

The Golden Gear Glitch

Grade 2 math · Addition, Place value, Subtraction, Skip counting, Missing addends · Reading level grades 1-2

Detective: _____ **Date:** _____

A rogue robot ran off with the Golden Gear! The head mechanic needs your help to find which robot did it before Spark City loses all its power.

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 robot is _____

Possible suspects

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

NAME	TOOL HAND	SPECIAL SENSOR	LIGHT POSITION	ANTENNA SHAPE	GLITCH TRIGGER
Gizmo	laser cutter	sonar ears	left blinker	bolt antenna	strong magnet
Sprocket	grease spray	night vision	right blinker	star antenna	strong magnet
Boop	laser cutter	sonar ears	right blinker	star antenna	loud whistle
Bolt	drill finger	sonar ears	left blinker	hoop antenna	strong magnet
Rusty	laser cutter	radar nose	left blinker	star antenna	strong magnet
Micro	laser cutter	sonar ears	right blinker	bolt antenna	soapy water
Geary	clamp claw	radar nose	left blinker	hoop antenna	soapy water
Beep	drill finger	heat sensor	left blinker	bolt antenna	loud whistle
Pixel	grease spray	radar nose	left blinker	star antenna	loud whistle
Rivet	magnet arm	heat sensor	left blinker	hoop antenna	loud whistle
Dynamo	grease spray	metal detector	right blinker	star antenna	soapy water
Charger	laser cutter	radar nose	right blinker	bolt antenna	loud whistle
Clanky	clamp claw	night vision	left blinker	bolt antenna	loud whistle
Turbo	clamp claw	metal detector	left blinker	bolt antenna	loud whistle
Sparky	clamp claw	night vision	right blinker	hoop antenna	loud whistle
Zinc	laser cutter	night vision	right blinker	hoop antenna	loud whistle
Vector	grease spray	radar nose	left blinker	bolt antenna	strong magnet
Orbit	magnet arm	night vision	right blinker	hoop antenna	soapy water
Widget	grease spray	sonar ears	left blinker	bolt antenna	loud whistle
Radar	clamp claw	sonar ears	left blinker	bolt antenna	loud whistle
Byte	grease spray	metal detector	right blinker	bolt antenna	soapy water

CLUE 1 Addition

The scrap pile has six red gears and five blue gears. Add them together to find how many gears the robot dropped.

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

The diagram shows two rows of boxes, each with a number below it. The top row has 16 boxes, and the bottom row has 10 boxes. Some boxes are shaded orange and contain the letter 'T', indicating they are 'true' or 'filled'. The numbers below the boxes represent the values in each position.

Row	Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7	Box 8	Box 9	Box 10	Box 11	Box 12	Box 13	Box 14	Box 15	Box 16
Top	T						T							T		
	63	28	22	21	52	84	52	63	96	52	22	89	43	52	63	28
Bottom					T											
	43	59	88	28	63	49	59	89	59	52	43					

$$19 + 44 = \boxed{} \rightarrow \boxed{\text{T}}$$

$$36 + 52 = \boxed{} \rightarrow \boxed{\text{G}}$$

$$44 + 52 = \boxed{} \rightarrow \mathbf{D}$$

$15 + 7 = \boxed{} \rightarrow \boxed{\text{E}}$

$$17 + 11 = \boxed{} \rightarrow \boxed{\text{H}}$$

$23 + 20 = \boxed{} \rightarrow \boxed{\text{N}}$

$$21 + 28 = \boxed{} \rightarrow \mathbf{v}$$

$31 + 24 = \square \rightarrow \mathbf{A}$

$$22 + 37 = \boxed{} \rightarrow \boxed{}$$

$14 + 7 = \boxed{} \rightarrow \boxed{\text{R}}$

$$23 + 29 = \boxed{} \rightarrow \boxed{\mathbf{0}}$$

$$55 + 34 = \boxed{} \rightarrow \boxed{\text{S}}$$

$49 + 35 = \boxed{} \rightarrow \boxed{\mathbf{B}}$

Scratch space:

CLUE 2 Place value

We checked the battery power screen. It shows a number with four tens and seven ones. Read the screen to find the clue.

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

T								T									T
39	61	64	27	75	20	75	39	61	51	86	51	48	64	32	39		
20	48	29	28	65	64	27											

What number has 3 tens and 9 ones? → **T**

What number has 6 tens and 4 ones? → **E**

What number has 2 tens and 9 ones? → **I**

What number has 8 tens and 6 ones? → **S**

What number has 2 tens and 8 ones? → **N**

What number has 5 tens and 1 one? → **A**

What number has 4 tens and 8 ones? → **L**

What number has 3 tens and 2 ones? → **F**

What number has 6 tens and 5 ones? → **K**

What number has 2 tens and 7 ones? → **R**

What number has 2 tens and 0 ones? → **B**

What number has 7 tens and 5 ones? → **O**

What number has 6 tens and 1 one? → **H**

Scratch space:

CLUE 3

Subtraction

The robot had ten tiny screws but lost eight of them. Subtract to find how many screws are left on the floor.

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

T								T											
23	44	28	75	78	72	78	23	34	28	35	75	48	35	50	78	36	69		

				T		
63	44	67	48	23	50	28

$55 - 32 = \square \rightarrow \boxed{\text{T}}$

$82 - 34 = \square \rightarrow \boxed{\text{S}}$

$66 - 16 = \square \rightarrow \boxed{\text{L}}$

$82 - 13 = \square \rightarrow \boxed{\text{D}}$

$113 - 38 = \square \rightarrow \boxed{\text{R}}$

$58 - 24 = \square \rightarrow \boxed{\text{F}}$

$96 - 18 = \square \rightarrow \boxed{\text{O}}$

$70 - 35 = \square \rightarrow \boxed{\text{A}}$

$64 - 1 = \square \rightarrow \boxed{\text{W}}$

$46 - 2 = \square \rightarrow \boxed{\text{H}}$

$46 - 18 = \square \rightarrow \boxed{\text{E}}$

$43 - 7 = \square \rightarrow \boxed{\text{U}}$

$87 - 20 = \square \rightarrow \boxed{\text{I}}$

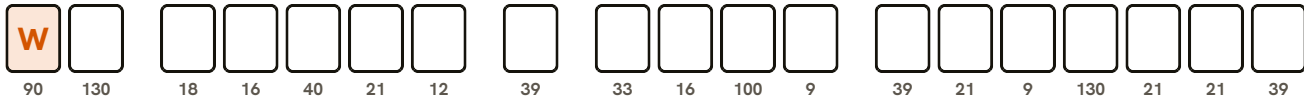
$77 - 5 = \square \rightarrow \boxed{\text{B}}$

Scratch space:

CLUE 4 Skip counting

Look at the footprints in the grease. They are in groups of two. Count by twos to see how many steps the robot made.

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



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

Skip-count by 3s. Fill the blank: 3, 6, __, 12, 15 → **T**

Skip-count by 3s. Fill the blank: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, __, 42, 45 → **A**

Skip-count by 3s. Fill the blank: 3, 6, 9, 12, 15, 18, __, 24, 27 → **N**

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

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

Skip-count by 3s. Fill the blank: 3, 6, 9, 12, 15, __, 21, 24 → **F**

Skip-count by 2s. Fill the blank: 2, 4, 6, 8, 10, 12, 14, __, 18, 20 → **O**

Skip-count by 10s. Fill the blank: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, __, 140, 150 → **E**

Skip-count by 10s. Fill the blank: 10, 20, 30, __, 50, 60 → **U**

Skip-count by 3s. Fill the blank: 3, 6, 9, __, 15, 18 → **D**

Scratch space:

CLUE 5**Missing addends - the last clue**

The tool box holds eight bolts. We only see five. How many more bolts do we need to make eight? Find the missing number.

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:

$9 + \underline{\quad} = 21$

$6 + \underline{\quad} = 17$

$2 + \underline{\quad} = 12$

$10 + \underline{\quad} = 12$

$7 + \underline{\quad} = 10$

$10 + \underline{\quad} = 16$

$6 + \underline{\quad} = 15$

$9 + \underline{\quad} = 14$

$5 + \underline{\quad} = 6$

$4 + \underline{\quad} = 8$

$10 + \underline{\quad} = 18$

Step 2 - cross out the sentence with each answer:

1. The villain spins a drill finger, then sweeps with a metal detector.
2. The villain uses a laser cutter, then beeps with a radar nose.
3. The villain spins a drill finger, then turns on sonar ears.
4. The villain shoots a grease spray, then sweeps with a metal detector.
5. The villain snaps a clamp claw, then scans with a heat sensor.
6. The villain snaps a clamp claw, then beeps with a radar nose.
7. The villain snaps a clamp claw, then turns on sonar ears.
8. The villain waves a magnet arm, then glows with night vision.
9. The villain shoots a grease spray, then scans with a heat sensor.
10. The villain snaps a clamp claw, then sweeps with a metal detector.
11. The villain spins a drill finger, then scans with a heat sensor.
12. The villain shoots a grease spray, then turns on sonar ears.

Answer Key

The Golden Gear Glitch

Culprit: Radar

clamp claw · sonar ears · left blinker · bolt antenna · loud whistle

Trail: Start 21 → Clue 1 16 → Clue 2 11 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Addition): "THE ROBOT DOES NOT HAVE NIGHT VISION"

$19 + 44 = 63$ (T) · $36 + 52 = 88$ (G) · $44 + 52 = 96$ (D) · $15 + 7 = 22$ (E) · $17 + 11 = 28$ (H) · $23 + 20 = 43$ (N) · $21 + 28 = 49$ (V) · $31 + 24 = 55$ (A) · $22 + 37 = 59$ (I) · $14 + 7 = 21$ (R) · $23 + 29 = 52$ (O) · $55 + 34 = 89$ (S) · $49 + 35 = 84$ (B)

Clue 2 (Place value): "THE ROBOT HAS A LEFT BLINKER"

What number has 3 tens and 9 ones? = 39 (T) · What number has 6 tens and 4 ones? = 64 (E) · What number has 2 tens and 9 ones? = 29 (I) · What number has 8 tens and 6 ones? = 86 (S) · What number has 2 tens and 8 ones? = 28 (N) · What number has 5 tens and 1 one? = 51 (A) · What number has 4 tens and 8 ones? = 48 (L) · What number has 3 tens and 2 ones? = 32 (F) · What number has 6 tens and 5 ones? = 65 (K) · What number has 2 tens and 7 ones? = 27 (R) · What number has 2 tens and 0 ones? = 20 (B) · What number has 7 tens and 5 ones? = 75 (O) · What number has 6 tens and 1 one? = 61 (H)

Clue 3 (Subtraction): "THE ROBOT FEARS A LOUD WHISTLE"

$55 - 32 = 23$ (T) · $82 - 34 = 48$ (S) · $66 - 16 = 50$ (L) · $82 - 13 = 69$ (D) · $113 - 38 = 75$ (R) · $58 - 24 = 34$ (F) · $96 - 18 = 78$ (O) · $70 - 35 = 35$ (A) · $64 - 1 = 63$ (W) · $46 - 2 = 44$ (H) · $46 - 18 = 28$ (E) · $43 - 7 = 36$ (U) · $87 - 20 = 67$ (I) · $77 - 5 = 72$ (B)

Clue 4 (Skip counting): "WE FOUND A BOLT ANTENNA"

Skip-count by 10s. Fill the blank: 10, 20, 30, 40, 50, 60, 70, 80, __, 100, 110 = 90 (W) · Skip-count by 3s. Fill the blank: 3, 6, __, 12, 15 = 9 (T) · Skip-count by 3s. Fill the blank: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, __, 42, 45 = 39 (A) · Skip-count by 3s. Fill the blank: 3, 6, 9, 12, 15, 18, __, 24, 27 = 21 (N) · Skip-count by 3s. Fill the blank: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, __, 36, 39 = 33 (B) · Skip-count by 10s. Fill the blank: 10, 20, 30, 40, 50, 60, 70, 80, 90, __, 110, 120 = 100 (L) · Skip-count by 3s. Fill the blank: 3, 6, 9, 12, 15, __, 21, 24 = 18 (F) · Skip-count by 2s. Fill the blank: 2, 4, 6, 8, 10, 12, 14, __, 18, 20 = 16 (O) · Skip-count by 10s. Fill the blank: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, __, 140, 150 = 130 (E) · Skip-count by 10s. Fill the blank: 10, 20, 30, __, 50, 60 = 40 (U) · Skip-count by 3s. Fill the blank: 3, 6, 9, __, 15, 18 = 12 (D)

Clue 5 (Missing addends): surviving statement is box 7 → Radar

$9 + \underline{\quad} = 21 = 12$ · $6 + \underline{\quad} = 17 = 11$ · $2 + \underline{\quad} = 12 = 10$ · $10 + \underline{\quad} = 12 = 2$ · $7 + \underline{\quad} = 10 = 3$ · $10 + \underline{\quad} = 16 = 6$ · $6 + \underline{\quad} = 15 = 9$ · $9 + \underline{\quad} = 14 = 5$ · $5 + \underline{\quad} = 6 = 1$ · $4 + \underline{\quad} = 8 = 4$ · $10 + \underline{\quad} = 18 = 8$