



The Wind Tunnel Sabotage

Grade 10 math · Pythagorean theorem, Square roots, Exponents, Order of operations · Reading level grades 7-9

Detective: _____ **Date:** _____

A saboteur has stolen the highly classified engine maps for the new McLaren hypercar! The Chief Telemetry Engineer was locked inside the high-speed wind tunnel, and the suspect fled the paddock in a disguised test mule. We must decode the performance logs to 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 Rogue Driver is _____

Possible suspects

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

NAME	ENGINE MAP TYPE	CHASSIS MODE	TELEMETRY SIGNATURE	HELMET VISOR TINT	COOLING VULNERABILITY
Gilles	Drag Reduction	Slipstream Mode	Left Foot Brake	Neon Chrome Visor	Brake Pad Wear
Lewis	Thermal Kinetic	Active Suspension	Left Foot Brake	Gold Iridium Visor	Radiator Fan Block
Jenson	Torque Vector	Active Aero	Left Foot Brake	Gold Iridium Visor	Brake Pad Wear
Pedro	Thermal Kinetic	Active Suspension	Right Foot Brake	Midnight Tint Visor	Radiator Fan Block
Mika	Torque Vector	Slipstream Mode	Right Foot Brake	Neon Chrome Visor	Brake Pad Wear
Lando	Torque Vector	Active Suspension	Right Foot Brake	Gold Iridium Visor	Radiator Fan Block
Juan	Torque Vector	Active Aero	Right Foot Brake	Gold Iridium Visor	Brake Pad Wear
Kevin	Launch Control	Active Aero	Right Foot Brake	Midnight Tint Visor	Brake Pad Wear
Ayrton	Torque Vector	Hydraulic Tilt	Left Foot Brake	Neon Chrome Visor	Radiator Fan Block
Nico	Drag Reduction	Active Suspension	Left Foot Brake	Gold Iridium Visor	Radiator Fan Block
Daniel	Torque Vector	Active Aero	Right Foot Brake	Midnight Tint Visor	Radiator Fan Block
Fernando	Drag Reduction	Active Aero	Left Foot Brake	Gold Iridium Visor	Radiator Fan Block
Alain	Torque Vector	Hydraulic Tilt	Left Foot Brake	Gold Iridium Visor	Brake Pad Wear
Emerson	Apex Boost	Active Aero	Left Foot Brake	Midnight Tint Visor	Radiator Fan Block
Oscar	Torque Vector	Hydraulic Tilt	Left Foot Brake	Midnight Tint Visor	Brake Pad Wear
Denny	Apex Boost	Ground Effect	Right Foot Brake	Gold Iridium Visor	Battery Thermal Spikes
Niki	Launch Control	Active Suspension	Left Foot Brake	Gold Iridium Visor	Radiator Fan Block
Zak	Launch Control	Ground Effect	Left Foot Brake	Gold Iridium Visor	Battery Thermal Spikes
Stoffel	Drag Reduction	Slipstream Mode	Left Foot Brake	Gold Iridium Visor	Battery Thermal Spikes
Carlos	Drag Reduction	Active Suspension	Left Foot Brake	Gold Iridium Visor	Battery Thermal Spikes
Bruce	Torque Vector	Hydraulic Tilt	Left Foot Brake	Gold Iridium Visor	Radiator Fan Block

CLUE 1

Pythagorean theorem

To locate the saboteur, our telemetry drone needs to measure the straight-line diagonal distance from the pit lane wall to the main paddock roof.

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

T																		
123	37	41	51	74	85	125	41	51	75	17	41	51	20	74	41	34		
		T													T		T	
52	74	123	125	34	41	37	40	20	51	75	125	26	13	17	123	13	26	123

legs 27 and 120, hypotenuse = → **T**

legs 21 and 72, hypotenuse = → **A**

legs 40 and 75, hypotenuse = → **G**

legs 10 and 24, hypotenuse = → **L**

legs 8 and 15, hypotenuse = → **C**

legs 12 and 35, hypotenuse = → **H**

legs 9 and 40, hypotenuse = → **E**

legs 35 and 120, hypotenuse = → **U**

legs 20 and 48, hypotenuse = → **N**

legs 12 and 16, hypotenuse = → **D**

legs 24 and 45, hypotenuse = → **R**

legs 5 and 12, hypotenuse = → **I**

legs 24 and 70, hypotenuse = → **O**

legs 24 and 32, hypotenuse = → **Y**

legs 16 and 30, hypotenuse = → **S**

Scratch space:

CLUE 2 Square roots

We can narrow down the escape route by calculating the exact side length of the square tire-testing pad from its total area.

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

T					T						T			T					
2	15	20	6	17	2	13	18	4	4	21	20	2	20	7	2	20	21		
								T				T							
15	20	18	25	19	4	20	24	2	24	11	11	2	23	9	18	8	17	5	22

$\sqrt{4} = \square \rightarrow \text{T}$	$\sqrt{49} = \square \rightarrow \text{C}$	$\sqrt{289} = \square \rightarrow \text{I}$
$\sqrt{16} = \square \rightarrow \text{L}$	$\sqrt{400} = \square \rightarrow \text{E}$	$\sqrt{64} = \square \rightarrow \text{K}$
$\sqrt{576} = \square \rightarrow \text{F}$	$\sqrt{324} = \square \rightarrow \text{A}$	$\sqrt{225} = \square \rightarrow \text{H}$
$\sqrt{529} = \square \rightarrow \text{B}$	$\sqrt{625} = \square \rightarrow \text{V}$	$\sqrt{81} = \square \rightarrow \text{R}$
$\sqrt{121} = \square \rightarrow \text{O}$	$\sqrt{441} = \square \rightarrow \text{D}$	$\sqrt{169} = \square \rightarrow \text{W}$
$\sqrt{25} = \square \rightarrow \text{N}$	$\sqrt{361} = \square \rightarrow \text{Y}$	$\sqrt{36} = \square \rightarrow \text{P}$
$\sqrt{484} = \square \rightarrow \text{G}$		

Scratch space:

CLUE 3 Exponents

The engine's hybrid thermal system is heating up rapidly, and we must calculate the exponential power surge to see how far the racer got.

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

B																			
361	289	144	9	16	125	343	324	121	343	216	121	100	144	324	400	121	625	243	
400	144	324	9	125	343	100	81	125	32	100	144	49	216	100					

$19^2 = \square \rightarrow \text{B}$	$3^5 = \square \rightarrow \text{S}$	$12^2 = \square \rightarrow \text{O}$	$2^5 = \square \rightarrow \text{M}$
$7^3 = \square \rightarrow \text{D}$	$2^4 = \square \rightarrow \text{K}$	$3^4 = \square \rightarrow \text{H}$	$6^3 = \square \rightarrow \text{I}$
$5^3 = \square \rightarrow \text{E}$	$20^2 = \square \rightarrow \text{F}$	$7^2 = \square \rightarrow \text{P}$	$3^2 = \square \rightarrow \text{C}$
$18^2 = \square \rightarrow \text{R}$	$11^2 = \square \rightarrow \text{A}$	$10^2 = \square \rightarrow \text{T}$	$17^2 = \square \rightarrow \text{L}$
$5^4 = \square \rightarrow \text{N}$			

Scratch space:

CLUE 4 Order of operations

To decode the corrupted telemetry signal, we must solve a complex, multi-step sensor equation in the correct mathematical order.

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

G											
61	45	17	79	39	85	39	79	39	105	77	

85	89	68	17	89	84	58	39	45	28	13	96	89	85	89	45	28	58	37	89

84	80	77	89	85	80

$37 + 4 \times 6 = \square \rightarrow \text{G}$	$29 + 4 \times 4 = \square \rightarrow \text{O}$	$8 \times 9 - 14 = \square \rightarrow \text{T}$
$62 + 2 \times 9 = \square \rightarrow \text{A}$	$81 + 2 \times 2 = \square \rightarrow \text{R}$	$4 \times 11 - 5 = \square \rightarrow \text{I}$
$88 + 2 \times 4 = \square \rightarrow \text{W}$	$6 \times 3 - 5 = \square \rightarrow \text{S}$	$12 \times 6 - 4 = \square \rightarrow \text{F}$
$57 + 4 \times 5 = \square \rightarrow \text{M}$	$12 \times 4 - 11 = \square \rightarrow \text{H}$	$35 + 7 \times 7 = \square \rightarrow \text{C}$
$11 \times 8 - 9 = \square \rightarrow \text{D}$	$83 + 3 \times 2 = \square \rightarrow \text{E}$	$5 \times 10 - 22 = \square \rightarrow \text{N}$
$87 + 9 \times 2 = \square \rightarrow \text{U}$	$1 + 2 \times 8 = \square \rightarrow \text{L}$	

Scratch space:

CLUE 5**Square roots - the last clue**

Our tracking computer needs to calculate the precise speed value from the kinetic energy formula, which requires finding a square root.

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:

$\text{sqrt}(64) = \boxed{}$

$\text{sqrt}(16) = \boxed{}$

$\text{sqrt}(81) = \boxed{}$

$\text{sqrt}(100) = \boxed{}$

$\text{sqrt}(36) = \boxed{}$

$\text{sqrt}(25) = \boxed{}$

$\text{sqrt}(49) = \boxed{}$

$\text{sqrt}(144) = \boxed{}$

$\text{sqrt}(1) = \boxed{}$

$\text{sqrt}(4) = \boxed{}$

$\text{sqrt}(121) = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain engages the advanced torque vectoring, then seals the underbody ground effect tunnels.
2. The villain launches with high-grip control, then seals the underbody ground effect tunnels.
3. The villain activates the drag reduction system, then deploys the active carbon wings.
4. The villain triggers the thermal kinetic recovery, then stiffens the active electromagnetic suspension.
5. The villain launches with high-grip control, then deploys the active carbon wings.
6. The villain engages the apex boost, then deploys the active carbon wings.
7. The villain engages the apex boost, then stiffens the active electromagnetic suspension.
8. The villain activates the drag reduction system, then stiffens the active electromagnetic suspension.
9. The villain launches with high-grip control, then stiffens the active electromagnetic suspension.
10. The villain triggers the thermal kinetic recovery, then tucks into the slipstream of the pace car.
11. The villain activates the drag reduction system, then tucks into the slipstream of the pace car.
12. The villain triggers the thermal kinetic recovery, then adjusts the hydraulic chassis pitch.

Answer Key

The Wind Tunnel Sabotage

Culprit: Fernando

Drag Reduction · Active Aero · Left Foot Brake · Gold Iridium Visor · Radiator Fan Block

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

Clue 1 (Pythagorean theorem): "THE ROGUE RACER DOES NOT USE HYDRAULIC TILT"

legs 27 and 120, hypotenuse = 123 (T) · legs 21 and 72, hypotenuse = 75 (A) · legs 40 and 75, hypotenuse = 85 (G) · legs 10 and 24, hypotenuse = 26 (L) · legs 8 and 15, hypotenuse = 17 (C) · legs 12 and 35, hypotenuse = 37 (H) · legs 9 and 40, hypotenuse = 41 (E) · legs 35 and 120, hypotenuse = 125 (U) · legs 20 and 48, hypotenuse = 52 (N) · legs 12 and 16, hypotenuse = 20 (D) · legs 24 and 45, hypotenuse = 51 (R) · legs 5 and 12, hypotenuse = 13 (I) · legs 24 and 70, hypotenuse = 74 (O) · legs 24 and 32, hypotenuse = 40 (Y) · legs 16 and 30, hypotenuse = 34 (S)

Clue 2 (Square roots): "THE PIT WALL DETECTED HEAVY LEFT FOOT BRAKING"

$\sqrt{4} = 2$ (T) · $\sqrt{49} = 7$ (C) · $\sqrt{289} = 17$ (I) · $\sqrt{16} = 4$ (L) · $\sqrt{400} = 20$ (E) · $\sqrt{64} = 8$ (K) · $\sqrt{576} = 24$ (F) · $\sqrt{324} = 18$ (A) · $\sqrt{225} = 15$ (H) · $\sqrt{529} = 23$ (B) · $\sqrt{625} = 25$ (V) · $\sqrt{81} = 9$ (R) · $\sqrt{121} = 11$ (O) · $\sqrt{441} = 21$ (D) · $\sqrt{169} = 13$ (W) · $\sqrt{25} = 5$ (N) · $\sqrt{361} = 19$ (Y) · $\sqrt{36} = 6$ (P) · $\sqrt{484} = 22$ (G)

Clue 3 (Exponents): "BLOCKED RADIATOR FANS FORCED THEM TO PIT"

$19^2 = 361$ (B) · $3^5 = 243$ (S) · $12^2 = 144$ (O) · $2^5 = 32$ (M) · $7^3 = 343$ (D) · $2^4 = 16$ (K) · $3^4 = 81$ (H) · $6^3 = 216$ (I) · $5^3 = 125$ (E) · $20^2 = 400$ (F) · $7^2 = 49$ (P) · $3^2 = 9$ (C) · $18^2 = 324$ (R) · $11^2 = 121$ (A) · $10^2 = 100$ (T) · $17^2 = 289$ (L) · $5^4 = 625$ (N)

Clue 4 (Order of operations): "GOLD IRIIDIUM REFLECTIONS WERE ON THE CAMERA"

$37 + 4 \times 6 = 61$ (G) · $29 + 4 \times 4 = 45$ (O) · $8 \times 9 - 14 = 58$ (T) · $62 + 2 \times 9 = 80$ (A) · $81 + 2 \times 2 = 85$ (R) · $4 \times 11 - 5 = 39$ (I) · $88 + 2 \times 4 = 96$ (W) · $6 \times 3 - 5 = 13$ (S) · $12 \times 6 - 4 = 68$ (F) · $57 + 4 \times 5 = 77$ (M) · $12 \times 4 - 11 = 37$ (H) · $35 + 7 \times 7 = 84$ (C) · $11 \times 8 - 9 = 79$ (D) · $83 + 3 \times 2 = 89$ (E) · $5 \times 10 - 22 = 28$ (N) · $87 + 9 \times 2 = 105$ (U) · $1 + 2 \times 8 = 17$ (L)

Clue 5 (Square roots): surviving statement is box 3 → Fernando

$\sqrt{64} = 8$ · $\sqrt{16} = 4$ · $\sqrt{81} = 9$ · $\sqrt{100} = 10$ · $\sqrt{36} = 6$ · $\sqrt{25} = 5$ · $\sqrt{49} = 7$ · $\sqrt{144} = 12$ · $\sqrt{1} = 1$ · $\sqrt{4} = 2$ · $\sqrt{121} = 11$