The Mystery of the Golden Gear

Grade 2 math · Multiplication, Place value, Addition, Subtraction, Missing addends · Reading level grades 3-4

Detective: _____ **Date:** _____

Harbor Master Gearbeard woke up to find his shiny Golden Gear missing! A sneaky robot pirate crept onto the dockyard and snatched it before sunrise. Detective Bot must trace the clues and 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 Scallywag Bot is _____

Possible suspects

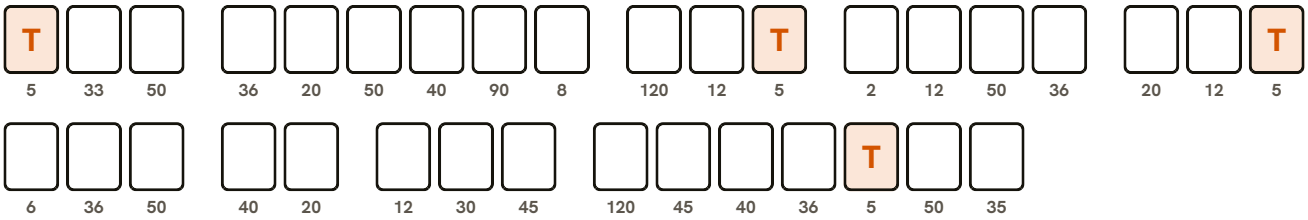
Cross off a row as each clue rules it out. The one left at the end is the culprit.

NAME	PRIMARY GADGET	CYBER CANNON	STANCE	BANDANA COLOR	WEAKNESS
Tracker Tom	Laser Hook	Frost Beam	Right Footed	Black Bandana	Loud Whistles
Radar Ray	Magnet Claw	Frost Beam	Left Footed	Red Bandana	Loud Whistles
Salty Wires	Drill Arm	Rust Blast	Right Footed	Black Bandana	Soapy Water
Copperbeard	Magnet Claw	Rust Blast	Left Footed	Black Bandana	Soapy Water
Ollie Oilcan	Rocket Boot	Oil Blaster	Left Footed	Black Bandana	Loud Whistles
Rusty Rusty	Drill Arm	Sonic Cannon	Right Footed	Black Bandana	Bright Flashlights
Iron Sam	Laser Hook	Frost Beam	Left Footed	Black Bandana	Loud Whistles
Patch Byte	Magnet Claw	Oil Blaster	Left Footed	Black Bandana	Loud Whistles
Welder Wally	Rocket Boot	Rust Blast	Left Footed	Black Bandana	Loud Whistles
Gearhead Greta	Laser Hook	Rust Blast	Right Footed	Black Bandana	Loud Whistles
Rivet Rachel	Steam Jet	Sonic Cannon	Left Footed	Black Bandana	Loud Whistles
Anchor Amy	Rocket Boot	Spark Cannon	Left Footed	Blue Bandana	Bright Flashlights
Mechanic Mae	Laser Hook	Frost Beam	Left Footed	Blue Bandana	Bright Flashlights
Barnaby Bolts	Drill Arm	Frost Beam	Left Footed	Black Bandana	Bright Flashlights
Scrapjack	Drill Arm	Sonic Cannon	Left Footed	Black Bandana	Loud Whistles
Circuit Cy	Magnet Claw	Rust Blast	Right Footed	Blue Bandana	Bright Flashlights
Booster Bob	Rocket Boot	Frost Beam	Right Footed	Blue Bandana	Soapy Water
Cannon Carl	Drill Arm	Frost Beam	Left Footed	Red Bandana	Loud Whistles
Binnacle Ben	Laser Hook	Oil Blaster	Left Footed	Black Bandana	Loud Whistles
Captain Sprocket	Laser Hook	Sonic Cannon	Right Footed	Red Bandana	Bright Flashlights
Pegleg Piston	Magnet Claw	Rust Blast	Right Footed	Black Bandana	Soapy Water

CLUE 1 Multiplication facts (1-12)

> Harbor Master Gearbeard counted crates of spare bolts stacked in equal rows across the deck to find a hidden code.

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



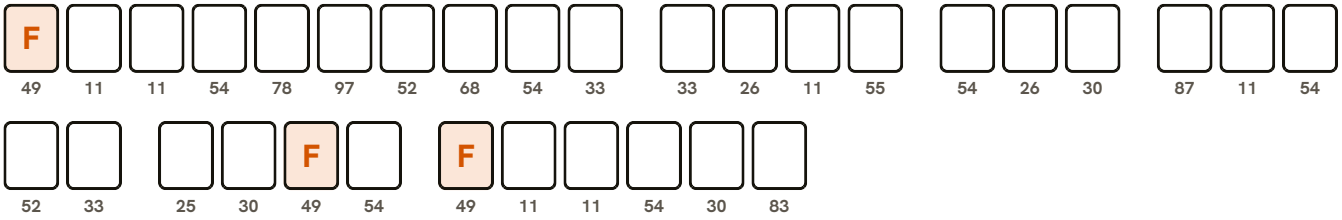
1 × 5 = ☐ → T	12 × 1 = ☐ → O	2 × 4 = ☐ → Y	6 × 5 = ☐ → I
10 × 9 = ☐ → K	3 × 11 = ☐ → H	10 × 2 = ☐ → N	
10 × 12 = ☐ → B	5 × 9 = ☐ → L	2 × 1 = ☐ → D	
10 × 4 = ☐ → A	4 × 9 = ☐ → S	7 × 5 = ☐ → R	
5 × 10 = ☐ → E	6 × 1 = ☐ → U		

Scratch space:

CLUE 2 Place value

The guard robot checked the digital door log by reading the digits in the tens and ones places.

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



What number has 4 tens and 9 ones? ☐ → F

What number has 8 tens and 7 ones? ☐ → B

What number has 5 tens and 5 ones? ☐ → W

What number has 2 tens and 5 ones? ☐ → L

What number has 8 tens and 3 ones? ☐ → D

What number has 3 tens and 0 ones? ☐ → E

What number has 7 tens and 8 ones? ☐ → P

What number has 6 tens and 8 ones? ☐ → N

What number has 2 tens and 6 ones? ☐ → H

What number has 1 ten and 1 one? ☐ → O

What number has 5 tens and 2 ones? ☐ → I

What number has 9 tens and 7 ones? ☐ → R

What number has 3 tens and 3 ones? ☐ → S

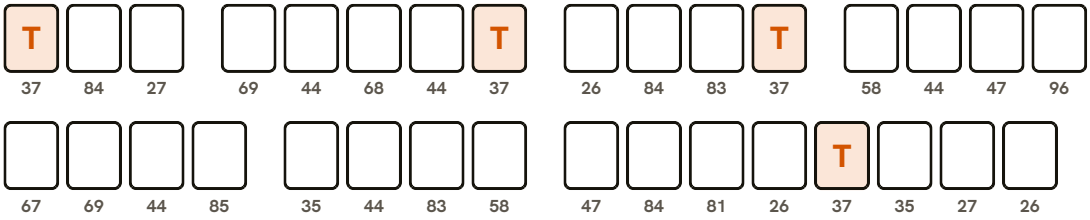
What number has 5 tens and 4 ones? ☐ → T

Scratch space:

CLUE 3 Addition

Detective Bot added up all the brass coins found scattered near the dock gate.

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



18 + 19 = ☐ → T	24 + 34 = ☐ → D	9 + 17 = ☐ → S
30 + 55 = ☐ → M	46 + 38 = ☐ → H	11 + 24 = ☐ → L
27 + 40 = ☐ → F	36 + 45 = ☐ → I	30 + 38 = ☐ → B
27 + 17 = ☐ → O	46 + 50 = ☐ → N	38 + 45 = ☐ → U
29 + 40 = ☐ → R	15 + 12 = ☐ → E	26 + 21 = ☐ → W

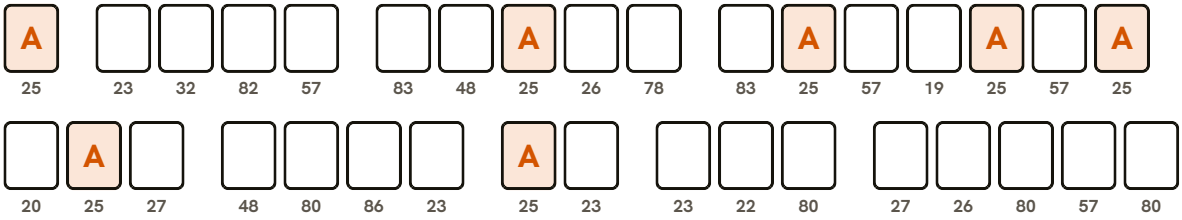
Scratch space:

CLUE 4

Subtraction

The crew calculated how many energy cells remained in the ship battery after the break in.

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



37 - 12 = ☐ → A

66 - 9 = ☐ → N

121 - 35 = ☐ → F

50 - 2 = ☐ → L

40 - 21 = ☐ → D

101 - 18 = ☐ → B

65 - 33 = ☐ → O

45 - 18 = ☐ → S

54 - 34 = ☐ → W

119 - 39 = ☐ → E

88 - 6 = ☐ → R

36 - 14 = ☐ → H

65 - 39 = ☐ → C

60 - 37 = ☐ → T

112 - 34 = ☐ → K

Scratch space:

CLUE 5 Missing addends - the last clue

> Gearbeard needed a full power charge for the searchlight, so he figured out how much energy was missing.

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:

4 + ___ = 5 ☐	3 + ___ = 14 ☐	7 + ___ = 15 ☐	9 + ___ = 16 ☐
8 + ___ = 10 ☐	9 + ___ = 13 ☐	3 + ___ = 8 ☐	6 + ___ = 18 ☐
6 + ___ = 15 ☐	10 + ___ = 20 ☐	1 + ___ = 7 ☐	

Step 2 - cross out the sentence with each answer:

1. The villain zoomed with a rocket boot, then sprayed a rust blast.
2. The villain grabbed with a magnet claw, then sparked a spark cannon.
3. The villain fired a laser hook, then zapped a frost beam.
4. The villain fired a laser hook, then squirted an oil blaster.
5. The villain fired a laser hook, then shot a sonic cannon.
6. The villain grabbed with a magnet claw, then sprayed a rust blast.
7. The villain zoomed with a rocket boot, then sparked a spark cannon.
8. The villain spun a drill arm, then shot a sonic cannon.
9. The villain blasted a steam jet, then squirted an oil blaster.
10. The villain spun a drill arm, then sprayed a rust blast.
11. The villain blasted a steam jet, then shot a sonic cannon.
12. The villain fired a laser hook, then sprayed a rust blast.

TEACHER / PARENT

Answer Key

The Mystery of the Golden Gear

Culprit: Iron Sam

Laser Hook · Frost Beam · Left Footed · Black Bandana · Loud Whistles

Trail: Start 21 → Clue 1 18 → Clue 2 10 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Multiplication facts (1-12)): "THE SNEAKY BOT DOES NOT USE AN OIL BLASTER"

1 × 5 = 5 (T) · 12 × 1 = 12 (O) · 2 × 4 = 8 (Y) · 6 × 5 = 30 (I) · 10 × 9 = 90 (K) · 3 × 11 = 33 (H) · 10 × 2 = 20 (N) · 10 × 12 = 120 (B) · 5 × 9 = 45 (L) · 2 × 1 = 2 (D) · 10 × 4 = 40 (A) · 4 × 9 = 36 (S) · 7 × 5 = 35 (R) · 5 × 10 = 50 (E) · 6 × 1 = 6 (U)

Clue 2 (Place value): "FOOTPRINTS SHOW THE BOT IS LEFT FOOTED"

What number has 4 tens and 9 ones? = 49 (F) · What number has 8 tens and 7 ones? = 87 (B) · What number has 5 tens and 5 ones? = 55 (W) · What number has 2 tens and 5 ones? = 25 (L) · What number has 8 tens and 3 ones? = 83 (D) · What number has 3 tens and 0 ones? = 30 (E) · What number has 7 tens and 8 ones? = 78 (P) · What number has 6 tens and 8 ones? = 68 (N) · What number has 2 tens and 6 ones? = 26 (H) · What number has 1 ten and 1 one? = 11 (O) · What number has 5 tens and 2 ones? = 52 (I) · What number has 9 tens and 7 ones? = 97 (R) · What number has 3 tens and 3 ones? = 33 (S) · What number has 5 tens and 4 ones? = 54 (T)

Clue 3 (Addition): "THE ROBOT SHUT DOWN FROM LOUD WHISTLES"

18 + 19 = 37 (T) · 24 + 34 = 58 (D) · 9 + 17 = 26 (S) · 30 + 55 = 85 (M) · 46 + 38 = 84 (H) · 11 + 24 = 35 (L) · 27 + 40 = 67 (F) · 36 + 45 = 81 (I) · 30 + 38 = 68 (B) · 27 + 17 = 44 (O) · 46 + 50 = 96 (N) · 38 + 45 = 83 (U) · 29 + 40 = 69 (R) · 15 + 12 = 27 (E) · 26 + 21 = 47 (W)

Clue 4 (Subtraction): "A TORN BLACK BANDANA WAS LEFT AT THE SCENE"

37 - 12 = 25 (A) · 66 - 9 = 57 (N) · 121 - 35 = 86 (F) · 50 - 2 = 48 (L) · 40 - 21 = 19 (D) · 101 - 18 = 83 (B) · 65 - 33 = 32 (O) · 45 - 18 = 27 (S) · 54 - 34 = 20 (W) · 119 - 39 = 80 (E) · 88 - 6 = 82 (R) · 36 - 14 = 22 (H) · 65 - 39 = 26 (C) · 60 - 37 = 23 (T) · 112 - 34 = 78 (K)

Clue 5 (Missing addends): surviving statement is box 3 → Iron Sam

4 + ___ = 5 = 1 · 3 + ___ = 14 = 11 · 7 + ___ = 15 = 8 · 9 + ___ = 16 = 7 · 8 + ___ = 10 = 2 · 9 + ___ = 13 = 4 · 3 + ___ = 8 = 5 · 6 + ___ = 18 = 12 · 6 + ___ = 15 = 9 · 10 + ___ = 20 = 10 · 1 + ___ = 7 = 6