The Case of the Missing Star Crystal

Grade 4 math · Rounding, Multi-step word problems, Word problems, Addition, Missing addends · Reading level grades 3-4

Detective: _____ **Date:** _____

Someone sneaked into the Starlight Observatory and snatched the glowing Cosmic Crystal right off the telescope mount! Use your detective skills to decode clues and stop 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 Cosmic Mischief Maker is _____

Possible suspects

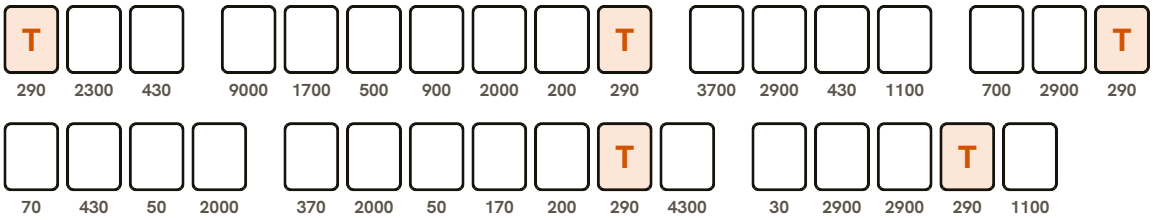
Cross off a row as each clue rules it out. The one left at the end is the culprit.

NAME	GADGET	BOOSTER	GLOVE TYPE	HELMET STRIPE	DISTRACTION
Ava Galaxy	Laser Torch	Turbo Dash	Right Glove	Electric Blue	Shiny Coins
Leo Orion	Laser Torch	Rocket Skates	Right Glove	Electric Blue	Shiny Coins
Cosmo Jack	Freeze Ray	Turbo Dash	Right Glove	Neon Silver	Bubble Gum
Ruby Orbit	Freeze Ray	Solar Wings	Right Glove	Copper Gold	Squeaky Toys
Toby Quasar	Hover Board	Turbo Dash	Left Glove	Copper Gold	Squeaky Toys
Penny Starlight	Freeze Ray	Jet Pack	Left Glove	Electric Blue	Shiny Coins
Maya Nova	Freeze Ray	Rocket Skates	Left Glove	Neon Silver	Squeaky Toys
Kai Eclipse	Freeze Ray	Rocket Skates	Left Glove	Electric Blue	Squeaky Toys
Zoe Comet	Grapple Hook	Turbo Dash	Left Glove	Electric Blue	Bubble Gum
Nora Aurora	Laser Torch	Gravity Boots	Right Glove	Electric Blue	Shiny Coins
Wren Sol	Grapple Hook	Rocket Skates	Right Glove	Electric Blue	Squeaky Toys
Jax Nebula	Grapple Hook	Solar Wings	Right Glove	Electric Blue	Shiny Coins
Luna Star	Hover Board	Jet Pack	Left Glove	Copper Gold	Shiny Coins
Hugo Gravity	Hover Board	Solar Wings	Right Glove	Copper Gold	Bubble Gum
Max Pulsar	Hover Board	Jet Pack	Right Glove	Electric Blue	Shiny Coins
Cleo Photon	Sonic Whistle	Solar Wings	Right Glove	Neon Silver	Bubble Gum
Sam Rocket	Sonic Whistle	Gravity Boots	Right Glove	Copper Gold	Bubble Gum
Astro Ben	Hover Board	Jet Pack	Left Glove	Neon Silver	Squeaky Toys
Finn Zenith	Freeze Ray	Rocket Skates	Right Glove	Copper Gold	Shiny Coins
Ivy Meteor	Laser Torch	Jet Pack	Right Glove	Neon Silver	Bubble Gum
Tess Horizon	Laser Torch	Rocket Skates	Right Glove	Electric Blue	Squeaky Toys

CLUE 1 Rounding

The station computer logs show energy usage from the observatory room. Solve this problem to unlock the clue.

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



Round 286 to the nearest ten ☐ → T

Round 8,551 to the nearest thousand ☐ → C

Round 1,685 to the nearest hundred ☐ → U

Round 54 to the nearest ten ☐ → A

Round 4,323 to the nearest hundred ☐ → Y

Round 72 to the nearest ten ☐ → W

Round 32 to the nearest ten ☐ → B

Round 370 to the nearest ten ☐ → G

Round 2,348 to the nearest hundred ☐ → H

Round 167 to the nearest hundred ☐ → I

Round 488 to the nearest hundred ☐ → L

Round 1,138 to the nearest hundred ☐ → S

Round 2,388 to the nearest thousand ☐ → R

Round 433 to the nearest ten ☐ → E

Round 863 to the nearest hundred ☐ → P

Round 168 to the nearest ten ☐ → V

Round 713 to the nearest hundred ☐ → N

Round 3,680 to the nearest hundred ☐ → D

Round 2,875 to the nearest hundred ☐ → O

Scratch space:

CLUE 2 Multi-step word problems

To track down the culprit, Cadets must calculate the total fuel used across multiple supply stops.

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

A witness saw the villain was

R								V	E
56	39	87	90	77	87	68	64		

.

There were 465 star crystals in all. 17 star crystals were set aside. The rest were shared equally among 8 Starlight Rangers. How many star crystals did each get?

Answer: ☐ → R

There were 252 moon rocks in all. 21 moon rocks were set aside. The rest were shared equally among 3 Starlight Rangers. How many moon rocks did each get?

Answer: ☐ → T

Cadet Captain filled 6 boxes with 4 cosmic maps each, then found 15 more cosmic maps. How many cosmic maps are there in all?

Answer: ☐ → I

Cadet Captain earned 7 moon rocks in each of 4 rounds, plus 60 bonus moon rocks. Then 1 moon rocks were lost. How many moon rocks are left?

Answer: ☐ → G

Cadet Captain earned 8 moon rocks in each of 3 rounds, plus 51 bonus moon rocks. Then 11 moon rocks were lost. How many moon rocks are left?

Answer: ☐ → O

Cadet Captain filled 6 boxes with 6 moon rocks each, then found 32 more moon rocks. How many moon rocks are there in all?

Answer: ☐ → L

There were 522 star crystals in all. 2 Starlight Rangers used 36 star crystals each. The other 5 Starlight Rangers shared the rest equally. How many star crystals did each of the other Starlight Rangers get?

Answer: ☐ → H

Scratch space:

CLUE 3 Word problems

> The station radar scanner only shows rough rounded distance numbers for safety reasons.

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

Someone scared the villain off with

S									S
36	37	66	32	25	60	64	66	32	36

.

Cadet Captain lined up 12 rows of 3 space badges. How many space badges in all?

Answer: ☐ → **S**

Cadet Captain found 11 cosmic maps yesterday and 14 more today. How many cosmic maps in all?

Answer: ☐ → **Y**

Cadet Captain found 2 moon rocks yesterday and 30 more today. How many moon rocks in all?

Answer: ☐ → **N**

Cadet Captain lined up 8 rows of 8 cosmic maps. How many cosmic maps in all?

Answer: ☐ → **O**

Cadet Captain found 25 moon rocks yesterday and 12 more today. How many moon rocks in all?

Answer: ☐ → **H**

Cadet Captain lined up 11 rows of 6 star crystals. How many star crystals in all?

Answer: ☐ → **I**

Cadet Captain lined up 5 rows of 12 star crystals. How many star crystals in all?

Answer: ☐ → **C**

Scratch space:

CLUE 4 Addition

The cadet officer tallied up the extra footprints left near the observation deck.

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



2055 + 1883 = ☐ → A

2401 + 2927 = ☐ → L

3931 + 5775 = ☐ → T

3212 + 2220 = ☐ → W

4299 + 2528 = ☐ → D

1858 + 3221 = ☐ → K

2259 + 1379 = ☐ → S

4922 + 4797 = ☐ → E

5065 + 4577 = ☐ → B

811 + 1308 = ☐ → U

2326 + 4242 = ☐ → C

2786 + 5439 = ☐ → F

4187 + 3476 = ☐ → H

2451 + 1653 = ☐ → I

2861 + 1930 = ☐ → N

1713 + 3284 = ☐ → P

3238 + 1808 = ☐ → R

Scratch space:

CLUE 5 Missing addends - the last clue

> The security locker has a missing code digit needed to match the evidence vault.

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:

36 + ___ = 44 ☐	40 + ___ = 43 ☐	4 + ___ = 8 ☐	38 + ___ = 50 ☐
10 + ___ = 21 ☐	32 + ___ = 41 ☐	30 + ___ = 40 ☐	12 + ___ = 18 ☐
27 + ___ = 29 ☐	28 + ___ = 35 ☐	37 + ___ = 42 ☐	

Step 2 - cross out the sentence with each answer:

1. The villain melted the vault hinge with a laser torch, then dashed out the airlock with turbo dash.
2. The villain blasted open the panel with a sonic whistle, then fled high into the rafters using a jet pack.
3. The villain zapped the vault lock with a grapple hook, then glided over the fence with solar wings.
4. The villain melted the vault hinge with a laser torch, then skated past guards using rocket skates.
5. The villain zoomed through security on a hover board, then skated past guards using rocket skates.
6. The villain froze the alarm sensors with a freeze ray, then skated past guards using rocket skates.
7. The villain blasted open the panel with a sonic whistle, then strode across the ceiling wearing gravity boots.
8. The villain zoomed through security on a hover board, then fled high into the rafters using a jet pack.
9. The villain zoomed through security on a hover board, then dashed out the airlock with turbo dash.
10. The villain froze the alarm sensors with a freeze ray, then glided over the fence with solar wings.
11. The villain blasted open the panel with a sonic whistle, then skated past guards using rocket skates.
12. The villain melted the vault hinge with a laser torch, then strode across the ceiling wearing gravity boots.

TEACHER / PARENT

Answer Key

The Case of the Missing Star Crystal

Culprit: Ava Galaxy

Laser Torch · Turbo Dash · Right Glove · Electric Blue · Shiny Coins

Trail: Start 21 → Clue 1 19 → Clue 2 12 → Clue 3 5 → Clue 4 4 → Clue 5 1

Clue 1 (Rounding): "THE CULPRIT DOES NOT WEAR GRAVITY BOOTS"

Round 286 to the nearest ten = 290 (T) · Round 8,551 to the nearest thousand = 9000 (C) · Round 1,685 to the nearest hundred = 1700 (U) · Round 54 to the nearest ten = 50 (A) · Round 4,323 to the nearest hundred = 4300 (Y) · Round 72 to the nearest ten = 70 (W) · Round 32 to the nearest ten = 30 (B) · Round 370 to the nearest ten = 370 (G) · Round 2,348 to the nearest hundred = 2300 (H) · Round 167 to the nearest hundred = 200 (I) · Round 488 to the nearest hundred = 500 (L) · Round 1,138 to the nearest hundred = 1100 (S) · Round 2,388 to the nearest thousand = 2000 (R) · Round 433 to the nearest ten = 430 (E) · Round 863 to the nearest hundred = 900 (P) · Round 168 to the nearest ten = 170 (V) · Round 713 to the nearest hundred = 700 (N) · Round 3,680 to the nearest hundred = 3700 (D) · Round 2,875 to the nearest hundred = 2900 (O)

Clue 2 (Multi-step word problems): "RIGHT GLOVE"

There were 465 star crystals in all. 17 star crystals were set aside. The rest were shared equally among 8 Starlight Rangers. How many star crystals did each get? = 56 (R) · There were 252 moon rocks in all. 21 moon rocks were set aside. The rest were shared equally among 3 Starlight Rangers. How many moon rocks did each get? = 77 (T) · Cadet Captain filled 6 boxes with 4 cosmic maps each, then found 15 more cosmic maps. How many cosmic maps are there in all? = 39 (I) · Cadet Captain earned 7 moon rocks in each of 4 rounds, plus 60 bonus moon rocks. Then 1 moon rocks were lost. How many moon rocks are left? = 87 (G) · Cadet Captain earned 8 moon rocks in each of 3 rounds, plus 51 bonus moon rocks. Then 11 moon rocks were lost. How many moon rocks are left? = 64 (O) · Cadet Captain filled 6 boxes with 6 moon rocks each, then found 32 more moon rocks. How many moon rocks are there in all? = 68 (L) · There were 522 star crystals in all. 2 Starlight Rangers used 36 star crystals each. The other 5 Starlight Rangers shared the rest equally. How many star crystals did each of the other Starlight Rangers get? = 90 (H)

Clue 3 (Word problems): "SHINY COINS"

Cadet Captain lined up 12 rows of 3 space badges. How many space badges in all? = 36 (S) · Cadet Captain found 11 cosmic maps yesterday and 14 more today. How many cosmic maps in all? = 25 (Y) · Cadet Captain found 2 moon rocks yesterday and 30 more today. How many moon rocks in all? = 32 (N) · Cadet Captain lined up 8 rows of 8 cosmic maps. How many cosmic maps in all? = 64 (O) · Cadet Captain found 25 moon rocks yesterday and 12 more today. How many moon rocks in all? = 37 (H) · Cadet Captain lined up 11 rows of 6 star crystals. How many star crystals in all? = 66 (I) · Cadet Captain lined up 5 rows of 12 star crystals. How many star crystals in all? = 60 (C)

Clue 4 (Addition): "AN ELECTRIC BLUE STRIPE FLAKE WAS LEFT BEHIND"

2055 + 1883 = 3938 (A) · 2401 + 2927 = 5328 (L) · 3931 + 5775 = 9706 (T) · 3212 + 2220 = 5432 (W) · 4299 + 2528 = 6827 (D) · 1858 + 3221 = 5079 (K) · 2259 + 1379 = 3638 (S) · 4922 + 4797 = 9719 (E) · 5065 + 4577 = 9642 (B) · 811 + 1308 = 2119 (U) · 2326 + 4242 = 6568 (C) · 2786 + 5439 = 8225 (F) · 4187 + 3476 = 7663 (H) · 2451 + 1653 = 4104 (I) · 2861 + 1930 = 4791 (N) · 1713 + 3284 = 4997 (P) · 3238 + 1808 = 5046 (R)

Clue 5 (Missing addends): surviving statement is box 1 → Ava Galaxy

36 + ___ = 44 = 8 · 40 + ___ = 43 = 3 · 4 + ___ = 8 = 4 · 38 + ___ = 50 = 12 · 10 + ___ = 21 = 11 · 32 + ___ = 41 = 9 · 30 + ___ = 40 = 10 · 12 + ___ = 18 = 6 · 27 + ___ = 29 = 2 · 28 + ___ = 35 = 7 · 37 + ___ = 42 = 5