



The Case of the Scrap Yard Sabotage

Grade 7 math · Multiplication, Fractions of a number, Integers, Percentages · Reading level grades 7-9

Detective: _____ **Date:** _____

A rogue automaton has sabotaged the main processing core at the Neon Scrap Yards, stealing the experimental Quantum CPU. The Master Tinkerer needs your help to decode the system logs and catch the culprit before the sector goes dark.

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 automaton is _____

Possible suspects

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

NAME	PRIMARY CHASSIS MOD	AUXILIARY TOOL	OPTICAL SCAN PATTERN	WIRING HARNESS COLOR	SYSTEM VULNERABILITY
Alan	hover thrusters	sonic sensor	left-lens focus	copper orange	water splashes
Ada	pneumatic pistons	grappling hook	left-lens focus	copper orange	magnet static
Watt	magnetic treads	grappling hook	left-lens focus	neon yellow	magnet static
Asimov	pneumatic pistons	plasma welder	left-lens focus	cobalt blue	magnet static
Edison	pneumatic pistons	grappling hook	left-lens focus	cobalt blue	magnet static
Curie	laser drills	grappling hook	right-lens focus	copper orange	water splashes
Hawking	magnetic treads	hologram decoy	right-lens focus	neon yellow	rust remover
Volta	magnetic treads	grappling hook	left-lens focus	cobalt blue	water splashes
Sagan	magnetic treads	grappling hook	right-lens focus	cobalt blue	rust remover
Newton	magnetic treads	emp emitter	left-lens focus	cobalt blue	rust remover
Tesla	laser drills	hologram decoy	left-lens focus	copper orange	magnet static
Einstein	titanium plating	plasma welder	left-lens focus	copper orange	rust remover
Galileo	hover thrusters	plasma welder	right-lens focus	copper orange	magnet static
Wozniak	hover thrusters	sonic sensor	right-lens focus	cobalt blue	magnet static
Gates	magnetic treads	emp emitter	left-lens focus	copper orange	magnet static
Hopper	laser drills	sonic sensor	right-lens focus	copper orange	magnet static
Kepler	laser drills	plasma welder	left-lens focus	copper orange	magnet static
Babbage	laser drills	emp emitter	right-lens focus	neon yellow	rust remover
Kelvin	magnetic treads	grappling hook	right-lens focus	copper orange	magnet static
Jobs	hover thrusters	emp emitter	right-lens focus	cobalt blue	water splashes
Ampere	laser drills	sonic sensor	left-lens focus	copper orange	magnet static

Multiplication facts (1-12)

We found several crates of stolen processors arranged in even rows. Multiplying the number of rows by the processors per row will reveal the ID code of the excluded gear.

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

44 27 144 56 8 40 8 44 84 8 144 72 63 8 44 15 72 144 16

18 56 16 96 96 49 28 63 18 27 8 8 5

$$11 \times 4 = \boxed{} \rightarrow \boxed{\text{T}}$$

$$3 \times 9 = \boxed{} \rightarrow \boxed{\text{H}}$$

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

$1 \times 5 = \boxed{} \rightarrow \boxed{\text{K}}$

$3 \times 5 = \boxed{} \rightarrow \boxed{\text{U}}$

$12 \times 8 = \boxed{} \rightarrow \boxed{\text{P}}$

$8 \times 9 = \boxed{} \rightarrow \boxed{\text{S}}$

$7 \times 12 = \boxed{} \rightarrow \boxed{\text{D}}$

$8 \times 7 = \boxed{} \rightarrow \boxed{\mathbf{R}}$

$9 \times 7 = \boxed{} \rightarrow \boxed{\text{N}}$

$$7 \times 4 = \boxed{} \rightarrow \boxed{}$$

$2 \times 8 = \boxed{} \rightarrow \boxed{\text{A}}$

$4 \times 10 = \boxed{} \rightarrow \boxed{\mathbf{B}}$

$1 \times 8 = \boxed{} \rightarrow \boxed{0}$

$7 \times 7 = \square \rightarrow \boxed{\text{L}}$

$$2 \times 9 = \boxed{} \rightarrow \boxed{\mathbf{G}}$$

Scratch space:

CLUE 2 Fractions of a number

The security camera captured a flash of light, but the battery died after recording only a fraction of its total run time. We can calculate the exact duration of the clip to identify the camera's angle and find the suspect's lens focus.

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

Two rows of number pyramids. The top row has 14 pyramids with values 25, 15, 34, 8, 48, 8, 31, 34, 16, 25, 8, 16, 7, 29, 8, 58, 49, 25, 15. The bottom row has 14 pyramids with values 25, 15, 34, 49, 33, 11, 34, 32, 25, 11, 34, 29, 8. In both rows, the 10th pyramid from the left contains the letter 'T'.

$2/8$ of 100 = $\rightarrow$ **T**

$$1/2 \text{ of } 116 = \boxed{} \rightarrow \boxed{\mathbf{W}}$$

$\frac{3}{4}$ of 64 = $\rightarrow$ **U**

$$1/6 \text{ of } 42 = \boxed{} \rightarrow \boxed{\mathbf{A}}$$

$$1/5 \text{ of } 40 = \boxed{} \rightarrow \boxed{\text{S}}$$

3/6 of 98 = $\rightarrow$

$2/4$ of 58 = $\rightarrow$ **N**

4/8 of 68 = → **E**

$$\frac{1}{5} \text{ of } 165 = \boxed{} \rightarrow \boxed{\text{R}}$$

$$1/5 \text{ of } 55 = \boxed{} \rightarrow \boxed{\text{L}}$$

$$2/6 \text{ of } 93 = \boxed{} \rightarrow \boxed{\text{P}}$$

$$1/10 \text{ of } 150 = \boxed{} \rightarrow \boxed{\text{H}}$$

$$2/10 \text{ of } 80 = \boxed{} \rightarrow \boxed{\text{C}}$$

4/6 of 48 = → **F**

Scratch space:

CLUE 3 Integers

The heat level in the server room dropped way below zero, then surged back up when the intruder bypassed the cooling unit. Tracking this net change in temperature reveals the exact voltage drop, which points to the rogue's system vulnerability.

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

S												S					
21	24	25	10	1	11	17	18	11	1	15	24	21	24	18	24	8	16

S					S				S			
21	24	18	23	23	21	24	27	8	21	20	10	24

$12 - (-9) = \square \rightarrow$ S	$13 - (-14) = \square \rightarrow$ H	$11 - (-4) = \square \rightarrow$ E
$(-10) + 28 = \square \rightarrow$ A	$(-5) + 29 = \square \rightarrow$ T	$3 - (-5) = \square \rightarrow$ I
$(-3) + 4 = \square \rightarrow$ N	$11 - (-5) = \square \rightarrow$ C	$(-1) + 26 = \square \rightarrow$ R
$(-9) + 19 = \square \rightarrow$ O	$(-13) + 33 = \square \rightarrow$ B	$7 - (-4) = \square \rightarrow$ G
$(-9) + 26 = \square \rightarrow$ M	$(-1) + 24 = \square \rightarrow$ L	

Scratch space:

CLUE 4 Percentages

The laboratory's backup battery is partially drained from the heist. Working out what percentage of power remains in the grid lets us isolate the signature of the suspect's wiring harness.

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

C																	
23	7	1	1	40	55	7	55	43	20	2	40	8	59	55	59	20	2
													C				
8	43	9	54	40	25	39	43	39	39	29	40	9	23	40	20	40	

5% of 460 = → C	25% of 156 = → T	25% of 36 = → S
50% of 14 = → O	5% of 400 = → N	5% of 580 = → H
20% of 295 = → I	60% of 90 = → L	5% of 860 = → A
40% of 5 = → G	20% of 125 = → F	50% of 110 = → R
50% of 2 = → P	5% of 800 = → E	20% of 40 = → W

Scratch space:

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

We need to divide a stash of spare memory blocks among our remaining service droids. Finding the exact fractional share for each droid gives us the remaining clue to confirm the suspect's wiring harness color.

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:

$1/3 \text{ of } 15 = \boxed{}$

$2/6 \text{ of } 3 = \boxed{}$

$3/10 \text{ of } 40 = \boxed{}$

$2/10 \text{ of } 20 = \boxed{}$

$1/10 \text{ of } 20 = \boxed{}$

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

$1/3 \text{ of } 21 = \boxed{}$

$2/10 \text{ of } 45 = \boxed{}$

$4/6 \text{ of } 15 = \boxed{}$

$4/8 \text{ of } 16 = \boxed{}$

$1/2 \text{ of } 12 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain tunnels through the floor using laser drills, then melts the vault door with a plasma welder.
2. The villain smashes the security gate with pneumatic pistons, then escapes through the skylight with a grappling hook.
3. The villain glides silently using hover thrusters, then escapes through the skylight with a grappling hook.
4. The villain charges through walls with titanium plating, then escapes through the skylight with a grappling hook.
5. The villain tunnels through the floor using laser drills, then bypasses the acoustic locks with a sonic sensor.
6. The villain glides silently using hover thrusters, then melts the vault door with a plasma welder.
7. The villain glides silently using hover thrusters, then disables the alarms with an EMP emitter.
8. The villain smashes the security gate with pneumatic pistons, then bypasses the acoustic locks with a sonic sensor.
9. The villain charges through walls with titanium plating, then disables the alarms with an EMP emitter.
10. The villain rolls past security on magnetic treads, then confuses the guards with a hologram decoy.
11. The villain tunnels through the floor using laser drills, then confuses the guards with a hologram decoy.
12. The villain rolls past security on magnetic treads, then disables the alarms with an EMP emitter.

Answer Key

The Case of the Scrap Yard Sabotage

Culprit: Tesla

laser drills · hologram decoy · left-lens focus · copper orange · magnet static

Trail: Start 21 → Clue 1 14 → Clue 2 8 → Clue 3 5 → Clue 4 4 → Clue 5 1

Clue 1 (Multiplication facts (1-12)): "THE ROBOT DOES NOT USE A GRAPPLING HOOK"

$11 \times 4 = 44$ (T) · $3 \times 9 = 27$ (H) · $12 \times 12 = 144$ (E) · $1 \times 5 = 5$ (K) · $3 \times 5 = 15$ (U) · $12 \times 8 = 96$ (P) · $8 \times 9 = 72$ (S) · $7 \times 12 = 84$ (D) · $8 \times 7 = 56$ (R) · $9 \times 7 = 63$ (N) · $7 \times 4 = 28$ (I) · $2 \times 8 = 16$ (A) · $4 \times 10 = 40$ (B) · $1 \times 8 = 8$ (O) · $7 \times 7 = 49$ (L) · $2 \times 9 = 18$ (G)

Clue 2 (Fractions of a number): "THE SUSPECT SCANS WITH THEIR LEFT LENS"

$\frac{2}{8}$ of 100 = 25 (T) · $\frac{1}{2}$ of 116 = 58 (W) · $\frac{3}{4}$ of 64 = 48 (U) · $\frac{1}{6}$ of 42 = 7 (A) · $\frac{1}{5}$ of 40 = 8 (S) · $\frac{3}{6}$ of 98 = 49 (I) · $\frac{2}{4}$ of 58 = 29 (N) · $\frac{4}{8}$ of 68 = 34 (E) · $\frac{1}{5}$ of 165 = 33 (R) · $\frac{1}{5}$ of 55 = 11 (L) · $\frac{2}{6}$ of 93 = 31 (P) · $\frac{1}{10}$ of 150 = 15 (H) · $\frac{2}{10}$ of 80 = 16 (C) · $\frac{4}{6}$ of 48 = 32 (F)

Clue 3 (Integers): "STRONG MAGNET STATIC STALLS THIS BOT"

$12 - (-9) = 21$ (S) · $13 - (-14) = 27$ (H) · $11 - (-4) = 15$ (E) · $(-10) + 28 = 18$ (A) · $(-5) + 29 = 24$ (T) · $3 - (-5) = 8$ (I) · $(-3) + 4 = 1$ (N) · $11 - (-5) = 16$ (C) · $(-1) + 26 = 25$ (R) · $(-9) + 19 = 10$ (O) · $(-13) + 33 = 20$ (B) · $7 - (-4) = 11$ (G) · $(-9) + 26 = 17$ (M) · $(-1) + 24 = 23$ (L)

Clue 4 (Percentages): "COPPER ORANGE WIRING WAS LEFT AT THE SCENE"

5% of 460 = 23 (C) · 25% of 156 = 39 (T) · 25% of 36 = 9 (S) · 50% of 14 = 7 (O) · 5% of 400 = 20 (N) · 5% of 580 = 29 (H) · 20% of 295 = 59 (I) · 60% of 90 = 54 (L) · 5% of 860 = 43 (A) · 40% of 5 = 2 (G) · 20% of 125 = 25 (F) · 50% of 110 = 55 (R) · 50% of 2 = 1 (P) · 5% of 800 = 40 (E) · 20% of 40 = 8 (W)

Clue 5 (Fractions of a number): surviving statement is box 11 → Tesla

$\frac{1}{3}$ of 15 = 5 · $\frac{2}{6}$ of 3 = 1 · $\frac{3}{10}$ of 40 = 12 · $\frac{2}{10}$ of 20 = 4 · $\frac{1}{10}$ of 20 = 2 · $\frac{1}{5}$ of 15 = 3 · $\frac{1}{3}$ of 21 = 7 · $\frac{2}{10}$ of 45 = 9 · $\frac{4}{6}$ of 15 = 10 · $\frac{4}{8}$ of 16 = 8 · $\frac{1}{2}$ of 12 = 6