



The Case of the Secret Igpay

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

Detective: _____ Date: _____

Someone snuck into the Oinktown Cipher Academy and hid the golden dictionary! Use Pig Latin clues and math skills to track down the sneaky culprit before graduation.

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 Secret Encoder is _____

Possible suspects

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

NAME	SPECIAL MOVE	SECRET GADGET	OBSERVATIONAL TELL	HAIR STYLE	SILLY WEAKNESS
Polly Porker	Consonant Flip	Decoder Ring	Wears Blue Scarf	Braided Brown Hair	Loud Pig Grunts
Penny Piglet	Consonant Flip	Golden Marker	Wears Red Scarf	Braided Brown Hair	Silly Rhymes
Sammy Swine	Vowel Shift	Golden Marker	Wears Red Scarf	Curly Pink Wig	Loud Pig Grunts
Hattie Hoof	Word Reverse	Piggy Badge	Wears Red Scarf	Spiky Silver Hair	Silly Rhymes
Sasha Sow	Vowel Shift	Secret Whistle	Wears Blue Scarf	Braided Brown Hair	Salty Snacks
Hogarth Snout	Vowel Shift	Piggy Badge	Wears Red Scarf	Braided Brown Hair	Loud Pig Grunts
Gabe Grunter	Vowel Shift	Piggy Badge	Wears Blue Scarf	Braided Brown Hair	Silly Rhymes
Chloe Curly	Syllable Swap	Secret Whistle	Wears Blue Scarf	Braided Brown Hair	Silly Rhymes
Wilbur Muddy	Consonant Flip	Piggy Badge	Wears Blue Scarf	Spiky Silver Hair	Salty Snacks
Barnaby Boar	Consonant Flip	Snout Compass	Wears Blue Scarf	Curly Pink Wig	Loud Pig Grunts
Pippa Pig	Syllable Swap	Golden Marker	Wears Blue Scarf	Curly Pink Wig	Loud Pig Grunts
Leo Letter	Syllable Swap	Decoder Ring	Wears Red Scarf	Curly Pink Wig	Loud Pig Grunts
Gideon Glaze	Consonant Flip	Snout Compass	Wears Blue Scarf	Curly Pink Wig	Silly Rhymes
Fiona Farm	Oink Blast	Piggy Badge	Wears Blue Scarf	Curly Pink Wig	Loud Pig Grunts
Petunia Pink	Syllable Swap	Secret Whistle	Wears Blue Scarf	Curly Pink Wig	Loud Pig Grunts
Bella Bacon	Word Reverse	Piggy Badge	Wears Blue Scarf	Curly Pink Wig	Loud Pig Grunts
Kobe Kerfuffle	Word Reverse	Piggy Badge	Wears Blue Scarf	Spiky Silver Hair	Salty Snacks
Bruno Oinker	Word Reverse	Golden Marker	Wears Red Scarf	Spiky Silver Hair	Salty Snacks
Jenny Jabber	Word Reverse	Piggy Badge	Wears Blue Scarf	Curly Pink Wig	Salty Snacks
Toby Trotter	Vowel Shift	Secret Whistle	Wears Red Scarf	Braided Brown Hair	Salty Snacks
Oinkly Oliver	Vowel Shift	Golden Marker	Wears Blue Scarf	Spiky Silver Hair	Salty Snacks

CLUE 1

Rounding

The digital cipher board only displays approximate numbers. Round the code counts to solve the first mystery!

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

T									T								T
200	90	700	2000	3700	2000	370	700	3000	200	4300	1100	700	2000	900	1100	200	
									T					T			
90	2300	110	700	2300	2000	700	3000	130	700	200	500	90	300	2000	200	1300	700

Round 211 to the nearest hundred → **T**

Round 660 to the nearest hundred → **E**

Round 1,262 to the nearest hundred → **L**

Round 107 to the nearest ten → **V**

Round 3,393 to the nearest thousand → **C**

Round 510 to the nearest hundred → **W**

Round 370 to the nearest ten → **P**

Round 131 to the nearest ten → **R**

Round 89 to the nearest ten → **H**

Round 4,329 to the nearest hundred → **D**

Round 2,305 to the nearest hundred → **A**

Round 3,723 to the nearest hundred → **U**

Round 301 to the nearest hundred → **I**

Round 863 to the nearest hundred → **N**

Round 1,962 to the nearest thousand → **S**

Round 1,104 to the nearest hundred → **O**

Scratch space:

CLUE 2 Addition

We found secret notes scattered in two classrooms. Add all the word counts together to decode the next clue.

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

W																			
4102	6465	5259	7332	7083	8176	8176	7332	2571	5259	6465	4713	7083	8367	8336	8367	8336	8215	8458	
2180	4145	7901	7083	8176	4713	8336	8215	3672											

$$1854 + 2248 = \boxed{} \rightarrow \boxed{\text{W}}$$

$$4270 + 3906 = \boxed{} \rightarrow \boxed{\text{S}}$$

$$1749 + 3510 = \boxed{} \rightarrow \boxed{\text{T}}$$

$$3835 + 3248 = \boxed{} \rightarrow \boxed{\text{E}}$$

$$1735 + 1937 = \boxed{} \rightarrow \boxed{\text{F}}$$

$$1237 + 1334 = \boxed{} \rightarrow \boxed{\text{O}}$$

$$2349 + 2364 = \boxed{} \rightarrow \boxed{\text{C}}$$

$$2761 + 1384 = \boxed{} \rightarrow \boxed{\text{L}}$$

$$4426 + 3475 = \boxed{} \rightarrow \boxed{\text{U}}$$

$$4062 + 4396 = \boxed{} \rightarrow \boxed{\text{K}}$$

$$4076 + 3256 = \boxed{} \rightarrow \boxed{\text{N}}$$

$$5471 + 2744 = \boxed{} \rightarrow \boxed{\text{R}}$$

$$2997 + 5370 = \boxed{} \rightarrow \boxed{\text{D}}$$

$$2848 + 5488 = \boxed{} \rightarrow \boxed{\text{A}}$$

$$4214 + 2251 = \boxed{} \rightarrow \boxed{\text{I}}$$

$$1151 + 1029 = \boxed{} \rightarrow \boxed{\text{B}}$$

Scratch space:

CLUE 3
Subtraction

The villain dropped a pouch of secret tokens. Subtract the missing ones from the total to find the clue.

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

T																	
7481	1761	7966	8876	4622	1328	1328	7003	4622	5321	1587	7003	5321	7003	1630	7003	3085	

														T		
3915	1587	2736	2333	1328	2736	2069	3089	8273	4622	2164	2164	1587	2069	5321	7481	5099

$9446 - 1965 = \square \rightarrow \text{[T]}$

$8798 - 1795 = \square \rightarrow \text{[A]}$

$2131 - 501 = \square \rightarrow \text{[W]}$

$10817 - 1941 = \square \rightarrow \text{[V]}$

$6516 - 3780 = \square \rightarrow \text{[O]}$

$5346 - 3759 = \square \rightarrow \text{[R]}$

$5747 - 3583 = \square \rightarrow \text{[G]}$

$5116 - 1201 = \square \rightarrow \text{[F]}$

$8002 - 3380 = \square \rightarrow \text{[I]}$

$4437 - 1352 = \square \rightarrow \text{[Y]}$

$9379 - 1106 = \square \rightarrow \text{[P]}$

$6151 - 3062 = \square \rightarrow \text{[D]}$

$2425 - 92 = \square \rightarrow \text{[M]}$

$7617 - 2296 = \square \rightarrow \text{[N]}$

$6460 - 4391 = \square \rightarrow \text{[U]}$

$4718 - 2957 = \square \rightarrow \text{[H]}$

$10487 - 2521 = \square \rightarrow \text{[E]}$

$7723 - 2624 = \square \rightarrow \text{[S]}$

$4845 - 3517 = \square \rightarrow \text{[L]}$

Scratch space:

CLUE 4

Multiplication facts (1-12)

The decoder rings are arranged in neat equal rows on the wall. Multiply to count them all up!

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

F																		
84	90	55	18	36	100	40	90	18	50	64	55	144	40	60	12	4	18	121

2	4	50	3	56	144	100	18	36

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

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

$11 \times 11 = \square \rightarrow \text{K}$

$1 \times 4 = \square \rightarrow \text{I}$

$10 \times 6 = \square \rightarrow \text{Y}$

$7 \times 8 = \square \rightarrow \text{T}$

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

$8 \times 8 = \square \rightarrow \text{C}$

$10 \times 10 = \square \rightarrow \text{A}$

$9 \times 10 = \square \rightarrow \text{O}$

$9 \times 2 = \square \rightarrow \text{N}$

$1 \times 3 = \square \rightarrow \text{S}$

$9 \times 4 = \square \rightarrow \text{D}$

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

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

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

$2 \times 1 = \square \rightarrow \text{W}$

Scratch space:

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

The hog club members need to share the pig latin rulebooks equally. Divide the books into groups to get the final clue.

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:

$12 \div 2 = \boxed{}$

$90 \div 9 = \boxed{}$

$25 \div 5 = \boxed{}$

$6 \div 3 = \boxed{}$

$21 \div 3 = \boxed{}$

$48 \div 6 = \boxed{}$

$44 \div 11 = \boxed{}$

$54 \div 6 = \boxed{}$

$10 \div 10 = \boxed{}$

$6 \div 2 = \boxed{}$

$121 \div 11 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain flipped the consonants, then signaled a buddy with a secret whistle.
2. The villain blasted an oink wave, then drew on the map with a golden marker.
3. The villain swapped the syllables, then flashed a shiny piggy badge.
4. The villain swapped the syllables, then signaled a buddy with a secret whistle.
5. The villain flipped the consonants, then checked the path with a snout compass.
6. The villain reversed the whole word, then flashed a shiny piggy badge.
7. The villain shifted every vowel, then drew on the map with a golden marker.
8. The villain reversed the whole word, then signaled a buddy with a secret whistle.
9. The villain shifted every vowel, then checked the path with a snout compass.
10. The villain swapped the syllables, then drew on the map with a golden marker.
11. The villain reversed the whole word, then drew on the map with a golden marker.
12. The villain blasted an oink wave, then flashed a shiny piggy badge.

Answer Key

The Case of the Secret Igpay

Culprit: Fiona Farm

Oink Blast · Piggy Badge · Wears Blue Scarf · Curly Pink Wig · Loud Pig Grunts

Trail: Start 21 → Clue 1 17 → Clue 2 11 → Clue 3 5 → Clue 4 4 → Clue 5 1

Clue 1 (Rounding): "THE SUSPECT DOES NOT HAVE A SECRET WHISTLE"

Round 211 to the nearest hundred = 200 (T) · Round 660 to the nearest hundred = 700 (E) · Round 1,262 to the nearest hundred = 1300 (L) · Round 107 to the nearest ten = 110 (V) · Round 3,393 to the nearest thousand = 3000 (C) · Round 510 to the nearest hundred = 500 (W) · Round 370 to the nearest ten = 370 (P) · Round 131 to the nearest ten = 130 (R) · Round 89 to the nearest ten = 90 (H) · Round 4,329 to the nearest hundred = 4300 (D) · Round 2,305 to the nearest hundred = 2300 (A) · Round 3,723 to the nearest hundred = 3700 (U) · Round 301 to the nearest hundred = 300 (I) · Round 863 to the nearest hundred = 900 (N) · Round 1,962 to the nearest thousand = 2000 (S) · Round 1,104 to the nearest hundred = 1100 (O)

Clue 2 (Addition): "WITNESS NOTICED A DARK BLUE SCARF"

1854 + 2248 = 4102 (W) · 4270 + 3906 = 8176 (S) · 1749 + 3510 = 5259 (T) · 3835 + 3248 = 7083 (E) · 1735 + 1937 = 3672 (F) · 1237 + 1334 = 2571 (O) · 2349 + 2364 = 4713 (C) · 2761 + 1384 = 4145 (L) · 4426 + 3475 = 7901 (U) · 4062 + 4396 = 8458 (K) · 4076 + 3256 = 7332 (N) · 5471 + 2744 = 8215 (R) · 2997 + 5370 = 8367 (D) · 2848 + 5488 = 8336 (A) · 4214 + 2251 = 6465 (I) · 1151 + 1029 = 2180 (B)

Clue 3 (Subtraction): "THE VILLAIN RAN AWAY FROM LOUD PIG GRUNTS"

9446 - 1965 = 7481 (T) · 8798 - 1795 = 7003 (A) · 2131 - 501 = 1630 (W) · 10817 - 1941 = 8876 (V) · 6516 - 3780 = 2736 (O) · 5346 - 3759 = 1587 (R) · 5747 - 3583 = 2164 (G) · 5116 - 1201 = 3915 (F) · 8002 - 3380 = 4622 (I) · 4437 - 1352 = 3085 (Y) · 9379 - 1106 = 8273 (P) · 6151 - 3062 = 3089 (D) · 2425 - 92 = 2333 (M) · 7617 - 2296 = 5321 (N) · 6460 - 4391 = 2069 (U) · 4718 - 2957 = 1761 (H) · 10487 - 2521 = 7966 (E) · 7723 - 2624 = 5099 (S) · 4845 - 3517 = 1328 (L)

Clue 4 (Multiplication facts (1-12)): "FOUND A LONG CURLY PINK WIG STRAND"

12 × 7 = 84 (F) · 1 × 12 = 12 (P) · 11 × 11 = 121 (K) · 1 × 4 = 4 (I) · 10 × 6 = 60 (Y) · 7 × 8 = 56 (T) · 5 × 11 = 55 (U) · 8 × 8 = 64 (C) · 10 × 10 = 100 (A) · 9 × 10 = 90 (O) · 9 × 2 = 18 (N) · 1 × 3 = 3 (S) · 9 × 4 = 36 (D) · 12 × 12 = 144 (R) · 10 × 5 = 50 (G) · 5 × 8 = 40 (L) · 2 × 1 = 2 (W)

Clue 5 (Division facts (1-12)): surviving statement is box 12 → Fiona Farm

12 ÷ 2 = 6 · 90 ÷ 9 = 10 · 25 ÷ 5 = 5 · 6 ÷ 3 = 2 · 21 ÷ 3 = 7 · 48 ÷ 6 = 8 · 44 ÷ 11 = 4 · 54 ÷ 6 = 9 · 10 ÷ 10 = 1 · 6 ÷ 2 = 3 · 121 ÷ 11 = 11