



The Cosmic Cup Heist

Grade 7 math · Integers, Percentages, Order of operations, Exponents, Two-step equations · Reading level grades 7-9

Detective: _____ **Date:** _____

The Golden Mecha-Cat Trophy has vanished from the Kepler-99 Arena! A rogue glitch-bot hacked the gravity grids, bypassed the laser net, and fled into the docking bay. The Chief Arena Programmer needs your help calculating telemetry coordinates to identify the thief before they warp to another galaxy.

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 Glitch-Bot is _____

Possible suspects

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

NAME	SIGNATURE MOVE	SPECIALIZED GEAR	CONTROL ALIGNMENT	VISOR COLOR	SYSTEM VULNERABILITY
Solo	redstone booster jump	solar wind dash	left-hand-aligned controls	glowing sapphire visor	magnetic disruptor pulse
Giga	warp-drive slide tackle	anti-matter spin move	left-hand-aligned controls	bright emerald visor	overloaded solar flare
Orion	nanotech block barrier	solar wind dash	left-hand-aligned controls	glowing sapphire visor	unpatched firewall glitch
Pixel	warp-drive slide tackle	magnetic ball tractor	left-hand-aligned controls	bright emerald visor	magnetic disruptor pulse
Kepler	warp-drive slide tackle	cyber-claw climbing	left-hand-aligned controls	bright emerald visor	overloaded solar flare
Babbage	redstone booster jump	cyber-claw climbing	right-hand-aligned controls	glowing sapphire visor	unpatched firewall glitch
Sparky	redstone booster jump	solar wind dash	right-hand-aligned controls	glowing sapphire visor	magnetic disruptor pulse
Comet	redstone booster jump	cyber-claw climbing	left-hand-aligned controls	glowing sapphire visor	magnetic disruptor pulse
Curry	redstone booster jump	matrix code shielding	left-hand-aligned controls	pulsing neon-pink visor	overloaded solar flare
Sputnik	redstone booster jump	matrix code shielding	right-hand-aligned controls	glowing sapphire visor	magnetic disruptor pulse
Ronaldo	gravity-dribble slam	matrix code shielding	right-hand-aligned controls	bright emerald visor	unpatched firewall glitch
Jordan	redstone booster jump	magnetic ball tractor	right-hand-aligned controls	bright emerald visor	magnetic disruptor pulse
Rover	laser-guided corner kick	matrix code shielding	left-hand-aligned controls	pulsing neon-pink visor	magnetic disruptor pulse
LeBron	laser-guided corner kick	cyber-claw climbing	right-hand-aligned controls	pulsing neon-pink visor	unpatched firewall glitch
Astro	redstone booster jump	matrix code shielding	left-hand-aligned controls	glowing sapphire visor	magnetic disruptor pulse
Messi	nanotech block barrier	anti-matter spin move	left-hand-aligned controls	glowing sapphire visor	overloaded solar flare
Gizmo	nanotech block barrier	anti-matter spin move	left-hand-aligned controls	glowing sapphire visor	magnetic disruptor pulse
Cosmo	warp-drive slide tackle	magnetic ball tractor	right-hand-aligned controls	bright emerald visor	magnetic disruptor pulse
Serena	laser-guided corner kick	cyber-claw climbing	left-hand-aligned controls	glowing sapphire visor	magnetic disruptor pulse
Felix	warp-drive slide tackle	matrix code shielding	left-hand-aligned controls	glowing sapphire visor	unpatched firewall glitch
Marta	warp-drive slide tackle	anti-matter spin move	left-hand-aligned controls	pulsing neon-pink visor	unpatched firewall glitch

CLUE 1 Integers

We analyzed the docking bay elevator logs, which recorded changes in altitude as positive and negative integers. By calculating the net floor shifts, we found a decrypted file.

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

T			T														
16	10	21	16	10	2	21	23	20	14	13	25	4					
		T				T	T										
14	5	16	2	17	14	16	16	21	30	4	27	2	5	17	29	6	21

$$(-14) + 30 = \boxed{} \rightarrow \boxed{\text{T}}$$

$$(-1) + 26 = \boxed{} \rightarrow \boxed{\text{K}}$$

$$22 - (-8) = \boxed{} \rightarrow \boxed{\text{R}}$$

$$3 - (-1) = \boxed{} \rightarrow \boxed{\text{S}}$$

$$4 - (-6) = \boxed{} \rightarrow \boxed{\text{H}}$$

$$20 - (-3) = \boxed{} \rightarrow \boxed{\text{F}}$$

$$(-14) + 43 = \boxed{} \rightarrow \boxed{\text{O}}$$

$$(-13) + 18 = \boxed{} \rightarrow \boxed{\text{N}}$$

$$(-11) + 32 = \boxed{} \rightarrow \boxed{\text{E}}$$

$$(-11) + 24 = \boxed{} \rightarrow \boxed{\text{C}}$$

$$(-12) + 14 = \boxed{} \rightarrow \boxed{\text{I}}$$

$$(-12) + 29 = \boxed{} \rightarrow \boxed{\text{M}}$$

$$10 - (-4) = \boxed{} \rightarrow \boxed{\text{A}}$$

$$(-6) + 12 = \boxed{} \rightarrow \boxed{\text{V}}$$

$$20 - (-7) = \boxed{} \rightarrow \boxed{\text{P}}$$

$$(-6) + 26 = \boxed{} \rightarrow \boxed{\text{L}}$$

Scratch space:

CLUE 2

Our surveillance drones scanned the escape vectors, but the data packet was partially corrupted. Calculating the exact percentage of recovered battery cells unlocked the next data stream.

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

33 13 41 40 29 27 45 40 25 27 33 17 33 21 59 45 46 13 45 40

24 13 40 13 29 40 13 24 17 40 40 26 13 29 27 45 32 27 33 13

25% of 132 = → **L**

20% of 65 = → **E**

20% of 205 = → **F**

60% of 35 = $\rightarrow$

20% of 85 = → **A**

10% of 240 = → **D**

60% of 45 = → ☐

10% of 250 = → **R**

50% of 58 = → **C**

50% of 80 = → **T**

25% of 236 = → **G**

10% of 260 = → **H**

5% of 640 = → **S**

10% of 460 = → **M**

20% of 225 = → **N**

Scratch space:

CLUE 3

Order of operations

To bypass the stadium security lockout, we must execute the calibration commands in the exact order of operations. Solving this equation reveals the suspect's hardware profile.

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

M																	
84	89	107	92	68	119	50	37	57	33	63	62	68	29	50	63	63	
													M				
20	50	62	89	72	63	68	119	47	68	50	93	84	28	119	28	93	62

$8 \times 11 - 4 = \square \rightarrow \text{M}$

$11 \times 10 - 3 = \square \rightarrow \text{G}$

$7 \times 4 - 8 = \square \rightarrow \text{D}$

$9 \times 4 - 3 = \square \rightarrow \text{U}$

$8 \times 9 - 10 = \square \rightarrow \text{S}$

$7 \times 6 - 14 = \square \rightarrow \text{O}$

$9 + 4 \times 5 = \square \rightarrow \text{W}$

$9 \times 7 - 13 = \square \rightarrow \text{I}$

$8 \times 12 - 28 = \square \rightarrow \text{E}$

$8 \times 7 - 9 = \square \rightarrow \text{H}$

$11 \times 9 - 27 = \square \rightarrow \text{B}$

$35 + 4 \times 7 = \square \rightarrow \text{L}$

$22 + 5 \times 3 = \square \rightarrow \text{C}$

$85 + 2 \times 2 = \square \rightarrow \text{A}$

$30 + 9 \times 3 = \square \rightarrow \text{P}$

$11 \times 11 - 2 = \square \rightarrow \text{T}$

$77 + 2 \times 8 = \square \rightarrow \text{R}$

$12 \times 8 - 4 = \square \rightarrow \text{N}$

Scratch space:

CLUE 4 Exponents

The suspect activated a replicating nanobot swarm to block our sensors. By calculating the exponential growth rate of these mini-bots, we cleared the signal and found a clue.

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

B																
121	9	64	4	289	32	49	49	8	144	361	4	343	144	289	196	361
289	49	32	361	169	361	4	125	196	361	324	4	324				

$11^2 = \square \rightarrow$ B	$14^2 = \square \rightarrow$ O	$5^3 = \square \rightarrow$ C	$18^2 = \square \rightarrow$ D
$3^2 = \square \rightarrow$ L	$19^2 = \square \rightarrow$ R	$7^3 = \square \rightarrow$ V	$13^2 = \square \rightarrow$ K
$12^2 = \square \rightarrow$ I	$17^2 = \square \rightarrow$ S	$7^2 = \square \rightarrow$ P	$4^3 = \square \rightarrow$ U
$2^5 = \square \rightarrow$ A	$2^3 = \square \rightarrow$ H	$2^2 = \square \rightarrow$ E	

Scratch space:

CLUE 5**Two-step equations - the last clue**

We tracked the heat signature of the getaway pod, but we need to solve a two-step trajectory equation to isolate the exact coordinates of the thief's escape hatch.

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:

$3x + 4 = 37, x = \boxed{}$

$3x + 9 = 36, x = \boxed{}$

$3x + 4 = 16, x = \boxed{}$

$6x + 11 = 83, x = \boxed{}$

$3x + 12 = 15, x = \boxed{}$

$4x + 10 = 50, x = \boxed{}$

$3x + 4 = 10, x = \boxed{}$

$5x + 8 = 33, x = \boxed{}$

$5x + 12 = 47, x = \boxed{}$

$4x + 12 = 36, x = \boxed{}$

$2x + 8 = 24, x = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain activated the gravity-dribble slam, then stole the ball using magnetic ball tractor.
2. The villain executed a warp-drive slide tackle, then scaled the rafters with cyber-claw climbing.
3. The villain triggered a redstone booster jump, then scaled the rafters with cyber-claw climbing.
4. The villain triggered a redstone booster jump, then escaped inside matrix code shielding.
5. The villain executed a warp-drive slide tackle, then escaped inside matrix code shielding.
6. The villain activated the gravity-dribble slam, then spun through space with anti-matter spin move.
7. The villain aimed a laser-guided corner kick, then stole the ball using magnetic ball tractor.
8. The villain aimed a laser-guided corner kick, then spun through space with anti-matter spin move.
9. The villain aimed a laser-guided corner kick, then scaled the rafters with cyber-claw climbing.
10. The villain built a nanotech block barrier, then spun through space with anti-matter spin move.
11. The villain triggered a redstone booster jump, then boosted away using solar wind dash.
12. The villain triggered a redstone booster jump, then spun through space with anti-matter spin move.

Answer Key

The Cosmic Cup Heist

Culprit: Comet

redstone booster jump · cyber-claw climbing · left-hand-aligned controls · glowing sapphire visor · magnetic disruptor pulse

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

Clue 1 (Integers): "THE THIEF LACKS ANTIMATTER SPIN MOVE"

$(-14) + 30 = 16$ (T) · $(-1) + 26 = 25$ (K) · $22 - (-8) = 30$ (R) · $3 - (-1) = 4$ (S) · $4 - (-6) = 10$ (H) · $20 - (-3) = 23$ (F) · $(-14) + 43 = 29$ (O) · $(-13) + 18 = 5$ (N) · $(-11) + 32 = 21$ (E) · $(-11) + 24 = 13$ (C) · $(-12) + 14 = 2$ (I) · $(-12) + 29 = 17$ (M) · $10 - (-4) = 14$ (A) · $(-6) + 12 = 6$ (V) · $20 - (-7) = 27$ (P) · $(-6) + 26 = 20$ (L)

Clue 2 (Percentages): "LEFT CONTROL ALIGNMENT DETECTED AT THE CONSOLE"

25% of 132 = 33 (L) · 20% of 65 = 13 (E) · 20% of 205 = 41 (F) · 60% of 35 = 21 (I) · 20% of 85 = 17 (A) · 10% of 240 = 24 (D) · 60% of 45 = 27 (O) · 10% of 250 = 25 (R) · 50% of 58 = 29 (C) · 50% of 80 = 40 (T) · 25% of 236 = 59 (G) · 10% of 260 = 26 (H) · 5% of 640 = 32 (S) · 10% of 460 = 46 (M) · 20% of 225 = 45 (N)

Clue 3 (Order of operations): "MAGNETIC PULSE WILL DISABLE THEIR MOTORS"

$8 \times 11 - 4 = 84$ (M) · $11 \times 10 - 3 = 107$ (G) · $7 \times 4 - 8 = 20$ (D) · $9 \times 4 - 3 = 33$ (U) · $8 \times 9 - 10 = 62$ (S) · $7 \times 6 - 14 = 28$ (O) · $9 + 4 \times 5 = 29$ (W) · $9 \times 7 - 13 = 50$ (I) · $8 \times 12 - 28 = 68$ (E) · $8 \times 7 - 9 = 47$ (H) · $11 \times 9 - 27 = 72$ (B) · $35 + 4 \times 7 = 63$ (L) · $22 + 5 \times 3 = 37$ (C) · $85 + 2 \times 2 = 89$ (A) · $30 + 9 \times 3 = 57$ (P) · $11 \times 11 - 2 = 119$ (T) · $77 + 2 \times 8 = 93$ (R) · $12 \times 8 - 4 = 92$ (N)

Clue 4 (Exponents): "BLUE SAPPHIRE VISOR SPARK RECORDED"

$11^2 = 121$ (B) · $14^2 = 196$ (O) · $5^3 = 125$ (C) · $18^2 = 324$ (D) · $3^2 = 9$ (L) · $19^2 = 361$ (R) · $7^3 = 343$ (V) · $13^2 = 169$ (K) · $12^2 = 144$ (I) · $17^2 = 289$ (S) · $7^2 = 49$ (P) · $4^3 = 64$ (U) · $2^5 = 32$ (A) · $2^3 = 8$ (H) · $2^2 = 4$ (E)

Clue 5 (Two-step equations): surviving statement is box 3 → Comet

$3x + 4 = 37, x = 11$ · $3x + 9 = 36, x = 9$ · $3x + 4 = 16, x = 4$ · $6x + 11 = 83, x = 12$ · $3x + 12 = 15, x = 1$ · $4x + 10 = 50, x = 10$ · $3x + 4 = 10, x = 2$ · $5x + 8 = 33, x = 5$ · $5x + 12 = 47, x = 7$ · $4x + 12 = 36, x = 6$ · $2x + 8 = 24, x = 8$