rocket Boots	Right Handed	Gold Goggles	Magnet Pulse
Ellison Onizuka	Cosmic Wave	Solar Panel	Right Handed	Gold Goggles	Magnet Pulse
John Glenn	Starlight Shield	Orbital Drone	Right Handed	Silver Helmet	Magnet Pulse
Chris Hadfield	Plasma Beam	Rocket Boots	Right Handed	Silver Helmet	Space Dust
Judith Resnik	Gravity Field	Thruster Pack	Right Handed	Gold Goggles	Magnet Pulse
Stephanie Wilson	Plasma Beam	Solar Panel	Right Handed	Silver Helmet	Solar Flares
Valentina Tereshkova	Plasma Beam	Solar Panel	Left Handed	Gold Goggles	Magnet Pulse
Jessica Meir	Cosmic Wave	Orbital Drone	Right Handed	Gold Goggles	Magnet Pulse
Alan Shepard	Plasma Beam	Thruster Pack	Right Handed	Gold Goggles	Magnet Pulse
Eileen Collins	Gravity Field	Thruster Pack	Left Handed	Neon Visor	Space Dust
Peggy Whitson	Plasma Beam	Rocket Boots	Left Handed	Silver Helmet	Solar Flares
Kalpana Chawla	Gravity Field	Solar Panel	Left Handed	Neon Visor	Magnet Pulse
Neil Armstrong	Plasma Beam	Thruster Pack	Left Handed	Neon Visor	Space Dust
Jim Lovell	Starlight Shield	Solar Panel	Left Handed	Gold Goggles	Magnet Pulse
Sally Ride	Cosmic Wave	Solar Panel	Right Handed	Silver Helmet	Solar Flares

CLUE 1 Multiplication facts (1-12)

Cadet Leo counts the solar panels arrayed in equal rows across the launchpad.

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



8 × 11 = ☐ → T	12 × 8 = ☐ → O	12 × 12 = ☐ → D
6 × 7 = ☐ → E	3 × 11 = ☐ → N	4 × 7 = ☐ → I
12 × 5 = ☐ → C	7 × 10 = ☐ → H	5 × 1 = ☐ → S
7 × 12 = ☐ → U	1 × 1 = ☐ → V	5 × 5 = ☐ → B
11 × 9 = ☐ → L	9 × 7 = ☐ → R	7 × 7 = ☐ → A
8 × 1 = ☐ → K		

Scratch space:

CLUE 2 Word problems

Commander Vance reviews the flight logs to trace the thief energy usage.

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
107	88	83	101	9	101	106	27			

.

There were 123 moon rocks. 16 were used up. How many moon rocks are left?

Answer: ☐ → **R**

Cadet Nova found 34 star maps yesterday and 67 more today. How many star maps in all?

Answer: ☐ → **H**

There were 30 space crystals. 3 were used up. How many space crystals are left?

Answer: ☐ → **N**

Cadet Nova found 11 rocket boosters yesterday and 72 more today. How many rocket boosters in all?

Answer: ☐ → **G**

Cadet Nova lined up 11 rows of 8 rocket boosters. How many rocket boosters in all?

Answer: ☐ → **I**

Cadet Nova lined up 3 rows of 3 moon rocks. How many moon rocks in all?

Answer: ☐ → **T**

Cadet Nova found 7 star maps yesterday and 99 more today. How many star maps in all?

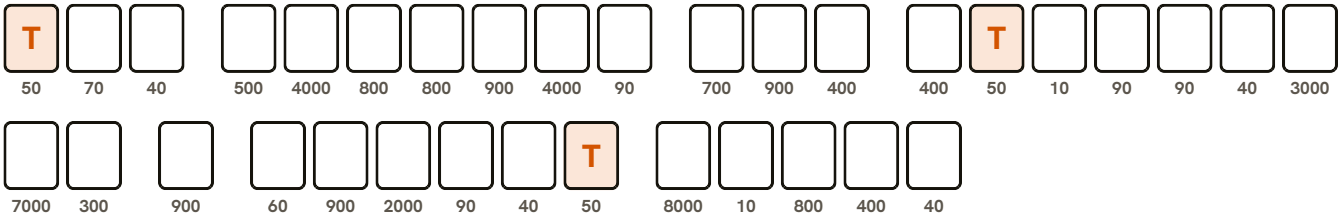
Answer: ☐ → **A**

Scratch space:

CLUE 3 Place value

The station computer displays digit codes from the airlock sensor log.

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



What is the value of the 5 in 274,158? ☐ → T

What is the value of the 5 in 337,501? ☐ → V

What is the value of the 4 in 74,570? ☐ → I

What is the value of the 9 in 184,901? ☐ → A

What is the value of the 9 in 563,290? ☐ → N

What is the value of the 3 in 423,584? ☐ → D

What is the value of the 3 in 55,370? ☐ → Y

What is the value of the 8 in 458,510? ☐ → P

What is the value of the 4 in 88,431? ☐ → S

What is the value of the 8 in 67,815? ☐ → L

What is the value of the 7 in 61,716? ☐ → W

What is the value of the 7 in 111,676? ☐ → H

What is the value of the 4 in 537,342? ☐ → E

What is the value of the 1 in 83,212? ☐ → U

What is the value of the 2 in 542,346? ☐ → G

What is the value of the 7 in 57,135? ☐ → B

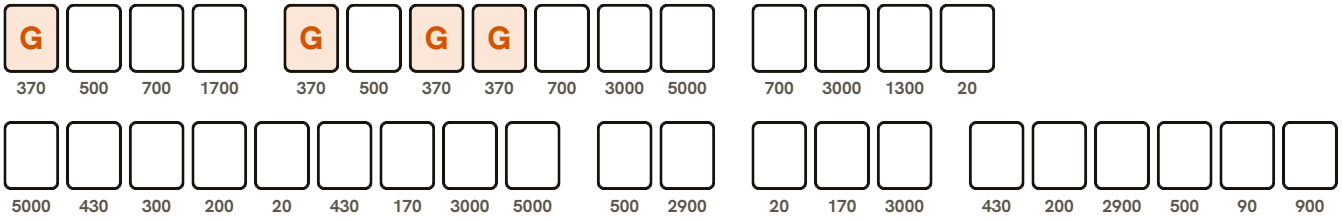
What is the value of the 6 in 240,863? ☐ → M

Scratch space:

CLUE 4 Rounding

The radar screen rounds the distance numbers to the nearest hundred kilometers.

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



Round 370 to the nearest ten ☐ → **G**

Round 1,705 to the nearest hundred ☐ → **D**

Round 434 to the nearest ten ☐ → **C**

Round 889 to the nearest hundred ☐ → **Y**

Round 299 to the nearest hundred ☐ → **R**

Round 22 to the nearest ten ☐ → **T**

Round 214 to the nearest hundred ☐ → **A**

Round 89 to the nearest ten ☐ → **P**

Round 4,778 to the nearest thousand ☐ → **S**

Round 1,333 to the nearest hundred ☐ → **F**

Round 452 to the nearest hundred ☐ → **O**

Round 728 to the nearest hundred ☐ → **L**

Round 169 to the nearest ten ☐ → **H**

Round 2,934 to the nearest hundred ☐ → **N**

Round 2,633 to the nearest thousand ☐ → **E**

Scratch space:

CLUE 5 Missing addends - the last clue

Leo checks the fuel gauges to see how much energy is missing from the tank.

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:

17 + ___ = 28 ☐	39 + ___ = 42 ☐	33 + ___ = 45 ☐	40 + ___ = 47 ☐
15 + ___ = 19 ☐	19 + ___ = 20 ☐	3 + ___ = 13 ☐	30 + ___ = 39 ☐
24 + ___ = 30 ☐	19 + ___ = 21 ☐	7 + ___ = 12 ☐	

Step 2 - cross out the sentence with each answer:

1. The villain raised a starlight shield, then deployed an orbital drone.
2. The villain fired a laser blast, then deployed an orbital drone.
3. The villain sent a cosmic wave, then deployed an orbital drone.
4. The villain raised a starlight shield, then trailed a bright comet tail.
5. The villain fired a laser blast, then fled with a thruster pack.
6. The villain raised a starlight shield, then fled with a thruster pack.
7. The villain fired a laser blast, then zoomed away on rocket boots.
8. The villain warped the gravity field, then fled with a thruster pack.
9. The villain sent a cosmic wave, then fled with a thruster pack.
10. The villain warped the gravity field, then charged up a solar panel.
11. The villain sent a cosmic wave, then charged up a solar panel.
12. The villain shot a plasma beam, then fled with a thruster pack.

TEACHER / PARENT

Answer Key

The Moon Base Crystal Caper

Culprit: Judith Resnik

Gravity Field · Thruster Pack · Right Handed · Gold Goggles · Magnet Pulse

Trail: Start 21 → Clue 1 17 → Clue 2 10 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Multiplication facts (1-12)): "THE VILLAIN DOES NOT USE ROCKET BOOTS"

8 × 11 = 88 (T) · 12 × 8 = 96 (O) · 12 × 12 = 144 (D) · 6 × 7 = 42 (E) · 3 × 11 = 33 (N) · 4 × 7 = 28 (I) · 12 × 5 = 60 (C) · 7 × 10 = 70 (H) · 5 × 1 = 5 (S) · 7 × 12 = 84 (U) · 1 × 1 = 1 (V) · 5 × 5 = 25 (B) · 11 × 9 = 99 (L) · 9 × 7 = 63 (R) · 7 × 7 = 49 (A) · 8 × 1 = 8 (K)

Clue 2 (Word problems): "RIGHT HANDED"

There were 123 moon rocks. 16 were used up. How many moon rocks are left? = 107 (R) · Cadet Nova found 34 star maps yesterday and 67 more today. How many star maps in all? = 101 (H) · There were 30 space crystals. 3 were used up. How many space crystals are left? = 27 (N) · Cadet Nova found 11 rocket boosters yesterday and 72 more today. How many rocket boosters in all? = 83 (G) · Cadet Nova lined up 11 rows of 8 rocket boosters. How many rocket boosters in all? = 88 (I) · Cadet Nova lined up 3 rows of 3 moon rocks. How many moon rocks in all? = 9 (T) · Cadet Nova found 7 star maps yesterday and 99 more today. How many star maps in all? = 106 (A)

Clue 3 (Place value): "THE VILLAIN WAS STUNNED BY A MAGNET PULSE"

What is the value of the 5 in 274,158? = 50 (T) · What is the value of the 5 in 337,501? = 500 (V) · What is the value of the 4 in 74,570? = 4000 (I) · What is the value of the 9 in 184,901? = 900 (A) · What is the value of the 9 in 563,290? = 90 (N) · What is the value of the 3 in 423,584? = 3000 (D) · What is the value of the 3 in 55,370? = 300 (Y) · What is the value of the 8 in 458,510? = 8000 (P) · What is the value of the 4 in 88,431? = 400 (S) · What is the value of the 8 in 67,815? = 800 (L) · What is the value of the 7 in 61,716? = 700 (W) · What is the value of the 7 in 111,676? = 70 (H) · What is the value of the 4 in 537,342? = 40 (E) · What is the value of the 1 in 83,212? = 10 (U) · What is the value of the 2 in 542,346? = 2000 (G) · What is the value of the 7 in 57,135? = 7000 (B) · What is the value of the 6 in 240,863? = 60 (M)

Clue 4 (Rounding): "GOLD GOGGLES LEFT SCRATCHES ON THE CANOPY"

Round 370 to the nearest ten = 370 (G) · Round 1,705 to the nearest hundred = 1700 (D) · Round 434 to the nearest ten = 430 (C) · Round 889 to the nearest hundred = 900 (Y) · Round 299 to the nearest hundred = 300 (R) · Round 22 to the nearest ten = 20 (T) · Round 214 to the nearest hundred = 200 (A) · Round 89 to the nearest ten = 90 (P) · Round 4,778 to the nearest thousand = 5000 (S) · Round 1,333 to the nearest hundred = 1300 (F) · Round 452 to the nearest hundred = 500 (O) · Round 728 to the nearest hundred = 700 (L) · Round 169 to the nearest ten = 170 (H) · Round 2,934 to the nearest hundred = 2900 (N) · Round 2,633 to the nearest thousand = 3000 (E)

Clue 5 (Missing addends): surviving statement is box 8 → Judith Resnik

17 + ___ = 28 = 11 · 39 + ___ = 42 = 3 · 33 + ___ = 45 = 12 · 40 + ___ = 47 = 7 · 15 + ___ = 19 = 4 · 19 + ___ = 20 = 1 · 3 + ___ = 13 = 10 · 30 + ___ = 39 = 9 · 24 + ___ = 30 = 6 · 19 + ___ = 21 = 2 · 7 + ___ = 12 = 5