



The Intergalactic Cup Sabotage

Grade 7 math · Fractions of a number, Bar models, Word problems, Multi-step word problems · Reading level grades 7-9

Detective: _____ **Date:** _____

During the championship final of the Intergalactic Soccer League, an unknown rogue sabotaged the zero-gravity field generators! The Head Referee called in space detective agents to analyze stadium sensor logs and catch the culprit before halftime.

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 Rogue is _____

Possible suspects

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

NAME	SPECIAL MOVE	GEAR TECH	DOMINANT FOOT	HAIRSTYLE	GLITCHED BY
Keira Walsh	Plasma Super-Kick	Gravity Shield	Right-Footed	Neon Blue Spikes	Magnetic Storms
Luka Modric	Tractor-Beam Control	Ion Visor	Right-Footed	Sleek Silver Fade	Cosmic Dust
Alex Morgan	Tractor-Beam Control	Starlight Gloves	Left-Footed	Neon Blue Spikes	Magnetic Storms
Federico Valverde	Plasma Super-Kick	Nebula Booster	Right-Footed	Zero-G Braids	Cosmic Dust
Bruno Fernandes	Plasma Super-Kick	Starlight Gloves	Left-Footed	Neon Blue Spikes	Starlight Flares
Lauren James	Tractor-Beam Control	Gravity Shield	Right-Footed	Neon Blue Spikes	Cosmic Dust
Sam Kerr	Warp-Speed Dribble	Solar Cleats	Right-Footed	Neon Blue Spikes	Cosmic Dust
Christine Sinclair	Warp-Speed Dribble	Solar Cleats	Left-Footed	Neon Blue Spikes	Cosmic Dust
Alexia Putellas	Plasma Super-Kick	Nebula Booster	Right-Footed	Zero-G Braids	Magnetic Storms
Cristiano Ronaldo	Warp-Speed Dribble	Nebula Booster	Right-Footed	Sleek Silver Fade	Magnetic Storms
Bukayo Saka	Photon Header	Solar Cleats	Left-Footed	Sleek Silver Fade	Cosmic Dust
Marta Vieira	Warp-Speed Dribble	Gravity Shield	Left-Footed	Neon Blue Spikes	Cosmic Dust
Kylian Mbappe	Warp-Speed Dribble	Nebula Booster	Right-Footed	Zero-G Braids	Cosmic Dust
Cole Palmer	Zero-G Curveball	Nebula Booster	Left-Footed	Neon Blue Spikes	Starlight Flares
Aitana Bonmati	Tractor-Beam Control	Ion Visor	Right-Footed	Neon Blue Spikes	Cosmic Dust
Marcus Rashford	Plasma Super-Kick	Solar Cleats	Left-Footed	Neon Blue Spikes	Cosmic Dust
Lionel Messi	Plasma Super-Kick	Nebula Booster	Right-Footed	Neon Blue Spikes	Magnetic Storms
Jude Bellingham	Zero-G Curveball	Nebula Booster	Right-Footed	Neon Blue Spikes	Cosmic Dust
Wendy Renard	Plasma Super-Kick	Solar Cleats	Right-Footed	Neon Blue Spikes	Cosmic Dust
Pedri Gonzalez	Photon Header	Nebula Booster	Right-Footed	Zero-G Braids	Magnetic Storms
Erling Haaland	Plasma Super-Kick	Ion Visor	Left-Footed	Sleek Silver Fade	Magnetic Storms

CLUE 1

Fractions of a number

We retrieved the entrance scanner logs from the stadium airlock. Solving these multi-step flight calculations reveals gear we can rule out.

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

T																		T
54	28	49	32	8	20	20	35	8	3	9	10	49	15	3	10	54		
48	15	49	35	3	8	10	3	32	8	15	10	34						

$$1/3 \text{ of } 162 = \boxed{} \rightarrow \boxed{\text{T}}$$

$$5/10 \text{ of } 16 = \boxed{} \rightarrow \boxed{\text{I}}$$

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

$$9/10 \text{ of } 10 = \boxed{} \rightarrow \boxed{\text{D}}$$

$$2/6 \text{ of } 105 = \boxed{} \rightarrow \boxed{\text{A}}$$

$$6/8 \text{ of } 20 = \boxed{} \rightarrow \boxed{\text{S}}$$

$$1/2 \text{ of } 20 = \boxed{} \rightarrow \boxed{\text{O}}$$

$$7/8 \text{ of } 32 = \boxed{} \rightarrow \boxed{\text{H}}$$

$$3/4 \text{ of } 64 = \boxed{} \rightarrow \boxed{\text{U}}$$

$$1/3 \text{ of } 147 = \boxed{} \rightarrow \boxed{\text{E}}$$

$$2/8 \text{ of } 128 = \boxed{} \rightarrow \boxed{\text{V}}$$

$$1/4 \text{ of } 136 = \boxed{} \rightarrow \boxed{\text{R}}$$

$$2/5 \text{ of } 50 = \boxed{} \rightarrow \boxed{\text{L}}$$

Scratch space:

CLUE 2

Bar model word problems

The power grid monitor generated bar models showing thrust outputs. Compare these visual power models to isolate the suspect's dominant foot.

Draw a bar model to solve each word problem, then write its letter in the boxes to fill in the missing word.

A witness saw the villain was R E D .

30 7 130 44 26 15 19 19 26

There were 59 orbit cones in all. 29 orbit cones were used. How many orbit cones are left?

draw a bar model

Answer: → R

There were 30 starlight passes in all. 11 starlight passes were used. How many starlight passes are left?

draw a bar model

Answer: → O

One group collected 9 booster badges and another group collected 17 booster badges. How many booster badges in all?

draw a bar model

Answer: → T

There were 159 orbit cones in all. 29 orbit cones were used. How many orbit cones are left?

draw a bar model

Answer: → G

Flight Controller shares 132 orbit cones equally among 3 teams. How many orbit cones does each team get?

draw a bar model

Answer: → H

Flight Controller has 135 orbit cones, packed 9 to a bag. How many bags can be filled?

draw a bar model

Answer: → F

The red team has 29 energy pods and the blue team has 22 energy pods. How many more energy pods does the red team have?

draw a bar model

Answer: → I

CLUE 3

Word problems

Pitch side drone logs recorded several suspicious incidents. Solve these scenario word problems to pinpoint what glitched the culprit's tech.

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

Someone scared the villain off with C C T .

56 11 47 28 59 56 38 29 47

Flight Controller found 21 starlight passes yesterday and 35 more today. How many starlight passes in all?

Answer: → C

There were 47 plasma balls. 36 were used up. How many plasma balls are left?

Answer: → O

There were 40 energy pods. 11 were used up. How many energy pods are left?

Answer: → U

Flight Controller lined up 7 rows of 4 booster badges. How many booster badges in all?

Answer: → M

There were 99 booster badges. 40 were used up. How many booster badges are left?

Answer: → I

There were 69 energy pods. 22 were used up. How many energy pods are left?

Answer: → S

There were 56 booster badges. 18 were used up. How many booster badges are left?

Answer: → D

Scratch space:

CLUE 4

Multi-step word problems

The stadium floodlight array registered fractional power drains. Calculate fractions of total energy output to decode hair evidence left at the goal.

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

A strand of N N P I K hair turned up at the scene.

20 8 12 20 27 33 38 8 80 8 80

Flight Controller collected 37 orbit cones in the morning and 23 orbit cones in the afternoon, then split them equally among 3 Astra Strikers. How many orbit cones did each get?

Answer: → N

Flight Controller collected 247 orbit cones in the morning and 73 orbit cones in the afternoon, then split them equally among 4 Astra Strikers. How many orbit cones did each get?

Answer: → S

Flight Controller collected 15 plasma balls in the morning and 1 plasma balls in the afternoon, then split them equally among 2 Astra Strikers. How many plasma balls did each get?

Answer: → E

There were 285 booster badges in all. 21 booster badges were set aside. The rest were shared equally among 8 Astra Strikers. How many booster badges did each get?

Answer: → L

Flight Controller collected 47 plasma balls in the morning and 34 plasma balls in the afternoon, then split them equally among 3 Astra Strikers. How many plasma balls did each get?

Answer: → B

There were 88 energy pods in all. 40 energy pods were set aside. The rest were shared equally among 4 Astra Strikers. How many energy pods did each get?

Answer: → O

Flight Controller filled 4 boxes with 4 orbit cones each, then found 22 more orbit cones. How many orbit cones are there in all?

Answer: → U

Scratch space:

CLUE 5**Fractions of a number - the last clue**

Analyzing fractional amounts of remaining booster fuel gives us our final piece of trace evidence.

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:

$1/2 \text{ of } 22 = \boxed{}$

$2/4 \text{ of } 10 = \boxed{}$

$2/4 \text{ of } 14 = \boxed{}$

$3/6 \text{ of } 16 = \boxed{}$

$1/8 \text{ of } 32 = \boxed{}$

$2/10 \text{ of } 50 = \boxed{}$

$1/5 \text{ of } 15 = \boxed{}$

$1/3 \text{ of } 3 = \boxed{}$

$1/5 \text{ of } 45 = \boxed{}$

$5/10 \text{ of } 4 = \boxed{}$

$3/5 \text{ of } 20 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain curved a shot through gravity waves, then deployed a gravity shield.
2. The villain directed a photon header into orbit, then ignited a nebula booster.
3. The villain directed a photon header into orbit, then charged up starlight gloves.
4. The villain fired a plasma kick across the stadium, then deployed a gravity shield.
5. The villain warped past defense drones, then activated solar cleats for speed.
6. The villain pulled the ball with a tractor beam, then deployed a gravity shield.
7. The villain curved a shot through gravity waves, then ignited a nebula booster.
8. The villain fired a plasma kick across the stadium, then calibrated an ion visor.
9. The villain warped past defense drones, then charged up starlight gloves.
10. The villain directed a photon header into orbit, then calibrated an ion visor.
11. The villain fired a plasma kick across the stadium, then activated solar cleats for speed.
12. The villain fired a plasma kick across the stadium, then charged up starlight gloves.

Answer Key

The Intergalactic Cup Sabotage

Culprit: Lauren James

Tractor-Beam Control · Gravity Shield · Right-Footed · Neon Blue Spikes · Cosmic Dust

Trail: Start 21 → Clue 1 18 → Clue 2 11 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Fractions of a number): "THE VILLAIN DOES NOT USE AN ION VISOR"

$\frac{1}{3}$ of 162 = 54 (T) · $\frac{5}{10}$ of 16 = 8 (I) · $\frac{3}{6}$ of 6 = 3 (N) · $\frac{9}{10}$ of 10 = 9 (D) · $\frac{2}{6}$ of 105 = 35 (A) · $\frac{6}{8}$ of 20 = 15 (S) · $\frac{1}{2}$ of 20 = 10 (O) · $\frac{7}{8}$ of 32 = 28 (H) · $\frac{3}{4}$ of 64 = 48 (U) · $\frac{1}{3}$ of 147 = 49 (E) · $\frac{2}{8}$ of 128 = 32 (V) · $\frac{1}{4}$ of 136 = 34 (R) · $\frac{2}{5}$ of 50 = 20 (L)

Clue 2 (Bar model word problems): "RIGHT FOOTED"

There were 59 orbit cones in all. 29 orbit cones were used. How many orbit cones are left? = 30 (R) · There were 30 starlight passes in all. 11 starlight passes were used. How many starlight passes are left? = 19 (O) · One group collected 9 booster badges and another group collected 17 booster badges. How many booster badges in all? = 26 (T) · There were 159 orbit cones in all. 29 orbit cones were used. How many orbit cones are left? = 130 (G) · Flight Controller shares 132 orbit cones equally among 3 teams. How many orbit cones does each team get? = 44 (H) · Flight Controller has 135 orbit cones, packed 9 to a bag. How many bags can be filled? = 15 (F) · The red team has 29 energy pods and the blue team has 22 energy pods. How many more energy pods does the red team have? = 7 (I)

Clue 3 (Word problems): "COSMIC DUST"

Flight Controller found 21 starlight passes yesterday and 35 more today. How many starlight passes in all? = 56 (C) · There were 47 plasma balls. 36 were used up. How many plasma balls are left? = 11 (O) · There were 40 energy pods. 11 were used up. How many energy pods are left? = 29 (U) · Flight Controller lined up 7 rows of 4 booster badges. How many booster badges in all? = 28 (M) · There were 99 booster badges. 40 were used up. How many booster badges are left? = 59 (I) · There were 69 energy pods. 22 were used up. How many energy pods are left? = 47 (S) · There were 56 booster badges. 18 were used up. How many booster badges are left? = 38 (D)

Clue 4 (Multi-step word problems): "NEON BLUE SPIKES"

Flight Controller collected 37 orbit cones in the morning and 23 orbit cones in the afternoon, then split them equally among 3 Astra Strikers. How many orbit cones did each get? = 20 (N) · Flight Controller collected 247 orbit cones in the morning and 73 orbit cones in the afternoon, then split them equally among 4 Astra Strikers. How many orbit cones did each get? = 80 (S) · Flight Controller collected 15 plasma balls in the morning and 1 plasma balls in the afternoon, then split them equally among 2 Astra Strikers. How many plasma balls did each get? = 8 (E) · There were 285 booster badges in all. 21 booster badges were set aside. The rest were shared equally among 8 Astra Strikers. How many booster badges did each get? = 33 (L) · Flight Controller collected 47 plasma balls in the morning and 34 plasma balls in the afternoon, then split them equally among 3 Astra Strikers. How many plasma balls did each get? = 27 (B) · There were 88 energy pods in all. 40 energy pods were set aside. The rest were shared equally among 4 Astra Strikers. How many energy pods did each get? = 12 (O) · Flight Controller filled 4 boxes with 4 orbit cones each, then found 22 more orbit cones. How many orbit cones are there in all? = 38 (U)

Clue 5 (Fractions of a number): surviving statement is box 6 → Lauren James

$\frac{1}{2}$ of 22 = 11 · $\frac{2}{4}$ of 10 = 5 · $\frac{2}{4}$ of 14 = 7 · $\frac{3}{6}$ of 16 = 8 · $\frac{1}{8}$ of 32 = 4 · $\frac{2}{10}$ of 50 = 10 · $\frac{1}{5}$ of 15 = 3 · $\frac{1}{3}$ of 3 = 1 · $\frac{1}{5}$ of 45 = 9 · $\frac{5}{10}$ of 4 = 2 · $\frac{3}{5}$ of 20 = 12