The Beacon Grid Sabotage

Grade 7 math · Integers, Multi-step word problems, Percentages, Order of operations, Missing addends · Reading level grades 7-9

Detective: _____ **Date:** _____

Someone sabotaged the central Redstone beacon grid at the Crafting Guild Citadel and swapped the nether star for a fake block of dyed quartz. The Guild needs a sharp detective to solve the clues, examine the grid evidence, and uncover 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 builder is _____

Possible suspects

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

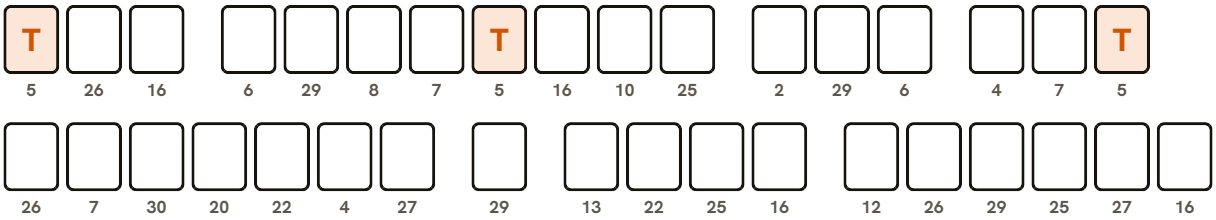
NAME	PRIMARY TOOL	OFFHAND GEAR	COMBAT STANCE	ARMOR TRIM COLOR	BLOCK HAZARD
PearlescentMoon	Golden Shovel	Totem of Undying	Right Handed	Copper Trim	Potion of Slowness
Xisuma	Redstone Wrench	Shield	Right Handed	Amethyst Trim	Potion of Slowness
Hypno	Diamond Pickaxe	Fire Charge	Right Handed	Copper Trim	Potion of Slowness
GoodTimesWithScar	Redstone Wrench	Totem of Undying	Left Handed	Amethyst Trim	Anvil Drop
ImpulseSV	Golden Shovel	Shield	Right Handed	Emerald Trim	Anvil Drop
FalseSymmetry	Redstone Wrench	Fireworks	Right Handed	Amethyst Trim	Anvil Drop
Smajor	Netherite Sword	Fire Charge	Right Handed	Amethyst Trim	Anvil Drop
Rendog	Diamond Pickaxe	Totem of Undying	Right Handed	Amethyst Trim	Splash Lava
Grian	Diamond Pickaxe	Fire Charge	Left Handed	Emerald Trim	Splash Lava
CaptainSparklez	Netherite Sword	Totem of Undying	Right Handed	Amethyst Trim	Anvil Drop
TangoTek	Golden Shovel	Fireworks	Right Handed	Amethyst Trim	Anvil Drop
Cubfan	Redstone Wrench	Totem of Undying	Right Handed	Amethyst Trim	Potion of Slowness
Docm77	Diamond Pickaxe	Shield	Right Handed	Emerald Trim	Anvil Drop
LDShadowLady	Golden Shovel	Totem of Undying	Left Handed	Copper Trim	Anvil Drop
BDoubleO	Enchanted Bow	Ender Pearl	Right Handed	Amethyst Trim	Potion of Slowness
GeminiTay	Diamond Pickaxe	Fire Charge	Left Handed	Copper Trim	Potion of Slowness
Smallishbeans	Golden Shovel	Fireworks	Right Handed	Copper Trim	Potion of Slowness
EthosLab	Golden Shovel	Totem of Undying	Left Handed	Amethyst Trim	Potion of Slowness
Stressmonster	Redstone Wrench	Shield	Left Handed	Amethyst Trim	Anvil Drop
DanTDM	Diamond Pickaxe	Ender Pearl	Right Handed	Amethyst Trim	Anvil Drop
Stampy	Enchanted Bow	Totem of Undying	Left Handed	Copper Trim	Potion of Slowness

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CLUE 1 Integers

> To track the inventory movements across multiple storage chests in the vault, we must calculate the exact net quantity of items removed during the breach.

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



(-5) + 10 = ☐ → **T**

(-5) + 9 = ☐ → **N**

(-6) + 14 = ☐ → **B**

(-4) + 20 = ☐ → **E**

(-7) + 20 = ☐ → **F**

(-11) + 13 = ☐ → **W**

(-7) + 19 = ☐ → **C**

25 - (-2) = ☐ → **G**

7 - (-3) = ☐ → **U**

(-1) + 23 = ☐ → **I**

(-7) + 14 = ☐ → **O**

26 - (-4) = ☐ → **L**

(-7) + 27 = ☐ → **D**

17 - (-12) = ☐ → **A**

(-14) + 20 = ☐ → **S**

(-5) + 31 = ☐ → **H**

21 - (-4) = ☐ → **R**

Scratch space:

CLUE 2 Multi-step word problems

> Analyzing the change in Y coordinate levels between the underground cavern and the high beacon tower reveals the movement trail of the intruder.

Solve each problem, then write its letter in the boxes to fill in the missing word.

A witness saw the villain was

R								D	E	D
18	19	85	77	66	77	23	81			

.

The master builder earned 3 obsidian blocks in each of 5 rounds, plus 11 bonus obsidian blocks. Then 8 obsidian blocks were lost. How many obsidian blocks are left?

Answer: ☐ → **R**

There were 519 ender pearls in all. 9 ender pearls were set aside. The rest were shared equally among 6 the Redstone Corps. How many ender pearls did each get?

Answer: ☐ → **G**

The master builder earned 7 diamonds in each of 3 rounds, plus 12 bonus diamonds. Then 10 diamonds were lost. How many diamonds are left?

Answer: ☐ → **A**

The master builder collected 129 diamonds in the morning and 114 diamonds in the afternoon, then split them equally among 3 the Redstone Corps. How many diamonds did each get?

Answer: ☐ → **N**

The master builder earned 6 glowstone dust in each of 6 rounds, plus 43 bonus glowstone dust. Then 2 glowstone dust were lost. How many glowstone dust are left?

Answer: ☐ → **H**

There were 223 diamonds in all. 1 the Redstone Corps used 25 diamonds each. The other 3 the Redstone Corps shared the rest equally. How many diamonds did each of the other the Redstone Corps get?

Answer: ☐ → **T**

The master builder earned 5 glowstone dust in each of 2 rounds, plus 17 bonus glowstone dust. Then 8 glowstone dust were lost. How many glowstone dust are left?

Answer: ☐ → **I**

Scratch space:

CLUE 3 Percentages

> We surveyed the remaining durability percentages on the armor stands left near the crime scene to determine which gear set sustained damage.

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

D					D				D							D			
3	11	45	11	55	3	11	21	17	3	21	4	16	16	11	3	6	55		
6	55	39	43	41	45	21	4	14	6	51	4	39	11						

25% of 12 = ☐ → D

5% of 900 = ☐ → F

10% of 160 = ☐ → P

75% of 68 = ☐ → B

5% of 220 = ☐ → E

10% of 410 = ☐ → L

5% of 280 = ☐ → M

25% of 172 = ☐ → I

10% of 550 = ☐ → N

20% of 195 = ☐ → V

5% of 420 = ☐ → R

50% of 12 = ☐ → A

25% of 16 = ☐ → O

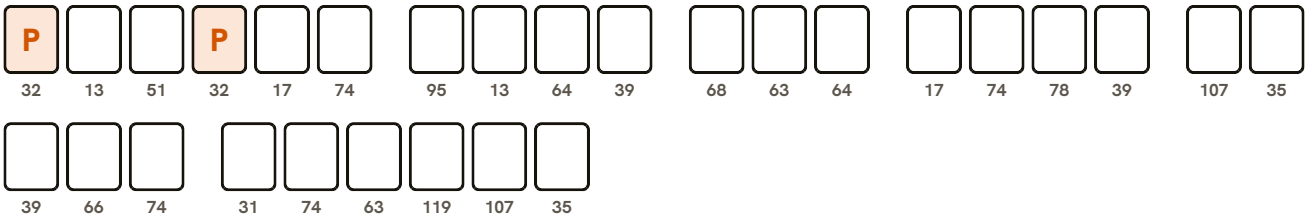
10% of 170 = ☐ → S

Scratch space:

CLUE 4 Order of operations

> Decoding the redstone tick sequence required calculating the order of operations for the complex repeater clock that opened the vault doors.

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



20 + 3 × 4 = ☐ → P

47 + 2 × 2 = ☐ → R

11 × 11 - 14 = ☐ → O

9 × 12 - 30 = ☐ → F

7 × 11 - 3 = ☐ → E

54 + 2 × 7 = ☐ → W

80 + 3 × 5 = ☐ → D

29 + 3 × 2 = ☐ → N

84 + 5 × 7 = ☐ → C

7 + 2 × 3 = ☐ → U

4 × 6 - 7 = ☐ → L

32 + 8 × 4 = ☐ → S

47 + 4 × 4 = ☐ → A

6 × 8 - 9 = ☐ → T

9 × 9 - 15 = ☐ → H

10 × 6 - 29 = ☐ → B

Scratch space:

CLUE 5 Missing addends - the last clue

> Calculating the missing block counts needed to restore the damaged defensive wall pinpointed which section the intruder broke through.

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 + ___ = 2 ☐	37 + ___ = 49 ☐	22 + ___ = 29 ☐	15 + ___ = 24 ☐
33 + ___ = 37 ☐	32 + ___ = 34 ☐	20 + ___ = 23 ☐	13 + ___ = 18 ☐
7 + ___ = 18 ☐	2 + ___ = 8 ☐	19 + ___ = 27 ☐	

Step 2 - cross out the sentence with each answer:

1. The villain dismantled the redstone wiring, then teleported using an ender pearl.
2. The villain pushed through the iron doors, then fled without a fire charge.
3. The villain overloaded the power repeaters, then vanished holding a totem.
4. The villain dug through the obsidian floor, then teleported using an ender pearl.
5. The villain overloaded the power repeaters, then fled without a fire charge.
6. The villain smashed the glass housing, then vanished holding a totem.
7. The villain overloaded the power repeaters, then boosted away using fireworks.
8. The villain smashed the glass housing, then boosted away using fireworks.
9. The villain smashed the glass housing, then fled without a fire charge.
10. The villain pushed through the iron doors, then boosted away using fireworks.
11. The villain smashed the glass housing, then teleported using an ender pearl.
12. The villain dug through the obsidian floor, then vanished holding a totem.

TEACHER / PARENT

Answer Key

The Beacon Grid Sabotage

Culprit: TangoTek

Golden Shovel · Fireworks · Right Handed · Amethyst Trim · Anvil Drop

Trail: Start 21 → Clue 1 17 → Clue 2 12 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Integers): "THE SABOTEUR WAS NOT HOLDING A FIRE CHARGE"

(-5) + 10 = 5 (T) · (-5) + 9 = 4 (N) · (-6) + 14 = 8 (B) · (-4) + 20 = 16 (E) · (-7) + 20 = 13 (F) · (-11) + 13 = 2 (W) · (-7) + 19 = 12 (C) · 25 - (-2) = 27 (G) · 7 - (-3) = 10 (U) · (-1) + 23 = 22 (I) · (-7) + 14 = 7 (O) · 26 - (-4) = 30 (L) · (-7) + 27 = 20 (D) · 17 - (-12) = 29 (A) · (-14) + 20 = 6 (S) · (-5) + 31 = 26 (H) · 21 - (-4) = 25 (R)

Clue 2 (Multi-step word problems): "RIGHT HANDED"

The master builder earned 3 obsidian blocks in each of 5 rounds, plus 11 bonus obsidian blocks. Then 8 obsidian blocks were lost. How many obsidian blocks are left? = 18 (R) · There were 519 ender pearls in all. 9 ender pearls were set aside. The rest were shared equally among 6 the Redstone Corps. How many ender pearls did each get? = 85 (G) · The master builder earned 7 diamonds in each of 3 rounds, plus 12 bonus diamonds. Then 10 diamonds were lost. How many diamonds are left? = 23 (A) · The master builder collected 129 diamonds in the morning and 114 diamonds in the afternoon, then split them equally among 3 the Redstone Corps. How many diamonds did each get? = 81 (N) · The master builder earned 6 glowstone dust in each of 6 rounds, plus 43 bonus glowstone dust. Then 2 glowstone dust were lost. How many glowstone dust are left? = 77 (H) · There were 223 diamonds in all. 1 the Redstone Corps used 25 diamonds each. The other 3 the Redstone Corps shared the rest equally. How many diamonds did each of the other the Redstone Corps get? = 66 (T) · The master builder earned 5 glowstone dust in each of 2 rounds, plus 17 bonus glowstone dust. Then 8 glowstone dust were lost. How many glowstone dust are left? = 19 (I)

Clue 3 (Percentages): "DEFENDERS DROPPED AN ANVIL FROM ABOVE"

25% of 12 = 3 (D) · 5% of 900 = 45 (F) · 10% of 160 = 16 (P) · 75% of 68 = 51 (B) · 5% of 220 = 11 (E) · 10% of 410 = 41 (L) · 5% of 280 = 14 (M) · 25% of 172 = 43 (I) · 10% of 550 = 55 (N) · 20% of 195 = 39 (V) · 5% of 420 = 21 (R) · 50% of 12 = 6 (A) · 25% of 16 = 4 (O) · 10% of 170 = 17 (S)

Clue 4 (Order of operations): "PURPLE DUST WAS LEFT ON THE BEACON"

20 + 3 × 4 = 32 (P) · 47 + 2 × 2 = 51 (R) · 11 × 11 - 14 = 107 (O) · 9 × 12 - 30 = 78 (F) · 7 × 11 - 3 = 74 (E) · 54 + 2 × 7 = 68 (W) · 80 + 3 × 5 = 95 (D) · 29 + 3 × 2 = 35 (N) · 84 + 5 × 7 = 119 (C) · 7 + 2 × 3 = 13 (U) · 4 × 6 - 7 = 17 (L) · 32 + 8 × 4 = 64 (S) · 47 + 4 × 4 = 63 (A) · 6 × 8 - 9 = 39 (T) · 9 × 9 - 15 = 66 (H) · 10 × 6 - 29 = 31 (B)

Clue 5 (Missing addends): surviving statement is box 10 → TangoTek

1 + ___ = 2 = 1 · 37 + ___ = 49 = 12 · 22 + ___ = 29 = 7 · 15 + ___ = 24 = 9 · 33 + ___ = 37 = 4 · 32 + ___ = 34 = 2 · 20 + ___ = 23 = 3 · 13 + ___ = 18 = 5 · 7 + ___ = 18 = 11 · 2 + ___ = 8 = 6 · 19 + ___ = 27 = 8