



The Rogue Bot Protocol

Grade 6 math · Percentages, Exponents, Order of operations, Multiplication, Division · Reading level grades 5-6

Detective: _____ Date: _____

A state-of-the-art robot has escaped the testing arena and hijacked the central mainframe. We must analyze the system logs and track down the metallic culprit before they lock us out of the network forever!

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 Bot is _____

Possible suspects

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

NAME	PRIMARY TOOL	SECONDARY MODULE	INDICATOR LIGHT LOCATION	CABLING TYPE	SHUTDOWN PORT
Ultron	Magnetic Crane	Cargo Hook	Chest Light	Steel Grill	USB Port
Eve	Driller Arm	Laser Welder	Chest Light	Copper Cables	Audio Jack
CThreePO	Jet Thruster	Radar Dish	Shoulder Light	Brass Antenna	Audio Jack
Atlas	Plasma Torch	Radar Dish	Chest Light	Brass Antenna	USB Port
Optimus	Magnetic Crane	Solar Panel	Shoulder Light	Brass Antenna	USB Port
Rosie	Magnetic Crane	Radar Dish	Shoulder Light	Copper Cables	Power Plug
Spot	Buzz Saw	Radar Dish	Shoulder Light	Copper Cables	Power Plug
Alita	Buzz Saw	Solar Panel	Shoulder Light	Brass Antenna	USB Port
Megatron	Buzz Saw	Radar Dish	Chest Light	Brass Antenna	Audio Jack
RTwoDTwo	Driller Arm	Radar Dish	Chest Light	Brass Antenna	Audio Jack
Wall E	Jet Thruster	Sonic Horn	Chest Light	Copper Cables	USB Port
Gort	Driller Arm	Solar Panel	Chest Light	Brass Antenna	Power Plug
Baymax	Magnetic Crane	Radar Dish	Shoulder Light	Brass Antenna	USB Port
Curiosity	Magnetic Crane	Cargo Hook	Chest Light	Brass Antenna	Audio Jack
Data	Jet Thruster	Sonic Horn	Chest Light	Steel Grill	Audio Jack
Robby	Plasma Torch	Cargo Hook	Shoulder Light	Copper Cables	USB Port
Asimo	Plasma Torch	Sonic Horn	Shoulder Light	Brass Antenna	Power Plug
Clank	Buzz Saw	Laser Welder	Chest Light	Brass Antenna	Audio Jack
Gizmo	Plasma Torch	Solar Panel	Chest Light	Copper Cables	Audio Jack
Hal	Jet Thruster	Radar Dish	Chest Light	Brass Antenna	Audio Jack
Bumblebee	Driller Arm	Solar Panel	Chest Light	Copper Cables	USB Port

CLUE 1 Percentages

We scanned the mainframe database and found a partially corrupted log. Solve this percentage of the code to reveal the first clue.

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

23 4 13 24 9 36 7 13 19 9 23 45 9 13 38 34 9 23

7 38 13 20 22 20 38 13 24 26 13 22 45 13 24

50% of 46 = $\rightarrow$ **T**

50% of 26 = → **E**

60% of 75 = $\rightarrow$ **D**

20% of 120 = $\rightarrow$ **R**

10% of 360 = → **G**

40% of 50 = $\rightarrow$ **A**

10% of 70 = $\rightarrow$ **U**

5% of 760 = $\rightarrow$ **S**

50% of 8 = $\rightarrow$ **H**

20% of 170 = $\rightarrow$ **N**

40% of 65 = $\rightarrow$ **W**

25% of 36 = $\rightarrow$

10% of 190 = $\rightarrow$ **B**

40% of 55 = $\rightarrow$ **L**

Scratch space:

CLUE 2 Exponents

The signal strength of the rogue robot grows exponentially. Calculate the power power-ups to track down where its signal is strongest.

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

T						T									T	
243	121	256	49	169	324	243	121	125	8	125	25	16	324	289	121	243

				T					T
361	121	256	8	243	4	324	289	121	243

$3^5 = \square \rightarrow \text{T}$	$11^2 = \square \rightarrow \text{H}$	$2^4 = \square \rightarrow \text{R}$	$4^4 = \square \rightarrow \text{E}$
$2^3 = \square \rightarrow \text{S}$	$19^2 = \square \rightarrow \text{C}$	$18^2 = \square \rightarrow \text{I}$	$5^3 = \square \rightarrow \text{A}$
$2^2 = \square \rightarrow \text{L}$	$13^2 = \square \rightarrow \text{N}$	$5^2 = \square \rightarrow \text{B}$	$17^2 = \square \rightarrow \text{G}$
$7^2 = \square \rightarrow \text{U}$			

Scratch space:

Order of operations

The robot locked the doors with a multi-step security equation. Solve the equation in the correct order to crack the code.

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

7 57 72 43 9 51 18 54 8 43 80 25 44 54 15 7 18 77

7 57 72 19 43 18 17 50 72 43 25 17 72 77 77

$$1 + 3 \times 2 = \boxed{} \rightarrow \boxed{\mathbf{T}}$$

$$17 + 2 \times 4 = \boxed{} \rightarrow \boxed{\mathbf{K}}$$

$$12 \times 9 - 28 = \boxed{} \rightarrow \boxed{\text{C}}$$

$$9 \times 8 - 15 = \boxed{} \rightarrow \boxed{\text{H}}$$

$$60 + 3 \times 4 = \boxed{} \rightarrow \boxed{\text{E}}$$

$12 \times 6 - 22 = \boxed{} \rightarrow \boxed{\text{W}}$

$$15 + 7 \times 4 = \boxed{} \rightarrow \mathbf{A}$$

$$7 \times 4 - 13 = \boxed{} \rightarrow \boxed{\mathbf{R}}$$

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

$$9 + 5 \times 2 = \boxed{} \rightarrow \boxed{\text{M}}$$

$$49 + 7 \times 4 = \boxed{} \rightarrow \boxed{\text{S}}$$

$$9 \times 7 - 19 = \boxed{} \rightarrow \boxed{\text{P}}$$

$$8 \times 8 - 10 = \boxed{} \rightarrow \boxed{0}$$

$$1 + 4 \times 4 = \boxed{} \rightarrow \boxed{\mathbf{N}}$$

$$6 \times 4 - 16 = \boxed{} \rightarrow \boxed{\mathbf{J}}$$

$$7 \times 6 - 24 = \boxed{} \rightarrow \boxed{}$$

$10 \times 6 - 9 = \boxed{} \rightarrow \boxed{\mathbf{D}}$

Scratch space:

CLUE 4
Multiplication facts (1-12)

We found several identical storage crates left in rows by the robot. Multiply the crates to figure out what was stolen.

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

W																			
63	132	3	16	66	40	96	45	16	90	16	66	12	132	96	27	12	84	110	110
84	40	80	132	40	40	84	3	44	90	44	40	36	110						

$7 \times 9 = \square \rightarrow \boxed{\text{W}}$

$6 \times 11 = \square \rightarrow \boxed{\text{U}}$

$5 \times 9 = \square \rightarrow \boxed{\text{C}}$

$3 \times 9 = \square \rightarrow \boxed{\text{B}}$

$8 \times 10 = \square \rightarrow \boxed{\text{T}}$

$10 \times 11 = \square \rightarrow \boxed{\text{S}}$

$4 \times 4 = \square \rightarrow \boxed{\text{O}}$

$1 \times 3 = \square \rightarrow \boxed{\text{F}}$

$12 \times 7 = \square \rightarrow \boxed{\text{A}}$

$11 \times 12 = \square \rightarrow \boxed{\text{E}}$

$2 \times 6 = \square \rightarrow \boxed{\text{R}}$

$4 \times 10 = \square \rightarrow \boxed{\text{N}}$

$9 \times 10 = \square \rightarrow \boxed{\text{L}}$

$8 \times 12 = \square \rightarrow \boxed{\text{D}}$

$11 \times 4 = \square \rightarrow \boxed{\text{I}}$

$4 \times 9 = \square \rightarrow \boxed{\text{G}}$

Scratch space:

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

The backup batteries need to be shared equally among our tracking drones. Divide the cells so we can launch the search.

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:

$40 \div 8 = \boxed{}$

$77 \div 7 = \boxed{}$

$120 \div 12 = \boxed{}$

$84 \div 7 = \boxed{}$

$81 \div 9 = \boxed{}$

$28 \div 4 = \boxed{}$

$30 \div 10 = \boxed{}$

$24 \div 6 = \boxed{}$

$66 \div 11 = \boxed{}$

$5 \div 5 = \boxed{}$

$72 \div 9 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain tunnels deep under the floor, then charges its battery backup.
2. The villain lifts heavy steel girders, then grapples a container of chips.
3. The villain lifts heavy steel girders, then scans the room with radar.
4. The villain tunnels deep under the floor, then seals the exit hatch shut.
5. The villain tunnels deep under the floor, then scans the room with radar.
6. The villain slices through security barriers, then seals the exit hatch shut.
7. The villain melts the titanium vault door, then seals the exit hatch shut.
8. The villain melts the titanium vault door, then blasts a loud warning signal.
9. The villain zooms across the ceiling, then grapples a container of chips.
10. The villain zooms across the ceiling, then scans the room with radar.
11. The villain slices through security barriers, then scans the room with radar.
12. The villain zooms across the ceiling, then blasts a loud warning signal.

Answer Key

The Rogue Bot Protocol

Culprit: Curiosity

Magnetic Crane · Cargo Hook · Chest Light · Brass Antenna · Audio Jack

Trail: Start 21 → Clue 1 19 → Clue 2 11 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Percentages): "THE ROGUE BOT DOES NOT USE A LASER WELDER"

50% of 46 = 23 (T) · 50% of 26 = 13 (E) · 60% of 75 = 45 (D) · 20% of 120 = 24 (R) · 10% of 360 = 36 (G) · 40% of 50 = 20 (A) · 10% of 70 = 7 (U) · 5% of 760 = 38 (S) · 50% of 8 = 4 (H) · 20% of 170 = 34 (N) · 40% of 65 = 26 (W) · 25% of 36 = 9 (O) · 10% of 190 = 19 (B) · 40% of 55 = 22 (L)

Clue 2 (Exponents): "THE UNIT HAS A BRIGHT CHEST LIGHT"

$3^5 = 243$ (T) · $11^2 = 121$ (H) · $2^4 = 16$ (R) · $4^4 = 256$ (E) · $2^3 = 8$ (S) · $19^2 = 361$ (C) · $18^2 = 324$ (I) · $5^3 = 125$ (A) · $2^2 = 4$ (L) · $13^2 = 169$ (N) · $5^2 = 25$ (B) · $17^2 = 289$ (G) · $7^2 = 49$ (U)

Clue 3 (Order of operations): "THE AUDIO JACK PORT IS THE MAIN WEAKNESS"

$1 + 3 \times 2 = 7$ (T) · $17 + 2 \times 4 = 25$ (K) · $12 \times 9 - 28 = 80$ (C) · $9 \times 8 - 15 = 57$ (H) · $60 + 3 \times 4 = 72$ (E) · $12 \times 6 - 22 = 50$ (W) · $15 + 7 \times 4 = 43$ (A) · $7 \times 4 - 13 = 15$ (R) · $3 \times 4 - 3 = 9$ (U) · $9 + 5 \times 2 = 19$ (M) · $49 + 7 \times 4 = 77$ (S) · $9 \times 7 - 19 = 44$ (P) · $8 \times 8 - 10 = 54$ (O) · $1 + 4 \times 4 = 17$ (N) · $6 \times 4 - 16 = 8$ (J) · $7 \times 6 - 24 = 18$ (I) · $10 \times 6 - 9 = 51$ (D)

Clue 4 (Multiplication facts (1-12)): "WE FOUND COLOURED BRASS ANTENNA FILINGS"

$7 \times 9 = 63$ (W) · $6 \times 11 = 66$ (U) · $5 \times 9 = 45$ (C) · $3 \times 9 = 27$ (B) · $8 \times 10 = 80$ (T) · $10 \times 11 = 110$ (S) · $4 \times 4 = 16$ (O) · $1 \times 3 = 3$ (F) · $12 \times 7 = 84$ (A) · $11 \times 12 = 132$ (E) · $2 \times 6 = 12$ (R) · $4 \times 10 = 40$ (N) · $9 \times 10 = 90$ (L) · $8 \times 12 = 96$ (D) · $11 \times 4 = 44$ (I) · $4 \times 9 = 36$ (G)

Clue 5 (Division facts (1-12)): surviving statement is box 2 → Curiosity

$40 \div 8 = 5$ · $77 \div 7 = 11$ · $120 \div 12 = 10$ · $84 \div 7 = 12$ · $81 \div 9 = 9$ · $28 \div 4 = 7$ · $30 \div 10 = 3$ · $24 \div 6 = 4$ · $66 \div 11 = 6$ · $5 \div 5 = 1$ · $72 \div 9 = 8$