



The Great Gear Heist

Grade 4 math · Multiplication, Bar models, Skip counting, Addition, Division · Reading level grades 3-4

Detective: _____ Date: _____

Someone reprogrammed a rogue bot to steal the Master Spark Plug from the Gearopolis Bot Factory! Inspect the clue logs and track down 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 Bot is _____

Possible suspects

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

NAME	MAIN GADGET	SPECIAL MODULE	ANTENNA STATUS	HEAD WIRING	DEFENSE HAZARD
Socket	Plasma Shield	Solar Panel	Left Antenna Bent	Sparking Silver Cables	Magnet Traps
Radar	Rocket Boost	Stealth Mode	Left Antenna Bent	Neon Blue Wires	Water Sprays
Gizmo	Magnet Grip	Hover Drive	Left Antenna Bent	Sparking Silver Cables	Water Sprays
Pixel	Laser Beam	Turbo Engine	Left Antenna Bent	Sparking Silver Cables	Water Sprays
Gears	Magnet Grip	Night Vision	Right Antenna Bent	Copper Wire Tufts	Water Sprays
Bolt	Rocket Boost	Night Vision	Right Antenna Bent	Copper Wire Tufts	Magnet Traps
Bytes	Magnet Grip	Solar Panel	Left Antenna Bent	Copper Wire Tufts	Water Sprays
Beep Boop	Plasma Shield	Stealth Mode	Left Antenna Bent	Sparking Silver Cables	Water Sprays
Widget	Plasma Shield	Stealth Mode	Left Antenna Bent	Copper Wire Tufts	Water Sprays
Wire	Rocket Boost	Turbo Engine	Left Antenna Bent	Copper Wire Tufts	Magnet Traps
Axle	Rocket Boost	Night Vision	Right Antenna Bent	Sparking Silver Cables	Oil Splatters
Volt	Rocket Boost	Night Vision	Right Antenna Bent	Sparking Silver Cables	Magnet Traps
Nano	Sonic Blast	Stealth Mode	Right Antenna Bent	Copper Wire Tufts	Magnet Traps
Clinker	Plasma Shield	Stealth Mode	Right Antenna Bent	Sparking Silver Cables	Water Sprays
Rotor	Magnet Grip	Night Vision	Left Antenna Bent	Sparking Silver Cables	Water Sprays
Cog	Sonic Blast	Solar Panel	Left Antenna Bent	Sparking Silver Cables	Water Sprays
Sprocket	Sonic Blast	Hover Drive	Left Antenna Bent	Sparking Silver Cables	Magnet Traps
Rust-E	Magnet Grip	Hover Drive	Left Antenna Bent	Copper Wire Tufts	Oil Splatters
Glitch	Magnet Grip	Turbo Engine	Left Antenna Bent	Sparking Silver Cables	Water Sprays
Sparky	Sonic Blast	Stealth Mode	Right Antenna Bent	Sparking Silver Cables	Oil Splatters
Piston	Sonic Blast	Hover Drive	Right Antenna Bent	Sparking Silver Cables	Water Sprays

CLUE 1
Multiplication facts (1-12)

The factory security bots march in equal rows across the assembly floor to decode the first signal.

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

T																T
22	88	72	63	18	40	40	55	18	25	24	7	72	35	25	7	22

					T											
88	55	63	72	55	22	28	144	33	7	72	25	27	18	25	72	

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

$5 \times 5 = \square \rightarrow \text{N}$

$12 \times 12 = \square \rightarrow \text{R}$

$4 \times 10 = \square \rightarrow \text{L}$

$12 \times 6 = \square \rightarrow \text{E}$

$8 \times 11 = \square \rightarrow \text{H}$

$3 \times 9 = \square \rightarrow \text{G}$

$2 \times 9 = \square \rightarrow \text{I}$

$5 \times 11 = \square \rightarrow \text{A}$

$11 \times 3 = \square \rightarrow \text{B}$

$4 \times 7 = \square \rightarrow \text{U}$

$1 \times 7 = \square \rightarrow \text{O}$

$8 \times 3 = \square \rightarrow \text{D}$

$7 \times 9 = \square \rightarrow \text{V}$

$7 \times 5 = \square \rightarrow \text{S}$

Scratch space:

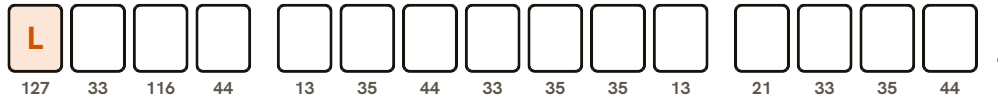
CLUE 2

Bar model word problems

A diagnostic screen displays rectangular data bars comparing energy grid outputs.

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



There were 145 steel plates in all. 18 steel plates were used. How many steel plates are left?

draw a bar model

Answer: → **L**

Cadet Bot has 7 times as many battery cells as a teammate. The teammate has 3 battery cells. How many battery cells does Cadet Bot have?

draw a bar model

Answer: → **B**

Cadet Bot has 220 microchips, packed 5 to a bag. How many bags can be filled?

draw a bar model

Answer: → **T**

There were 154 battery cells in all. 38 battery cells were used. How many battery cells are left?

draw a bar model

Answer: → **F**

There were 28 steel plates in all. 15 steel plates were used. How many steel plates are left?

draw a bar model

Answer: → **A**

There were 50 battery cells in all. 17 battery cells were used. How many battery cells are left?

draw a bar model

Answer: → **E**

The red team has 60 copper bolts and the blue team has 25 copper bolts. How many more copper bolts does the red team have?

draw a bar model

Answer: → **N**

CLUE 3

Skip counting

The sensor ticks steadily while counting energy pulses in regular intervals.

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

T					T					T								
14	45	30	36	18	14	70	33	24	24	14	18	140	140	30	60	36	120	
		T																
70	33	14	30	55	24	140	55	33	120	24								

Skip-count by 2s. Fill the blank: 2, 4, 6, 8, 10, 12, __, 16, 18 → **T**

Skip-count by 3s. Fill the blank: 3, 6, 9, 12, 15, 18, 21, __, 27, 30 → **S**

Skip-count by 10s. Fill the blank: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, __, 130, 140 → **Y**

Skip-count by 5s. Fill the blank: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, __, 65, 70 → **D**

Skip-count by 10s. Fill the blank: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, __, 150, 160 → **P**

Skip-count by 10s. Fill the blank: 10, 20, 30, 40, 50, 60, __, 80, 90 → **W**

Skip-count by 3s. Fill the blank: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, __, 39, 42 → **B**

Skip-count by 5s. Fill the blank: 5, 10, 15, 20, 25, 30, 35, 40, __, 50, 55 → **H**

Skip-count by 3s. Fill the blank: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, __, 36, 39 → **A**

Skip-count by 2s. Fill the blank: 2, 4, 6, 8, 10, 12, 14, 16, __, 20, 22 → **O**

Skip-count by 5s. Fill the blank: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, __, 60, 65 → **R**

Skip-count by 5s. Fill the blank: 5, 10, 15, 20, 25, __, 35, 40 → **E**

Scratch space:

CLUE 4

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

Diagram illustrating a sequence of numbers arranged in two rows of boxes. The top row contains 14 boxes, with the 10th and 11th boxes highlighted in orange and labeled 'T'. The bottom row contains 14 boxes. Below each box is a number.

Box	1	2	3	4	5	6	7	8	9	10	11	12	13	14		
Top Row	T									T	T					
Bottom Row																
Number	3696	5325	3061	4487	5116	3637	3061	5917	5116	6344	3051	4914	3696	3696	3061	7951

$$1837 + 1859 = \boxed{} \rightarrow \boxed{\text{T}}$$

$$3946 + 4456 = \boxed{} \rightarrow \boxed{\text{L}}$$

$$1665 + 1972 = \boxed{} \rightarrow \boxed{\text{M}}$$

$$1734 + 1317 = \boxed{} \rightarrow \boxed{\text{P}}$$

$$5347 + 2401 = \boxed{} \rightarrow \boxed{}$$

$$3139 + 1977 = \boxed{} \rightarrow \boxed{\mathbf{A}}$$

$$3464 + 6104 = \boxed{} \rightarrow \boxed{\mathbf{v}}$$

$$2475 + 2439 = \boxed{} \rightarrow \boxed{0}$$

$$2497 + 2828 = \boxed{} \rightarrow \boxed{\text{H}}$$

$$746 + 1471 = \boxed{} \rightarrow \boxed{\mathbf{B}}$$

$3937 + 2928 = \boxed{} \rightarrow \mathbf{G}$

$2305 + 2543 = \boxed{} \rightarrow \boxed{\text{N}}$

$$4407 + 1937 = \boxed{} \rightarrow \boxed{\text{S}}$$

$2508 + 5443 = \boxed{} \rightarrow \mathbf{D}$

$1203 + 1858 = \boxed{} \rightarrow \boxed{\text{E}}$

$1548 + 2939 = \boxed{} \rightarrow \mathbf{C}$

$$3602 + 4348 = \boxed{} \rightarrow \boxed{\text{K}}$$

$$3031 + 2886 = \boxed{} \rightarrow \boxed{\text{R}}$$

Scratch space:

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

The lead bot divides the remaining battery packs equally among the investigation team.

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:

$1 \div 1 = \boxed{}$

$24 \div 2 = \boxed{}$

$30 \div 6 = \boxed{}$

$12 \div 4 = \boxed{}$

$42 \div 6 = \boxed{}$

$8 \div 1 = \boxed{}$

$77 \div 7 = \boxed{}$

$16 \div 4 = \boxed{}$

$24 \div 12 = \boxed{}$

$60 \div 10 = \boxed{}$

$90 \div 9 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain used magnet grip, then engaged hover drive.
2. The villain activated rocket boost, then switched to night vision.
3. The villain used magnet grip, then turned on stealth mode.
4. The villain used magnet grip, then charged solar panels.
5. The villain raised a plasma shield, then turned on stealth mode.
6. The villain blasted a sonic wave, then engaged hover drive.
7. The villain activated rocket boost, then turned on stealth mode.
8. The villain raised a plasma shield, then revved a turbo engine.
9. The villain blasted a sonic wave, then charged solar panels.
10. The villain activated rocket boost, then engaged hover drive.
11. The villain activated rocket boost, then revved a turbo engine.
12. The villain used magnet grip, then switched to night vision.

Answer Key

The Great Gear Heist

Culprit: Cog

Sonic Blast · Solar Panel · Left Antenna Bent · Sparking Silver Cables · Water Sprays

Trail: Start 21 → Clue 1 18 → Clue 2 10 → Clue 3 7 → Clue 4 4 → Clue 5 1

Clue 1 (Multiplication facts (1-12)): "THE VILLAIN DOES NOT HAVE A TURBO ENGINE"

$11 \times 2 = 22$ (T) · $5 \times 5 = 25$ (N) · $12 \times 12 = 144$ (R) · $4 \times 10 = 40$ (L) · $12 \times 6 = 72$ (E) · $8 \times 11 = 88$ (H) · $3 \times 9 = 27$ (G) · $2 \times 9 = 18$ (I) · $5 \times 11 = 55$ (A) · $11 \times 3 = 33$ (B) · $4 \times 7 = 28$ (U) · $1 \times 7 = 7$ (O) · $8 \times 3 = 24$ (D) · $7 \times 9 = 63$ (V) · $7 \times 5 = 35$ (S)

Clue 2 (Bar model word problems): "LEFT ANTENNA BENT"

There were 145 steel plates in all. 18 steel plates were used. How many steel plates are left? = 127 (L) · Cadet Bot has 7 times as many battery cells as a teammate. The teammate has 3 battery cells. How many battery cells does Cadet Bot have? = 21 (B) · Cadet Bot has 220 microchips, packed 5 to a bag. How many bags can be filled? = 44 (T) · There were 154 battery cells in all. 38 battery cells were used. How many battery cells are left? = 116 (F) · There were 28 steel plates in all. 15 steel plates were used. How many steel plates are left? = 13 (A) · There were 50 battery cells in all. 17 battery cells were used. How many battery cells are left? = 33 (E) · The red team has 60 copper bolts and the blue team has 25 copper bolts. How many more copper bolts does the red team have? = 35 (N)

Clue 3 (Skip counting): "THE BOT WAS STOPPED BY WATER SPRAYS"

Skip-count by 2s. Fill the blank: 2, 4, 6, 8, 10, 12, __, 16, 18 = 14 (T) · Skip-count by 3s. Fill the blank: 3, 6, 9, 12, 15, 18, 21, __, 27, 30 = 24 (S) · Skip-count by 10s. Fill the blank: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, __, 130, 140 = 120 (Y) · Skip-count by 5s. Fill the blank: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, __, 65, 70 = 60 (D) · Skip-count by 10s. Fill the blank: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, __, 150, 160 = 140 (P) · Skip-count by 10s. Fill the blank: 10, 20, 30, 40, 50, 60, __, 80, 90 = 70 (W) · Skip-count by 3s. Fill the blank: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, __, 39, 42 = 36 (B) · Skip-count by 5s. Fill the blank: 5, 10, 15, 20, 25, 30, 35, 40, __, 50, 55 = 45 (H) · Skip-count by 3s. Fill the blank: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, __, 36, 39 = 33 (A) · Skip-count by 2s. Fill the blank: 2, 4, 6, 8, 10, 12, 14, 16, __, 20, 22 = 18 (O) · Skip-count by 5s. Fill the blank: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, __, 60, 65 = 55 (R) · Skip-count by 5s. Fill the blank: 5, 10, 15, 20, 25, __, 35, 40 = 30 (E)

Clue 4 (Addition): "THE CAMERA SPOTTED SPARKING SILVER CABLES"

$1837 + 1859 = 3696$ (T) · $3946 + 4456 = 8402$ (L) · $1665 + 1972 = 3637$ (M) · $1734 + 1317 = 3051$ (P) · $5347 + 2401 = 7748$ (I) · $3139 + 1977 = 5116$ (A) · $3464 + 6104 = 9568$ (V) · $2475 + 2439 = 4914$ (O) · $2497 + 2828 = 5325$ (H) · $746 + 1471 = 2217$ (B) · $3937 + 2928 = 6865$ (G) · $2305 + 2543 = 4848$ (N) · $4407 + 1937 = 6344$ (S) · $2508 + 5443 = 7951$ (D) · $1203 + 1858 = 3061$ (E) · $1548 + 2939 = 4487$ (C) · $3602 + 4348 = 7950$ (K) · $3031 + 2886 = 5917$ (R)

Clue 5 (Division facts (1-12)): surviving statement is box 9 → Cog

$1 \div 1 = 1$ · $24 \div 2 = 12$ · $30 \div 6 = 5$ · $12 \div 4 = 3$ · $42 \div 6 = 7$ · $8 \div 1 = 8$ · $77 \div 7 = 11$ · $16 \div 4 = 4$ · $24 \div 12 = 2$ · $60 \div 10 = 6$ · $90 \div 9 = 10$