



The Mystery of the Shadow Signal

Grade 5 math · Multiplication, Fractions of a number, Order of operations, Rounding, Division · Reading level grades 3-4

Detective: _____ **Date:** _____

Strange lights are flickering across Pine Valley and a strange signal is jamming the AV Club radios. Someone from another dimension is causing trouble, and only smart decoding can reveal the identity of 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 Shadow Master is _____

Possible suspects

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

NAME	PRIMARY POWER	SECONDARY POWER	DOMINANT HAND	HAIRSTYLE	MAJOR WEAKNESS
Will	Mind Reading	Sonic Screech	Right Handed	Feathered Shag	Loud Rock Music
Robin	Portal Control	Vine Lash	Left Handed	Curly Mullet	Flashlight Beam
Eddie	Mind Reading	Vine Lash	Right Handed	Buzz Cut	Eggo Waffles
Max	Shadow Cloak	Bat Swarms	Right Handed	Buzz Cut	Eggo Waffles
Mike	Mind Reading	Bat Swarms	Left Handed	Buzz Cut	Eggo Waffles
Joyce	Mind Reading	Sonic Screech	Right Handed	Buzz Cut	Eggo Waffles
Steve	Telekinesis	Vine Lash	Right Handed	Curly Mullet	Loud Rock Music
Dustin	Shadow Cloak	Vine Lash	Right Handed	Curly Mullet	Flashlight Beam
Murray	Mind Reading	Vine Lash	Right Handed	Buzz Cut	Loud Rock Music
Vickie	Electrical Surge	Sonic Screech	Left Handed	Curly Mullet	Loud Rock Music
Bob	Electrical Surge	Bat Swarms	Right Handed	Buzz Cut	Eggo Waffles
Jonathan	Telekinesis	Freeze Blast	Left Handed	Buzz Cut	Eggo Waffles
Nancy	Electrical Surge	Freeze Blast	Right Handed	Feathered Shag	Eggo Waffles
Billy	Shadow Cloak	Sonic Screech	Right Handed	Feathered Shag	Eggo Waffles
Carol	Electrical Surge	Sonic Screech	Right Handed	Buzz Cut	Eggo Waffles
Argyle	Portal Control	Time Warp	Left Handed	Curly Mullet	Loud Rock Music
Eleven	Electrical Surge	Vine Lash	Left Handed	Buzz Cut	Eggo Waffles
Chrissy	Shadow Cloak	Freeze Blast	Right Handed	Buzz Cut	Loud Rock Music
Erica	Portal Control	Time Warp	Right Handed	Buzz Cut	Eggo Waffles
Jim	Portal Control	Freeze Blast	Right Handed	Feathered Shag	Loud Rock Music
Lucas	Electrical Surge	Vine Lash	Left Handed	Curly Mullet	Eggo Waffles

Multiplication facts (1-12)

The AV Club counts batteries arranged in equal rows to decode a secret signal.

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

Diagram illustrating the multiplication of 12 by 77, showing the intermediate steps and the final result.

Top row (Partial products):

- 12 (under 12)
- 77 (under 77)
- 121 (under 121)

Bottom row (Final result):

- 55 (under 55)
- 27 (under 27)
- 121 (under 121)
- 27 (under 27)
- 16 (under 16)
- 5 (under 5)
- 132 (under 132)
- 14 (under 14)
- 27 (under 27)
- 14 (under 14)
- 40 (under 40)
- 121 (under 121)
- 121 (under 121)
- 14 (under 14)
- 77 (under 77)

$2 \times 6 = \square \rightarrow \boxed{\text{T}}$

$$8 \times 6 = \boxed{} \rightarrow \boxed{\mathbf{v}}$$

$11 \times 5 = \boxed{} \rightarrow \boxed{\text{U}}$

$7 \times 2 = \square \rightarrow \boxed{\text{C}}$

$2 \times 2 = \square \rightarrow \mathbf{A}$

$6 \times 11 = \square \rightarrow \mathbf{D}$

$4 \times 10 = \boxed{} \rightarrow \boxed{\text{R}}$

$$12 \times 11 = \boxed{} \rightarrow \boxed{\text{I}}$$

$11 \times 11 = \boxed{} \rightarrow \boxed{\text{E}}$

$$3 \times 9 = \boxed{} \rightarrow \boxed{\mathbf{S}}$$

$$4 \times 4 = \boxed{} \rightarrow \boxed{0}$$

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

$3 \times 6 = \square \rightarrow \boxed{\text{L}}$

$$7 \times 11 = \boxed{} \rightarrow \boxed{\text{H}}$$

Scratch space:

CLUE 2
Fractions of a number

Dustin reads a ham radio transmission and calculates a fraction of the channel frequency.

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

T									T					
30	26	32	6	18	6	16	32	29	30	18	6	32	19	2
				T										
39	8	34	26	30	26	2	23	19	32	19	19	8	2	38

$2/10 \text{ of } 150 = \square \rightarrow \text{T}$

$4/8 \text{ of } 52 = \square \rightarrow \text{H}$

$2/6 \text{ of } 57 = \square \rightarrow \text{D}$

$1/8 \text{ of } 128 = \square \rightarrow \text{P}$

$1/5 \text{ of } 10 = \square \rightarrow \text{A}$

$4/8 \text{ of } 68 = \square \rightarrow \text{G}$

$1/2 \text{ of } 58 = \square \rightarrow \text{C}$

$6/8 \text{ of } 52 = \square \rightarrow \text{R}$

$1/4 \text{ of } 72 = \square \rightarrow \text{U}$

$2/8 \text{ of } 92 = \square \rightarrow \text{N}$

$6/8 \text{ of } 8 = \square \rightarrow \text{S}$

$1/4 \text{ of } 152 = \square \rightarrow \text{L}$

$1/4 \text{ of } 32 = \square \rightarrow \text{I}$

$2/3 \text{ of } 48 = \square \rightarrow \text{E}$

Scratch space:

CLUE 3
Order of operations

Nancy follows a multi step formula on the arcade cabinet to unlock a clue.

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

T														T						
38	36	63	17	19	54	54	64	19	11	72	64	52	52	38	80	49	49	63	27	

42	53	63	55	55	80	72	64	66	66	54	63	52

$30 + 2 \times 4 = \boxed{} \rightarrow \boxed{\text{T}}$

$10 \times 6 - 11 = \boxed{} \rightarrow \boxed{\text{P}}$

$5 \times 3 - 4 = \boxed{} \rightarrow \boxed{\text{N}}$

$9 \times 6 - 27 = \boxed{} \rightarrow \boxed{\text{D}}$

$9 \times 7 - 11 = \boxed{} \rightarrow \boxed{\text{S}}$

$50 + 2 \times 8 = \boxed{} \rightarrow \boxed{\text{F}}$

$42 + 7 \times 3 = \boxed{} \rightarrow \boxed{\text{E}}$

$2 + 3 \times 5 = \boxed{} \rightarrow \boxed{\text{V}}$

$7 \times 8 - 2 = \boxed{} \rightarrow \boxed{\text{L}}$

$8 \times 9 - 17 = \boxed{} \rightarrow \boxed{\text{G}}$

$7 \times 11 - 5 = \boxed{} \rightarrow \boxed{\text{W}}$

$55 + 3 \times 3 = \boxed{} \rightarrow \boxed{\text{A}}$

$10 \times 4 - 4 = \boxed{} \rightarrow \boxed{\text{H}}$

$10 \times 7 - 28 = \boxed{} \rightarrow \boxed{\text{B}}$

$4 + 5 \times 3 = \boxed{} \rightarrow \boxed{\text{I}}$

$12 \times 6 - 19 = \boxed{} \rightarrow \boxed{\text{Y}}$

$10 \times 11 - 30 = \boxed{} \rightarrow \boxed{\text{O}}$

Scratch space:

CLUE 4
Rounding

The portal scanner screen rounds the energy levels to the nearest hundred.

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

W															
30	700	430	370	2000	20	2900	300	9000	370	5000	290	9000	3700	200	5000

430	5000	370	90	3700	1700	2000	1100	1100	4300	2000	290

Round 27 to the nearest ten → **W**

Round 4,346 to the nearest hundred → **C**

Round 271 to the nearest hundred → **S**

Round 5,000 to the nearest thousand → **R**

Round 89 to the nearest ten → **M**

Round 8,999 to the nearest thousand → **H**

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

Round 23 to the nearest ten → **N**

Round 164 to the nearest hundred → **I**

Round 286 to the nearest ten → **T**

Round 1,670 to the nearest hundred → **B**

Round 3,654 to the nearest hundred → **A**

Round 429 to the nearest ten → **F**

Round 1,118 to the nearest hundred → **Z**

Round 2,143 to the nearest thousand → **U**

Round 371 to the nearest ten → **O**

Round 2,851 to the nearest hundred → **D**

Scratch space:

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

Chief Hopper splits the remaining flashlights evenly among the search party.

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:

$6 \div 3 = \boxed{}$

$99 \div 11 = \boxed{}$

$28 \div 7 = \boxed{}$

$9 \div 9 = \boxed{}$

$40 \div 5 = \boxed{}$

$15 \div 3 = \boxed{}$

$96 \div 8 = \boxed{}$

$72 \div 12 = \boxed{}$

$6 \div 2 = \boxed{}$

$50 \div 5 = \boxed{}$

$49 \div 7 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain used telekinesis to flip a vehicle, then unleashed sonic screech.
2. The villain read minds across the radio frequency, then whipped wild vine lash.
3. The villain caused an electrical surge at the arcade, then caused a time warp.
4. The villain cast a shadow cloak over the street, then summoned bat swarms.
5. The villain opened a portal in the forest floor, then fired a freeze blast.
6. The villain caused an electrical surge at the arcade, then whipped wild vine lash.
7. The villain cast a shadow cloak over the street, then unleashed sonic screech.
8. The villain read minds across the radio frequency, then summoned bat swarms.
9. The villain opened a portal in the forest floor, then caused a time warp.
10. The villain cast a shadow cloak over the street, then fired a freeze blast.
11. The villain caused an electrical surge at the arcade, then summoned bat swarms.
12. The villain caused an electrical surge at the arcade, then fired a freeze blast.

Answer Key

The Mystery of the Shadow Signal

Culprit: Bob

Electrical Surge · Bat Swarms · Right Handed · Buzz Cut · Eggo Waffles

Trail: Start 21 → Clue 1 16 → Clue 2 10 → Clue 3 5 → Clue 4 4 → Clue 5 1

Clue 1 (Multiplication facts (1-12)): "THE VILLAIN DOES NOT USE SONIC SCREECH"

$2 \times 6 = 12$ (T) · $8 \times 6 = 48$ (V) · $11 \times 5 = 55$ (U) · $7 \times 2 = 14$ (C) · $2 \times 2 = 4$ (A) · $6 \times 11 = 66$ (D) · $4 \times 10 = 40$ (R) · $12 \times 11 = 132$ (I) · $11 \times 11 = 121$ (E) · $3 \times 9 = 27$ (S) · $4 \times 4 = 16$ (O) · $1 \times 5 = 5$ (N) · $3 \times 6 = 18$ (L) · $7 \times 11 = 77$ (H)

Clue 2 (Fractions of a number): "THE SUSPECT USED A RIGHT HANDED DIAL"

$2/10$ of 150 = 30 (T) · $4/8$ of 52 = 26 (H) · $2/6$ of 57 = 19 (D) · $1/8$ of 128 = 16 (P) · $1/5$ of 10 = 2 (A) · $4/8$ of 68 = 34 (G) · $1/2$ of 58 = 29 (C) · $6/8$ of 52 = 39 (R) · $1/4$ of 72 = 18 (U) · $2/8$ of 92 = 23 (N) · $6/8$ of 8 = 6 (S) · $1/4$ of 152 = 38 (L) · $1/4$ of 32 = 8 (I) · $2/3$ of 48 = 32 (E)

Clue 3 (Order of operations): "THE VILLAIN WAS STOPPED BY EGGO WAFFLES"

$30 + 2 \times 4 = 38$ (T) · $10 \times 6 - 11 = 49$ (P) · $5 \times 3 - 4 = 11$ (N) · $9 \times 6 - 27 = 27$ (D) · $9 \times 7 - 11 = 52$ (S) · $50 + 2 \times 8 = 66$ (F) · $42 + 7 \times 3 = 63$ (E) · $2 + 3 \times 5 = 17$ (V) · $7 \times 8 - 2 = 54$ (L) · $8 \times 9 - 17 = 55$ (G) · $7 \times 11 - 5 = 72$ (W) · $55 + 3 \times 3 = 64$ (A) · $10 \times 4 - 4 = 36$ (H) · $10 \times 7 - 28 = 42$ (B) · $4 + 5 \times 3 = 19$ (I) · $12 \times 6 - 19 = 53$ (Y) · $10 \times 11 - 30 = 80$ (O)

Clue 4 (Rounding): "WE FOUND SHORT HAIR FROM A BUZZ CUT"

Round 27 to the nearest ten = 30 (W) · Round 4,346 to the nearest hundred = 4300 (C) · Round 271 to the nearest hundred = 300 (S) · Round 5,000 to the nearest thousand = 5000 (R) · Round 89 to the nearest ten = 90 (M) · Round 8,999 to the nearest thousand = 9000 (H) · Round 676 to the nearest hundred = 700 (E) · Round 23 to the nearest ten = 20 (N) · Round 164 to the nearest hundred = 200 (I) · Round 286 to the nearest ten = 290 (T) · Round 1,670 to the nearest hundred = 1700 (B) · Round 3,654 to the nearest hundred = 3700 (A) · Round 429 to the nearest ten = 430 (F) · Round 1,118 to the nearest hundred = 1100 (Z) · Round 2,143 to the nearest thousand = 2000 (U) · Round 371 to the nearest ten = 370 (O) · Round 2,851 to the nearest hundred = 2900 (D)

Clue 5 (Division facts (1-12)): surviving statement is box 11 → Bob

$6 \div 3 = 2$ · $99 \div 11 = 9$ · $28 \div 7 = 4$ · $9 \div 9 = 1$ · $40 \div 5 = 8$ · $15 \div 3 = 5$ · $96 \div 8 = 12$ · $72 \div 12 = 6$ · $6 \div 2 = 3$ · $50 \div 5 = 10$ · $49 \div 7 = 7$