



The Phantom Bovine of Barnstar Nine

Grade 5 math · Place value, Addition, Subtraction, Multiplication, Division · Reading level grades 5-6

Detective: _____ Date: _____

A spectral mutant cow is haunting the darkened decks of Barnstar Nine and spooking the astronaut crew. Decode the evidence logs to track down the galactic ghost!

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 ghostly cow is _____

Possible suspects

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

NAME	GHOSTLY ABILITY	ALIEN GEAR	HOOF PREFERENCE	SPECTRAL FUR	STATION TRAP
Pilot Clover	Echo Spooky Moo Sounds	Magnetic Laser Collar	Right Hoofed	Ghostly White	Fresh Grass
Commander Daisy	Teleport Behind Doors	Anti Gravity Saddle	Right Hoofed	Ghostly White	Fresh Grass
Agent Guernsey	Teleport Behind Doors	Magnetic Laser Collar	Right Hoofed	Midnight Black	Fresh Grass
Officer Bluebell	Levitate In Zero Gravity	Starlight Jetpack	Left Hoofed	Ghostly White	Heavy Gravity
Navigator Otis	Phase Through Bulkheads	Magnetic Laser Collar	Left Hoofed	Midnight Black	Heavy Gravity
Specialist Meadow	Phase Through Bulkheads	Glowing Plasma Bell	Right Hoofed	Midnight Black	Fresh Grass
Scout Bramble	Teleport Behind Doors	Starlight Jetpack	Left Hoofed	Midnight Black	Heavy Gravity
Lieutenant Ferdinand	Levitate In Zero Gravity	Cybernetic Horn Ring	Left Hoofed	Ghostly White	Fresh Grass
Cadet Clarabelle	Phase Through Bulkheads	Glowing Plasma Bell	Right Hoofed	Ghostly White	Fresh Grass
Cadet Dexter	Levitate In Zero Gravity	Magnetic Laser Collar	Right Hoofed	Cosmic Purple	Fresh Grass
Pilot Galloway	Levitate In Zero Gravity	Magnetic Laser Collar	Right Hoofed	Ghostly White	Fresh Grass
Warden Bossy	Echo Spooky Moo Sounds	Starlight Jetpack	Right Hoofed	Ghostly White	Fresh Grass
Chief Jersey	Echo Spooky Moo Sounds	Starlight Jetpack	Right Hoofed	Midnight Black	Heavy Gravity
Captain Bessie	Echo Spooky Moo Sounds	Starlight Jetpack	Right Hoofed	Midnight Black	Fresh Grass
Major Buttercup	Teleport Behind Doors	Magnetic Laser Collar	Left Hoofed	Ghostly White	Heavy Gravity
Marshal Holstein	Echo Spooky Moo Sounds	Cybernetic Horn Ring	Left Hoofed	Ghostly White	Heavy Gravity
Gunner Norman	Levitate In Zero Gravity	Starlight Jetpack	Right Hoofed	Midnight Black	Heavy Gravity
Agent Devon	Phase Through Bulkheads	Glowing Plasma Bell	Right Hoofed	Ghostly White	Heavy Gravity
Trooper Hereford	Echo Spooky Moo Sounds	Magnetic Laser Collar	Right Hoofed	Midnight Black	Heavy Gravity
Officer Angus	Levitate In Zero Gravity	Anti Gravity Saddle	Right Hoofed	Cosmic Purple	Heavy Gravity
Commander Astro	Create Cosmic Fog	Cybernetic Horn Ring	Left Hoofed	Cosmic Purple	Fresh Grass

CLUE 1 Place value

The station scanner picks up a scrambled numeric code from the ghost cow. Look at the digit in the tens place to decode the first observation log.

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

T							T							T				
5000	700	60	10	60	90	9000	5000	600	8000	60	9000	400	8000	5000	50	60	90	4000
				T						T								
90	400	90	400	5000	2000	7000	4000	90	500	2000	5000	300	9000	90	600	600	100	60

What is the value of the 5 in 45,341? → **T**

What is the value of the 7 in 247,303? → **G**

What is the value of the 5 in 424,571? → **V**

What is the value of the 6 in 83,164? → **E**

What is the value of the 8 in 68,554? → **O**

What is the value of the 9 in 559,658? → **S**

What is the value of the 1 in 93,150? → **L**

What is the value of the 9 in 31,497? → **A**

What is the value of the 4 in 34,236? → **R**

What is the value of the 2 in 32,881? → **I**

What is the value of the 7 in 21,755? → **H**

What is the value of the 6 in 82,619? → **D**

What is the value of the 1 in 854,815? → **B**

What is the value of the 3 in 650,366? → **Y**

What is the value of the 4 in 785,411? → **N**

What is the value of the 5 in 607,353? → **W**

Scratch space:

CLUE 2 Addition

To count total thermal sightings across both station decks, the security officer adds the sensor counts together.

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

T 7092	7052	4049	7349	5901	4049	2614	T 7092	5772	5901	4049	4195	T 7092	5772	7349	6744	5809	T 7092	4195
5901	5809	2491	7052	T 7092	7052	7075	7075	7841	5809	4658	T 7092	7052	4049	7052	2614	T 7092	7349	7052

$2172 + 4920 = \boxed{} \rightarrow \boxed{T}$

$3182 + 3870 = \boxed{} \rightarrow \boxed{H}$

$2888 + 2884 = \boxed{} \rightarrow \boxed{U}$

$5420 + 2421 = \boxed{} \rightarrow \boxed{F}$

$2763 + 1895 = \boxed{} \rightarrow \boxed{N}$

$2848 + 3053 = \boxed{} \rightarrow \boxed{R}$

$3315 + 2494 = \boxed{} \rightarrow \boxed{I}$

$1579 + 1035 = \boxed{} \rightarrow \boxed{A}$

$1809 + 2240 = \boxed{} \rightarrow \boxed{E}$

$1376 + 1115 = \boxed{} \rightarrow \boxed{G}$

$2591 + 4153 = \boxed{} \rightarrow \boxed{K}$

$2289 + 5060 = \boxed{} \rightarrow \boxed{C}$

$3610 + 3465 = \boxed{} \rightarrow \boxed{O}$

$1597 + 2598 = \boxed{} \rightarrow \boxed{S}$

Scratch space:

CLUE 3

The engineering crew measures how much power dropped after the specter floated through the main circuit breaker.

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

3015 6238 4205 4265 7393 4356 3629 1618 4205 7356 4731 1430 3015 6937 4731 8978 8978 4205 4315

4265 2701 4551 6937 4205 1430 6238 8822 6937 4731 1430 1430

$$6601 - 3586 = \boxed{} \rightarrow \boxed{\text{T}}$$

$12149 - 4793 = \boxed{} \rightarrow \boxed{\text{W}}$

$$10439 - 3046 = \boxed{} \rightarrow \boxed{0}$$

$$7638 - 3087 = \boxed{} \rightarrow \boxed{\text{F}}$$

$$9522 - 3284 = \boxed{} \rightarrow \boxed{\text{H}}$$

$6878 - 2147 = \boxed{} \rightarrow \boxed{\text{A}}$

$$3087 - 1469 = \boxed{} \rightarrow \boxed{\text{N}}$$

$12618 - 3640 = \boxed{} \rightarrow \boxed{\text{P}}$

$7507 - 3192 = \boxed{} \rightarrow \boxed{\text{D}}$

$6617 - 2988 = \boxed{} \rightarrow \boxed{}$

$6860 - 2595 = \boxed{} \rightarrow \boxed{\mathbf{B}}$

$$2124 - 694 = \boxed{} \rightarrow \boxed{\text{S}}$$

$3399 - 698 = \boxed{} \rightarrow \boxed{\text{Y}}$

$5545 - 1340 = \boxed{} \rightarrow \boxed{\text{E}}$

$11208 - 2386 = \boxed{} \rightarrow \boxed{\text{G}}$

$$4800 - 444 = \boxed{} \rightarrow \boxed{\mathbf{V}}$$

$9845 - 2908 = \boxed{} \rightarrow \boxed{\text{R}}$

Scratch space:

CLUE 4
Multiplication facts (1-12)

The hydroponic farm deck stores space hay in identical equal rows. Multiply the pods per row to unlock the camera file.

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

S						S						S				
20	32	4	28	55	1	20	8	9	72	15	8	20	32	56	90	
12	15	6	32	77	9	108	4	12	77	4	77	8	55	32	15	77
1	8	8	4													

$2 \times 10 = \square \rightarrow$ S	$7 \times 8 = \square \rightarrow$ L	$9 \times 8 = \square \rightarrow$ G	
$9 \times 12 = \square \rightarrow$ U	$4 \times 1 = \square \rightarrow$ R	$6 \times 2 = \square \rightarrow$ W	
$11 \times 5 = \square \rightarrow$ N	$4 \times 8 = \square \rightarrow$ T	$11 \times 7 = \square \rightarrow$ E	
$8 \times 1 = \square \rightarrow$ O	$5 \times 3 = \square \rightarrow$ H	$3 \times 2 = \square \rightarrow$ I	$7 \times 4 = \square \rightarrow$ A
$1 \times 1 = \square \rightarrow$ D	$9 \times 10 = \square \rightarrow$ Y	$3 \times 3 = \square \rightarrow$ F	

Scratch space:

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

The astro patrol team splits their remaining flashlight batteries equally among all search squads to enter the dark cargo bay.

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:

$110 \div 11 = \boxed{}$

$32 \div 8 = \boxed{}$

$72 \div 12 = \boxed{}$

$90 \div 10 = \boxed{}$

$12 \div 6 = \boxed{}$

$49 \div 7 = \boxed{}$

$88 \div 11 = \boxed{}$

$60 \div 12 = \boxed{}$

$84 \div 7 = \boxed{}$

$36 \div 12 = \boxed{}$

$132 \div 12 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain levitates in zero gravity, then activates its magnetic laser collar.
2. The villain teleports behind doors, then rings its glowing plasma bell.
3. The villain echoes spooky moo sounds, then rings its glowing plasma bell.
4. The villain echoes spooky moo sounds, then activates its magnetic laser collar.
5. The villain creates cosmic fog, then rings its glowing plasma bell.
6. The villain phases through bulkheads, then rings its glowing plasma bell.
7. The villain levitates in zero gravity, then fires its starlight jetpack.
8. The villain teleports behind doors, then activates its magnetic laser collar.
9. The villain echoes spooky moo sounds, then adjusts its anti gravity saddle.
10. The villain echoes spooky moo sounds, then fires its starlight jetpack.
11. The villain creates cosmic fog, then charges its cybernetic horn ring.
12. The villain echoes spooky moo sounds, then charges its cybernetic horn ring.

Answer Key

The Phantom Bovine of Barnstar Nine

Culprit: Pilot Galloway

Levitate In Zero Gravity · Magnetic Laser Collar · Right Hoofed · Ghostly White · Fresh Grass

Trail: Start 21 → Clue 1 19 → Clue 2 12 → Clue 3 8 → Clue 4 4 → Clue 5 1

Clue 1 (Place value): "THE BEAST DOES NOT WEAR AN ANTI GRAVITY SADDLE"

What is the value of the 5 in 45,341? = 5000 (T) · What is the value of the 7 in 247,303? = 7000 (G) · What is the value of the 5 in 424,571? = 500 (V) · What is the value of the 6 in 83,164? = 60 (E) · What is the value of the 8 in 68,554? = 8000 (O) · What is the value of the 9 in 559,658? = 9000 (S) · What is the value of the 1 in 93,150? = 100 (L) · What is the value of the 9 in 31,497? = 90 (A) · What is the value of the 4 in 34,236? = 4000 (R) · What is the value of the 2 in 32,881? = 2000 (I) · What is the value of the 7 in 21,755? = 700 (H) · What is the value of the 6 in 82,619? = 600 (D) · What is the value of the 1 in 854,815? = 10 (B) · What is the value of the 3 in 650,366? = 300 (Y) · What is the value of the 4 in 785,411? = 400 (N) · What is the value of the 5 in 607,353? = 50 (W)

Clue 2 (Addition): "THE CREATURE STUCK ITS RIGHT HOOF IN THE HATCH"

2172 + 4920 = 7092 (T) · 3182 + 3870 = 7052 (H) · 2888 + 2884 = 5772 (U) · 5420 + 2421 = 7841 (F) · 2763 + 1895 = 4658 (N) · 2848 + 3053 = 5901 (R) · 3315 + 2494 = 5809 (I) · 1579 + 1035 = 2614 (A) · 1809 + 2240 = 4049 (E) · 1376 + 1115 = 2491 (G) · 2591 + 4153 = 6744 (K) · 2289 + 5060 = 7349 (C) · 3610 + 3465 = 7075 (O) · 1597 + 2598 = 4195 (S)

Clue 3 (Subtraction): "THE BOVINE WAS TRAPPED BY FRESH GRASS"

6601 - 3586 = 3015 (T) · 12149 - 4793 = 7356 (W) · 10439 - 3046 = 7393 (O) · 7638 - 3087 = 4551 (F) · 9522 - 3284 = 6238 (H) · 6878 - 2147 = 4731 (A) · 3087 - 1469 = 1618 (N) · 12618 - 3640 = 8978 (P) · 7507 - 3192 = 4315 (D) · 6617 - 2988 = 3629 (I) · 6860 - 2595 = 4265 (B) · 2124 - 694 = 1430 (S) · 3399 - 698 = 2701 (Y) · 5545 - 1340 = 4205 (E) · 11208 - 2386 = 8822 (G) · 4800 - 444 = 4356 (V) · 9845 - 2908 = 6937 (R)

Clue 4 (Multiplication facts (1-12)): "STRANDS OF GHOSTLY WHITE FUR WERE ON THE DOOR"

2 × 10 = 20 (S) · 7 × 8 = 56 (L) · 9 × 8 = 72 (G) · 9 × 12 = 108 (U) · 4 × 1 = 4 (R) · 6 × 2 = 12 (W) · 11 × 5 = 55 (N) · 4 × 8 = 32 (T) · 11 × 7 = 77 (E) · 8 × 1 = 8 (O) · 5 × 3 = 15 (H) · 3 × 2 = 6 (I) · 7 × 4 = 28 (A) · 1 × 1 = 1 (D) · 9 × 10 = 90 (Y) · 3 × 3 = 9 (F)

Clue 5 (Division facts (1-12)): surviving statement is box 1 → Pilot Galloway

110 ÷ 11 = 10 · 32 ÷ 8 = 4 · 72 ÷ 12 = 6 · 90 ÷ 10 = 9 · 12 ÷ 6 = 2 · 49 ÷ 7 = 7 · 88 ÷ 11 = 8 · 60 ÷ 12 = 5 · 84 ÷ 7 = 12 · 36 ÷ 12 = 3 · 132 ÷ 12 = 11