



The Great Robo-Museum Mystery

Grade 6 math · Place value, Percentages, Exponents, Order of operations, Division · Reading level grades 1-2

Detective: _____ Date: _____

Oh no! A sneaky Neon Shadow stole the golden scroll from the Tokyo Robo-Museum. The Tokyo Robo Squad needs your help. Use your math skills to track down the thief!

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 Neon Shadow is _____

Possible suspects

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

NAME	NINJA GEAR	MEGA MECH POWER	WRITING HAND	HAIR STREAK COLOR	FEAR
Kaito	shadow cloak	jet pack	left handed	pink streak	flashing camera lights
Mio	shadow cloak	robo arm	left handed	blue streak	meowing robot cats
Kenji	smoke bomb	neon shield	left handed	green streak	loud taiko drums
Yuto	paper glider	jet pack	left handed	pink streak	loud taiko drums
Rin	glowing fan	robo arm	left handed	pink streak	flashing camera lights
Mei	bamboo staff	robo arm	right handed	blue streak	flashing camera lights
Haruto	bamboo staff	robo arm	left handed	pink streak	loud taiko drums
Naoko	paper glider	laser sword	right handed	blue streak	meowing robot cats
Hiro	paper glider	neon shield	left handed	blue streak	meowing robot cats
Hana	smoke bomb	speed boots	left handed	pink streak	loud taiko drums
Koki	shadow cloak	neon shield	right handed	pink streak	loud taiko drums
Shinji	glowing fan	speed boots	right handed	green streak	meowing robot cats
Riku	glowing fan	neon shield	left handed	pink streak	loud taiko drums
Yua	shadow cloak	laser sword	right handed	pink streak	loud taiko drums
Sota	smoke bomb	jet pack	left handed	green streak	meowing robot cats
Takuya	paper glider	robo arm	right handed	pink streak	loud taiko drums
Aoi	paper glider	robo arm	left handed	pink streak	loud taiko drums
Ren	bamboo staff	robo arm	right handed	blue streak	loud taiko drums
Yuma	smoke bomb	neon shield	left handed	pink streak	meowing robot cats
Sora	paper glider	robo arm	left handed	blue streak	loud taiko drums
Keiko	shadow cloak	robo arm	left handed	green streak	meowing robot cats

CLUE 1 Place value

The thief left a digital code on the door. Look at the digit in the thousands place. It will show us the first clue!

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

30 50 900 100 500 300 300 5000 500 10 200 600 900 40 10 600 30

9000 40 900 5000 7000 900 30 1000 5000 400 70

What is the value of the 3 in 82,634?



What is the value of the 6 in 823,681?

A diagram illustrating a transformation. On the left is a rectangle with rounded corners. An arrow points to the right, where there is a square with a circle inside it.

What is the value of the 1 in 67,617?

A diagram showing a box with an arrow pointing to a box labeled **N**.

What is the value of the 7 in 238,474?

A diagram consisting of a rectangular box on the left, followed by a right-pointing arrow, and then another rectangular box on the right containing the letter 'K'.

What is the value of the 5 in 742,509?

? → ☒

What is the value of the 1 in 966,179?

? $\rightarrow$ V

What is the value of the 5 in 79,153?

A diagram showing a transformation. On the left is a rounded rectangle containing a question mark. An arrow points to the right, where there is a rounded rectangle containing the letter 'H'.

What is the value of the 7 in 87,611?

What is the value of the 1 in 21,870?

What is the value of the 4 in 13,495?

A diagram showing a rectangular box on the left, followed by a right-pointing arrow, and then a square box on the right containing the letter 'C'.

What is the value of the 5 in 385,718?

? → **A**

What is the value of the 9 in 15,972?

A diagram showing a box with an arrow pointing to a box labeled 'E'.

What is the value of the 9 in 49,214?

A diagram illustrating a transformation. On the left is a simple rectangular box. An arrow points from this box to a second box on the right. The second box contains the letter 'U'.

What is the value of the 4 in 93,148?

A diagram showing a box with an arrow pointing to a box containing the letter S.

What is the value of the 3 in 97,309?

A diagram showing a transformation. On the left is a simple rectangular box. An arrow points from this box to another box on the right. The box on the right contains the letter 'L'.

What is the value of the 2 in 799,258?

A diagram showing a box with an arrow pointing to a box labeled 'D'.

Scratch space:

CLUE 2 Percentages

A robot helper scanned the room. It found energy marks. What percent of the room is clean? Solve this to get the next clue.

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

T						T											
25	14	15	44	15	31	25	14	7	22	35	35	43	39	32	32	15	35
5	32	33	44	44	15	35	33	22	28								

$5\% \text{ of } 500 = \square \rightarrow \text{T}$

$10\% \text{ of } 150 = \square \rightarrow \text{E}$

$50\% \text{ of } 62 = \square \rightarrow \text{F}$

$25\% \text{ of } 172 = \square \rightarrow \text{R}$

$5\% \text{ of } 100 = \square \rightarrow \text{S}$

$5\% \text{ of } 780 = \square \rightarrow \text{O}$

$10\% \text{ of } 320 = \square \rightarrow \text{P}$

$10\% \text{ of } 220 = \square \rightarrow \text{N}$

$25\% \text{ of } 140 = \square \rightarrow \text{D}$

$10\% \text{ of } 70 = \square \rightarrow \text{A}$

$50\% \text{ of } 56 = \square \rightarrow \text{K}$

$20\% \text{ of } 70 = \square \rightarrow \text{H}$

$60\% \text{ of } 55 = \square \rightarrow \text{I}$

$50\% \text{ of } 88 = \square \rightarrow \text{L}$

Scratch space:

CLUE 3 Exponents

The security lock has a power scale. It grows fast by multiplying itself. Solve the power problem to unlock the third clue.

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

T			T											T			
196	49	324	196	49	289	324	4	169	144	400	4	169	225	121	196	49	324
			T														
16	225	100	361	196	144	289	216	225	361	169	100	121					

$14^2 = \square \rightarrow \text{T}$	$20^2 = \square \rightarrow \text{N}$	$7^2 = \square \rightarrow \text{H}$	$13^2 = \square \rightarrow \text{R}$
$2^2 = \square \rightarrow \text{F}$	$11^2 = \square \rightarrow \text{M}$	$6^3 = \square \rightarrow \text{K}$	$18^2 = \square \rightarrow \text{E}$
$15^2 = \square \rightarrow \text{O}$	$2^4 = \square \rightarrow \text{L}$	$17^2 = \square \rightarrow \text{I}$	$10^2 = \square \rightarrow \text{U}$
$12^2 = \square \rightarrow \text{A}$	$19^2 = \square \rightarrow \text{D}$		

Scratch space:

CLUE 4

Order of operations

We found a secret plan. We must follow the rules of math steps to read it. Solve the steps in the right order for clue four!

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

W															
18	57	59	26	17	15	48	46	45	11	15	76	28	46	11	73
63	66	73	57	46	76	11	15	66	28	57	55	26	6	76	

$6 + 4 \times 3 = \square \rightarrow \boxed{W}$

$2 + 2 \times 2 = \square \rightarrow \boxed{C}$

$12 \times 7 - 11 = \square \rightarrow \boxed{R}$

$11 \times 7 - 22 = \square \rightarrow \boxed{L}$

$6 \times 10 - 14 = \square \rightarrow \boxed{A}$

$7 + 4 \times 2 = \square \rightarrow \boxed{N}$

$9 \times 10 - 27 = \square \rightarrow \boxed{S}$

$36 + 3 \times 4 = \square \rightarrow \boxed{D}$

$9 \times 10 - 14 = \square \rightarrow \boxed{K}$

$8 \times 8 - 19 = \square \rightarrow \boxed{P}$

$9 \times 9 - 15 = \square \rightarrow \boxed{T}$

$49 + 5 \times 2 = \square \rightarrow \boxed{F}$

$8 \times 10 - 23 = \square \rightarrow \boxed{E}$

$6 \times 4 - 13 = \square \rightarrow \boxed{I}$

$8 \times 6 - 22 = \square \rightarrow \boxed{O}$

$24 + 2 \times 2 = \square \rightarrow \boxed{H}$

$3 \times 8 - 7 = \square \rightarrow \boxed{U}$

Scratch space:

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

The ninja divided their stolen star toys into equal groups. How many toys are in each group? This last answer gives us 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:

$110 \div 10 = \boxed{}$

$60 \div 12 = \boxed{}$

$9 \div 9 = \boxed{}$

$14 \div 7 = \boxed{}$

$48 \div 8 = \boxed{}$

$16 \div 2 = \boxed{}$

$50 \div 5 = \boxed{}$

$18 \div 2 = \boxed{}$

$12 \div 1 = \boxed{}$

$63 \div 9 = \boxed{}$

$3 \div 1 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain throws a smoke bomb to vanish, then runs out the back door in speed boots.
2. The villain throws a smoke bomb to vanish, then grabs the golden scroll with a robo arm.
3. The villain throws a paper glider into the air, then runs out the back door in speed boots.
4. The villain waves a glowing fan to make wind, then blocks the security laser with a neon shield.
5. The villain throws a paper glider into the air, then grabs the golden scroll with a robo arm.
6. The villain wraps a shadow cloak around them, then runs out the back door in speed boots.
7. The villain waves a glowing fan to make wind, then grabs the golden scroll with a robo arm.
8. The villain wraps a shadow cloak around them, then grabs the golden scroll with a robo arm.
9. The villain wraps a shadow cloak around them, then flies up into the sky using a jet pack.
10. The villain spins a bamboo staff fast, then runs out the back door in speed boots.
11. The villain spins a bamboo staff fast, then grabs the golden scroll with a robo arm.
12. The villain waves a glowing fan to make wind, then runs out the back door in speed boots.

Answer Key

The Great Robo-Museum Mystery

Culprit: Riku

glowing fan · neon shield · left handed · pink streak · loud taiko drums

Trail: Start 21 → Clue 1 18 → Clue 2 11 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Place value): "THE VILLAIN DOES NOT USE A JET PACK"

What is the value of the 3 in 82,634? = 30 (T) · What is the value of the 6 in 823,681? = 600 (O) · What is the value of the 1 in 67,617? = 10 (N) · What is the value of the 7 in 238,474? = 70 (K) · What is the value of the 5 in 742,509? = 500 (I) · What is the value of the 1 in 966,179? = 100 (V) · What is the value of the 5 in 79,153? = 50 (H) · What is the value of the 7 in 87,611? = 7000 (J) · What is the value of the 1 in 21,870? = 1000 (P) · What is the value of the 4 in 13,495? = 400 (C) · What is the value of the 5 in 385,718? = 5000 (A) · What is the value of the 9 in 15,972? = 900 (E) · What is the value of the 9 in 49,214? = 9000 (U) · What is the value of the 4 in 93,148? = 40 (S) · What is the value of the 3 in 97,309? = 300 (L) · What is the value of the 2 in 799,258? = 200 (D)

Clue 2 (Percentages): "THE LEFT HAND DROPPED SPILLED INK"

5% of 500 = 25 (T) · 10% of 150 = 15 (E) · 50% of 62 = 31 (F) · 25% of 172 = 43 (R) · 5% of 100 = 5 (S) · 5% of 780 = 39 (O) · 10% of 320 = 32 (P) · 10% of 220 = 22 (N) · 25% of 140 = 35 (D) · 10% of 70 = 7 (A) · 50% of 56 = 28 (K) · 20% of 70 = 14 (H) · 60% of 55 = 33 (I) · 50% of 88 = 44 (L)

Clue 3 (Exponents): "THE THIEF RAN FROM THE LOUD TAIKO DRUM"

$14^2 = 196$ (T) · $20^2 = 400$ (N) · $7^2 = 49$ (H) · $13^2 = 169$ (R) · $2^2 = 4$ (F) · $11^2 = 121$ (M) · $6^3 = 216$ (K) · $18^2 = 324$ (E) · $15^2 = 225$ (O) · $2^4 = 16$ (L) · $17^2 = 289$ (I) · $10^2 = 100$ (U) · $12^2 = 144$ (A) · $19^2 = 361$ (D)

Clue 4 (Order of operations): "WE FOUND A PINK HAIR STREAK IN THE LOCK"

$6 + 4 \times 3 = 18$ (W) · $2 + 2 \times 2 = 6$ (C) · $12 \times 7 - 11 = 73$ (R) · $11 \times 7 - 22 = 55$ (L) · $6 \times 10 - 14 = 46$ (A) · $7 + 4 \times 2 = 15$ (N) · $9 \times 10 - 27 = 63$ (S) · $36 + 3 \times 4 = 48$ (D) · $9 \times 10 - 14 = 76$ (K) · $8 \times 8 - 19 = 45$ (P) · $9 \times 9 - 15 = 66$ (T) · $49 + 5 \times 2 = 59$ (F) · $8 \times 10 - 23 = 57$ (E) · $6 \times 4 - 13 = 11$ (I) · $8 \times 6 - 22 = 26$ (O) · $24 + 2 \times 2 = 28$ (H) · $3 \times 8 - 7 = 17$ (U)

Clue 5 (Division facts (1-12)): surviving statement is box 4 → Riku

$110 \div 10 = 11$ · $60 \div 12 = 5$ · $9 \div 9 = 1$ · $14 \div 7 = 2$ · $48 \div 8 = 6$ · $16 \div 2 = 8$ · $50 \div 5 = 10$ · $18 \div 2 = 9$ · $12 \div 1 = 12$ · $63 \div 9 = 7$ · $3 \div 1 = 3$