



The Mystery of the Broken Vault

Grade 4 math · Rounding, Addition, Subtraction, Multiplication, Division · Reading level grades 3-4

Detective: _____ Date: _____

Someone snuck into the Pixel Peak Village bank and scattered the village supplies across the server! Use your detective skills and solve math puzzles to unmask the secret Griefer.

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 Griefer is _____

Possible suspects

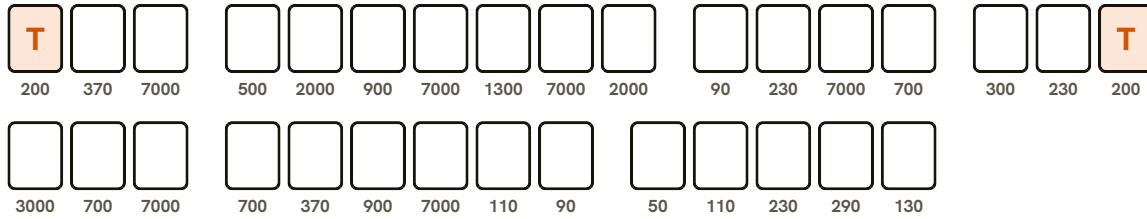
Cross off a row as each clue rules it out. The one left at the end is the culprit.

NAME	MAIN ATTACK	ESCAPE SKILL	DOMINANT HAND	HAIR COLOR	COUNTER WEAPON
Blocky Ben	Redstone Trap	Shield Block	Left Handed	Orange Hair	Snowball Toss
Diamond Dan	Redstone Trap	Elytra Glide	Right Handed	Orange Hair	Iron Sword
Furnace Faye	Piston Swipe	Elytra Glide	Left Handed	Orange Hair	Iron Sword
Redstone Rita	Piston Swipe	Golem Guard	Left Handed	Brown Hair	Snowball Toss
Nether Ned	TNT Explosion	Speed Boost	Right Handed	Brown Hair	Water Bucket
Pixel Pete	Lava Spill	Potion Brew	Left Handed	Orange Hair	Iron Sword
Miner Mark	Redstone Trap	Elytra Glide	Left Handed	Green Hair	Iron Sword
Alex Armor	Anvil Drop	Speed Boost	Left Handed	Orange Hair	Water Bucket
Lava Luke	TNT Explosion	Speed Boost	Right Handed	Green Hair	Iron Sword
Gravel Grace	Lava Spill	Shield Block	Right Handed	Brown Hair	Snowball Toss
Emerald Emma	Anvil Drop	Speed Boost	Left Handed	Green Hair	Iron Sword
Voxel Vera	Anvil Drop	Shield Block	Right Handed	Orange Hair	Iron Sword
Quartz Quinn	Lava Spill	Elytra Glide	Right Handed	Green Hair	Iron Sword
Torch Tiff	Anvil Drop	Golem Guard	Right Handed	Orange Hair	Iron Sword
Beacon Bob	TNT Explosion	Elytra Glide	Right Handed	Orange Hair	Iron Sword
Cavern Carl	Lava Spill	Potion Brew	Left Handed	Green Hair	Snowball Toss
Crafty Chloe	TNT Explosion	Shield Block	Right Handed	Orange Hair	Snowball Toss
Bedrock Bill	Piston Swipe	Elytra Glide	Right Handed	Orange Hair	Iron Sword
Builder Sam	Lava Spill	Elytra Glide	Left Handed	Orange Hair	Iron Sword
Cobble Chris	TNT Explosion	Shield Block	Left Handed	Brown Hair	Water Bucket
Piston Paul	Piston Swipe	Potion Brew	Right Handed	Orange Hair	Water Bucket

CLUE 1 Rounding

The scanner screen only shows rounded block counts to keep performance fast. Check the total to narrow down the evidence.

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



Round 188 to the nearest hundred → **T**

Round 535 to the nearest hundred → **G**

Round 7,068 to the nearest thousand → **E**

Round 48 to the nearest ten → **B**

Round 883 to the nearest hundred → **I**

Round 311 to the nearest hundred → **N**

Round 106 to the nearest ten → **L**

Round 367 to the nearest ten → **H**

Round 286 to the nearest ten → **C**

Round 129 to the nearest ten → **K**

Round 1,546 to the nearest thousand → **R**

Round 3,244 to the nearest thousand → **U**

Round 91 to the nearest ten → **D**

Round 231 to the nearest ten → **O**

Round 1,252 to the nearest hundred → **F**

Round 676 to the nearest hundred → **S**

Scratch space:

CLUE 2 Addition

To reconstruct the griever's path, combine the total resources gathered across both mining trips.

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

T									T							T		
7185	3560	7342	8746	4163	8746	3801	7342	7919	7185	8746	6415	4163	8790	7675	7185	3560	7342	
										T								
3801	3260	7919	7928	7277	8330	7342	2980	3260	7675	3560	7185	3560	7277	8790	5740	7342	5740	

$4363 + 2822 = \square \rightarrow \text{**T**}$

$1950 + 1610 = \square \rightarrow \text{**H**}$

$3895 + 4435 = \square \rightarrow \text{**X**}$

$5506 + 2422 = \square \rightarrow \text{**K**}$

$4558 + 2784 = \square \rightarrow \text{**E**}$

$2637 + 3778 = \square \rightarrow \text{**W**}$

$1489 + 1491 = \square \rightarrow \text{**R**}$

$3613 + 4062 = \square \rightarrow \text{**G**}$

$2069 + 1191 = \square \rightarrow \text{**I**}$

$4432 + 3487 = \square \rightarrow \text{**C**}$

$4052 + 4694 = \square \rightarrow \text{**S**}$

$1621 + 2180 = \square \rightarrow \text{**P**}$

$2796 + 1367 = \square \rightarrow \text{**U**}$

$1904 + 3836 = \square \rightarrow \text{**D**}$

$2848 + 5942 = \square \rightarrow \text{**N**}$

$4315 + 2962 = \square \rightarrow \text{**A**}$

Scratch space:

Subtraction

Calculate how many blocks were taken from the village vault by finding the missing amount.

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

Diagram illustrating the distribution of 16-bit words in memory. The words are arranged in two rows, with the word 4406 highlighted in orange in both rows.

Row 1 (Top): 4406, 2146, 8424, 1986, 5371, 4930, 3439, 7518, 8424, 4053, 8640, 4406, 4053, 5371, 6048, 7524, 1986, 1306, 6048, 7524.

Row 2 (Bottom): 8106, 4930, 4406, 2146, 1306, 2890, 4930, 4053, 7567, 2890, 8640, 8106, 7567, 4053, 7518.

$9223 - 4817 = \boxed{} \rightarrow \mathbf{T}$

$6252 - 204 = \boxed{} \rightarrow \mathbf{C}$

$$4266 - 1376 = \boxed{} \rightarrow \boxed{\text{N}}$$

$$9872 - 4942 = \boxed{} \rightarrow \boxed{}$$

$$6647 - 2594 = \boxed{} \rightarrow \boxed{\text{R}}$$

$11422 - 3904 = \boxed{} \rightarrow \boxed{\text{D}}$

$4099 - 2113 = \boxed{} \rightarrow \boxed{\mathbf{B}}$

$$9353 - 713 = \boxed{} \rightarrow \boxed{\text{S}}$$

$$4197 - 758 = \boxed{} \rightarrow \boxed{\text{L}}$$

$$8342 - 818 = \boxed{} \rightarrow \boxed{\text{K}}$$

$$7666 - 99 = \boxed{} \rightarrow \boxed{0}$$

$$4553 - 2407 = \boxed{} \rightarrow \boxed{\text{H}}$$

$10412 - 2306 = \boxed{} \rightarrow \boxed{\text{W}}$

$9685 - 1261 = \boxed{} \rightarrow \boxed{\text{E}}$

$2126 - 820 = \boxed{} \rightarrow \boxed{\text{A}}$

$$10073 - 4702 = \boxed{} \rightarrow \boxed{\text{U}}$$

Scratch space:

CLUE 4
Multiplication facts (1-12)

The griever stored stolen loot in identical stack rows inside double chests. Multiply to find the total count.

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

O																	
12	36	14	8	40	84	99	14	144	36	49	14	132	132	50	45	6	32

	O																
50	12	14	1	14	21	14	88	45	6	32	84	50					

$1 \times 12 = \square \rightarrow \text{O}$

$6 \times 1 = \square \rightarrow \text{C}$

$11 \times 12 = \square \rightarrow \text{S}$

$8 \times 4 = \square \rightarrow \text{K}$

$7 \times 7 = \square \rightarrow \text{W}$

$10 \times 5 = \square \rightarrow \text{T}$

$3 \times 7 = \square \rightarrow \text{V}$

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

$9 \times 5 = \square \rightarrow \text{U}$

$12 \times 7 = \square \rightarrow \text{E}$

$1 \times 1 = \square \rightarrow \text{L}$

$2 \times 4 = \square \rightarrow \text{N}$

$11 \times 9 = \square \rightarrow \text{H}$

$6 \times 6 = \square \rightarrow \text{R}$

$5 \times 8 = \square \rightarrow \text{G}$

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

$7 \times 2 = \square \rightarrow \text{A}$

Scratch space:

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

Divide the recovered emeralds equally among the guard posts to complete the investigation.

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:

$4 \div 4 = \boxed{}$

$32 \div 4 = \boxed{}$

$63 \div 9 = \boxed{}$

$132 \div 11 = \boxed{}$

$35 \div 7 = \boxed{}$

$63 \div 7 = \boxed{}$

$12 \div 2 = \boxed{}$

$10 \div 1 = \boxed{}$

$36 \div 12 = \boxed{}$

$110 \div 10 = \boxed{}$

$4 \div 1 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain detonated a tnt explosion, then glided away with elytra.
2. The villain triggered a redstone trap, then glided away with elytra.
3. The villain triggered a redstone trap, then drank a brewed potion.
4. The villain dropped a heavy anvil, then glided away with elytra.
5. The villain dropped a heavy anvil, then dashed off with speed boost.
6. The villain activated a piston swipe, then raised a shield block.
7. The villain activated a piston swipe, then glided away with elytra.
8. The villain dropped a heavy anvil, then summoned a golem guard.
9. The villain detonated a tnt explosion, then raised a shield block.
10. The villain poured a lava spill, then raised a shield block.
11. The villain dropped a heavy anvil, then raised a shield block.
12. The villain activated a piston swipe, then dashed off with speed boost.

Answer Key

The Mystery of the Broken Vault

Culprit: Diamond Dan

Redstone Trap · Elytra Glide · Right Handed · Orange Hair · Iron Sword

Trail: Start 21 → Clue 1 16 → Clue 2 8 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Rounding): "THE GRIEFER DOES NOT USE SHIELD BLOCK"

Round 188 to the nearest hundred = 200 (T) · Round 535 to the nearest hundred = 500 (G) · Round 7,068 to the nearest thousand = 7000 (E) · Round 48 to the nearest ten = 50 (B) · Round 883 to the nearest hundred = 900 (I) · Round 311 to the nearest hundred = 300 (N) · Round 106 to the nearest ten = 110 (L) · Round 367 to the nearest ten = 370 (H) · Round 286 to the nearest ten = 290 (C) · Round 129 to the nearest ten = 130 (K) · Round 1,546 to the nearest thousand = 2000 (R) · Round 3,244 to the nearest thousand = 3000 (U) · Round 91 to the nearest ten = 90 (D) · Round 231 to the nearest ten = 230 (O) · Round 1,252 to the nearest hundred = 1300 (F) · Round 676 to the nearest hundred = 700 (S)

Clue 2 (Addition): "THE SUSPECT SWUNG THE PICKAXE RIGHT HANDED"

$4363 + 2822 = 7185$ (T) · $1950 + 1610 = 3560$ (H) · $3895 + 4435 = 8330$ (X) · $5506 + 2422 = 7928$ (K) · $4558 + 2784 = 7342$ (E) · $2637 + 3778 = 6415$ (W) · $1489 + 1491 = 2980$ (R) · $3613 + 4062 = 7675$ (G) · $2069 + 1191 = 3260$ (I) · $4432 + 3487 = 7919$ (C) · $4052 + 4694 = 8746$ (S) · $1621 + 2180 = 3801$ (P) · $2796 + 1367 = 4163$ (U) · $1904 + 3836 = 5740$ (D) · $2848 + 5942 = 8790$ (N) · $4315 + 2962 = 7277$ (A)

Clue 3 (Subtraction): "THE BUILDER STRUCK BACK WITH AN IRON SWORD"

$9223 - 4817 = 4406$ (T) · $6252 - 204 = 6048$ (C) · $4266 - 1376 = 2890$ (N) · $9872 - 4942 = 4930$ (I) · $6647 - 2594 = 4053$ (R) · $11422 - 3904 = 7518$ (D) · $4099 - 2113 = 1986$ (B) · $9353 - 713 = 8640$ (S) · $4197 - 758 = 3439$ (L) · $8342 - 818 = 7524$ (K) · $7666 - 99 = 7567$ (O) · $4553 - 2407 = 2146$ (H) · $10412 - 2306 = 8106$ (W) · $9685 - 1261 = 8424$ (E) · $2126 - 820 = 1306$ (A) · $10073 - 4702 = 5371$ (U)

Clue 4 (Multiplication facts (1-12)): "ORANGE HAIR WAS STUCK TO A LAVA BUCKET"

$1 \times 12 = 12$ (O) · $6 \times 1 = 6$ (C) · $11 \times 12 = 132$ (S) · $8 \times 4 = 32$ (K) · $7 \times 7 = 49$ (W) · $10 \times 5 = 50$ (T) · $3 \times 7 = 21$ (V) · $11 \times 8 = 88$ (B) · $9 \times 5 = 45$ (U) · $12 \times 7 = 84$ (E) · $1 \times 1 = 1$ (L) · $2 \times 4 = 8$ (N) · $11 \times 9 = 99$ (H) · $6 \times 6 = 36$ (R) · $5 \times 8 = 40$ (G) · $12 \times 12 = 144$ (I) · $7 \times 2 = 14$ (A)

Clue 5 (Division facts (1-12)): surviving statement is box 2 → Diamond Dan

$4 \div 4 = 1$ · $32 \div 4 = 8$ · $63 \div 9 = 7$ · $132 \div 11 = 12$ · $35 \div 7 = 5$ · $63 \div 7 = 9$ · $12 \div 2 = 6$ · $10 \div 1 = 10$ · $36 \div 12 = 3$ · $110 \div 10 = 11$ · $4 \div 1 = 4$