



The Case of the Missing Golden Horn

Grade 7 math · Fractions of a number, Word problems, Multiplication, Integers · Reading level grades 5-6

Detective: _____ **Date:** _____

The Golden Horn of Harmony has been stolen from the Prism Palace! The Grand Archivist is in a panic because without it, the rainbows of the valley will fade to gray. We have twenty-four suspect unicorns, but only one is the thief. Grab your notebook, detective!

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 Glitter-Thief is _____

Possible suspects

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

NAME	MAGIC TALENT	ARTIFACT USED	DOMINANT HOOF	MANE COLOR	VULNERABILITY
Silverstream	rainbow-weaving	hover boots	left-hoofed	sunset orange mane	bright lantern
Sapphire	teleportation	glitter shield	right-hoofed	neon pink mane	peppermint scent
Onyx	rainbow-weaving	glitter shield	left-hoofed	pastel blue mane	peppermint scent
Pip	dream-walking	echo horn	left-hoofed	pastel blue mane	peppermint scent
Nebulo	rainbow-weaving	gold lasso	right-hoofed	neon pink mane	bright lantern
Zephyr	rainbow-weaving	glitter shield	left-hoofed	pastel blue mane	bright lantern
Nova	star-glowing	hover boots	right-hoofed	sunset orange mane	peppermint scent
Twinkle	rainbow-weaving	mist cloak	left-hoofed	pastel blue mane	peppermint scent
Moonbeam	crystal-shaping	glitter shield	left-hoofed	neon pink mane	silver whistle
Buttercup	rainbow-weaving	mist cloak	right-hoofed	sunset orange mane	peppermint scent
Bellara	dream-walking	mist cloak	right-hoofed	neon pink mane	peppermint scent
Sparkles	rainbow-weaving	glitter shield	right-hoofed	neon pink mane	peppermint scent
Glimmer	crystal-shaping	hover boots	left-hoofed	neon pink mane	peppermint scent
Marigold	dream-walking	mist cloak	right-hoofed	sunset orange mane	bright lantern
Barnaby	rainbow-weaving	hover boots	left-hoofed	sunset orange mane	peppermint scent
Starlight	dream-walking	hover boots	right-hoofed	sunset orange mane	peppermint scent
Starburst	rainbow-weaving	glitter shield	right-hoofed	pastel blue mane	peppermint scent
Clover	rainbow-weaving	mist cloak	right-hoofed	sunset orange mane	silver whistle
Eclipse	teleportation	glitter shield	right-hoofed	pastel blue mane	peppermint scent
Glitterhoof	star-glowing	hover boots	left-hoofed	pastel blue mane	peppermint scent
Celestia	teleportation	echo horn	left-hoofed	pastel blue mane	peppermint scent

CLUE 1
Fractions of a number

The crystal guards found a map of Prism Valley. To read it, we must calculate what fraction of the magic stars are still shining tonight.

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

T																			
3	24	58	48	17	48	43	58	41	3	19	11	58	48	50	11	3			

40	58	15	10	15	52	44	48	3	41	60	11	15	59	

$6/10 \text{ of } 5 = \square \rightarrow \text{ T }$

$3/6 \text{ of } 80 = \square \rightarrow \text{ W }$

$3/6 \text{ of } 118 = \square \rightarrow \text{ K }$

$4/8 \text{ of } 116 = \square \rightarrow \text{ E }$

$2/10 \text{ of } 85 = \square \rightarrow \text{ U }$

$1/5 \text{ of } 120 = \square \rightarrow \text{ H }$

$4/10 \text{ of } 130 = \square \rightarrow \text{ M }$

$1/3 \text{ of } 57 = \square \rightarrow \text{ D }$

$1/2 \text{ of } 82 = \square \rightarrow \text{ C }$

$5/10 \text{ of } 30 = \square \rightarrow \text{ A }$

$1/2 \text{ of } 22 = \square \rightarrow \text{ O }$

$4/8 \text{ of } 86 = \square \rightarrow \text{ P }$

$5/10 \text{ of } 100 = \square \rightarrow \text{ N }$

$3/4 \text{ of } 64 = \square \rightarrow \text{ S }$

$5/10 \text{ of } 120 = \square \rightarrow \text{ L }$

$2/6 \text{ of } 30 = \square \rightarrow \text{ R }$

$1/2 \text{ of } 88 = \square \rightarrow \text{ I }$

Scratch space:

CLUE 2

Word problems

We found a scattered ledger outside the royal orchard. Sorting out the math reveals who visited the fruit trees before the crime.

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

A witness saw the villain was

L									
111	9	76	34	94	119	119	76	9	116

.

Twinkle the Pixie found 53 sparkle berries yesterday and 58 more today. How many sparkle berries in all?

Answer: → **L**

Twinkle the Pixie found 39 sparkle berries yesterday and 37 more today. How many sparkle berries in all?

Answer: → **F**

There were 138 stardust jars. 19 were used up. How many stardust jars are left?

Answer: → **O**

Twinkle the Pixie lined up 3 rows of 3 rainbow carrots. How many rainbow carrots in all?

Answer: → **E**

Twinkle the Pixie found 6 magic gems yesterday and 88 more today. How many magic gems in all?

Answer: → **H**

There were 40 golden apples. 6 were used up. How many golden apples are left?

Answer: → **T**

There were 141 golden apples. 25 were used up. How many golden apples are left?

Answer: → **D**

Scratch space:

Multiplication facts (1-12)

The stable guards are organized in a giant grid. Multiplying the rows of defenders shows us which sector the suspect crossed.

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

Diagram illustrating a sequence of numbers and their corresponding values in boxes:

Top row (14 boxes):

- Box 1: T
- Box 2: (empty)
- Box 3: (empty)
- Box 4: (empty)
- Box 5: (empty)
- Box 6: (empty)
- Box 7: (empty)
- Box 8: (empty)
- Box 9: (empty)
- Box 10: (empty)
- Box 11: (empty)
- Box 12: (empty)
- Box 13: (empty)
- Box 14: (empty)

Values below top row: 64, 2, 27, 110, 66, 27, 21, 80, 100, 144, 27, 27, 3, 66, 8

Bottom row (14 boxes):

- Box 1: (empty)
- Box 2: (empty)
- Box 3: (empty)
- Box 4: (empty)
- Box 5: (empty)
- Box 6: (empty)
- Box 7: (empty)
- Box 8: (empty)
- Box 9: T
- Box 10: (empty)
- Box 11: (empty)
- Box 12: (empty)
- Box 13: (empty)
- Box 14: T

Values below bottom row: 110, 66, 27, 27, 30, 27, 81, 21, 64, 50, 27, 50, 50, 27, 32, 99, 3, 66, 64

$$8 \times 8 = \boxed{} \rightarrow \boxed{\text{T}}$$

$$12 \times 12 = \boxed{} \rightarrow \boxed{\text{L}}$$

$$3 \times 10 = \boxed{} \rightarrow \mathbf{[z]}$$

$10 \times 8 = \boxed{} \rightarrow \boxed{\mathbf{K}}$

$4 \times 8 = \boxed{} \rightarrow \boxed{\mathbf{R}}$

$5 \times 10 = \boxed{} \rightarrow \boxed{\text{P}}$

$9 \times 11 = \square \rightarrow \mathbf{M}$

$$3 \times 9 = \boxed{} \rightarrow \boxed{\text{E}}$$

$$7 \times 3 = \boxed{} \rightarrow \boxed{\mathbf{A}}$$

$11 \times 6 = \boxed{} \rightarrow \boxed{\text{N}}$

$10 \times 10 = \boxed{} \rightarrow \boxed{\text{F}}$

$$2 \times 1 = \boxed{} \rightarrow \boxed{\text{H}}$$

$1 \times 3 = \boxed{} \rightarrow \boxed{1}$

$9 \times 9 = \square \rightarrow \boxed{\mathbf{D}}$

$8 \times 1 = \boxed{} \rightarrow \boxed{\mathbf{G}}$

$11 \times 10 = \boxed{} \rightarrow \boxed{\text{S}}$

Scratch space:

CLUE 4 Integers

To track the flying getaway path, we have to calculate the rise and fall of altitude using positive and negative heights.

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

W																	
3	19	29	19	9	19	11	9	19	29	10	13	4	19	24	30	1	19
16	9	6	30	1	29	16	30	9	9	22	19	16	11	19	1	19	

$$(-15) + 18 = \square \rightarrow \boxed{\text{W}}$$

$$20 - (-10) = \square \rightarrow \boxed{\text{A}}$$

$$7 - (-6) = \square \rightarrow \boxed{\text{L}}$$

$$(-8) + 32 = \square \rightarrow \boxed{\text{M}}$$

$$(-15) + 44 = \square \rightarrow \boxed{\text{D}}$$

$$(-1) + 10 = \square \rightarrow \boxed{\text{T}}$$

$$6 - (-13) = \square \rightarrow \boxed{\text{E}}$$

$$(-11) + 22 = \square \rightarrow \boxed{\text{C}}$$

$$(-5) + 9 = \square \rightarrow \boxed{\text{U}}$$

$$(-15) + 31 = \square \rightarrow \boxed{\text{S}}$$

$$(-10) + 11 = \square \rightarrow \boxed{\text{N}}$$

$$(-14) + 24 = \square \rightarrow \boxed{\text{B}}$$

$$(-6) + 12 = \square \rightarrow \boxed{\text{R}}$$

$$(-14) + 36 = \square \rightarrow \boxed{\text{H}}$$

Scratch space:

CLUE 5**Fractions of a number - the last clue**

The fountain of stardust will only wash away the magic fog if we fill exactly two-thirds of the pool. Let's do the fraction math.

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:

$1/4 \text{ of } 36 = \boxed{}$

$1/2 \text{ of } 6 = \boxed{}$

$2/10 \text{ of } 60 = \boxed{}$

$1/2 \text{ of } 14 = \boxed{}$

$1/6 \text{ of } 12 = \boxed{}$

$1/3 \text{ of } 18 = \boxed{}$

$1/10 \text{ of } 100 = \boxed{}$

$1/4 \text{ of } 44 = \boxed{}$

$1/3 \text{ of } 3 = \boxed{}$

$1/10 \text{ of } 40 = \boxed{}$

$1/10 \text{ of } 50 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain melted the crystal vault door, then zoomed over the palace walls on hover boots.
2. The villain blinded the night guard with a starlight flash, then swung up to the high balcony with a gold lasso.
3. The villain teleported right past the main gate, then blasted a loud echo horn to cause a panic.
4. The villain blinded the night guard with a starlight flash, then blasted a loud echo horn to cause a panic.
5. The villain teleported right past the main gate, then swung up to the high balcony with a gold lasso.
6. The villain weaved a solid rainbow bridge, then faded into the shadows inside a mist cloak.
7. The villain teleported right past the main gate, then shielded themselves behind a glitter barrier.
8. The villain weaved a solid rainbow bridge, then shielded themselves behind a glitter barrier.
9. The villain blinded the night guard with a starlight flash, then zoomed over the palace walls on hover boots.
10. The villain weaved a solid rainbow bridge, then blasted a loud echo horn to cause a panic.
11. The villain weaved a solid rainbow bridge, then zoomed over the palace walls on hover boots.
12. The villain put the royal family into a deep dream, then blasted a loud echo horn to cause a panic.

Answer Key

The Case of the Missing Golden Horn

Culprit: Onyx

rainbow-weaving · glitter shield · left-hoofed · pastel blue mane · peppermint scent

Trail: Start 21 → Clue 1 16 → Clue 2 9 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Fractions of a number): "THE SUSPECT DOES NOT WEAR A MIST CLOAK"

$6/10$ of 5 = 3 (T) · $3/6$ of 80 = 40 (W) · $3/6$ of 118 = 59 (K) · $4/8$ of 116 = 58 (E) · $2/10$ of 85 = 17 (U) · $1/5$ of 120 = 24 (H) · $4/10$ of 130 = 52 (M) · $1/3$ of 57 = 19 (D) · $1/2$ of 82 = 41 (C) · $5/10$ of 30 = 15 (A) · $1/2$ of 22 = 11 (O) · $4/8$ of 86 = 43 (P) · $5/10$ of 100 = 50 (N) · $3/4$ of 64 = 48 (S) · $5/10$ of 120 = 60 (L) · $2/6$ of 30 = 10 (R) · $1/2$ of 88 = 44 (I)

Clue 2 (Word problems): "LEFT HOOFED"

Twinkle the Pixie found 53 sparkle berries yesterday and 58 more today. How many sparkle berries in all? = 111 (L) · Twinkle the Pixie found 39 sparkle berries yesterday and 37 more today. How many sparkle berries in all? = 76 (F) · There were 138 stardust jars. 19 were used up. How many stardust jars are left? = 119 (O) · Twinkle the Pixie lined up 3 rows of 3 rainbow carrots. How many rainbow carrots in all? = 9 (E) · Twinkle the Pixie found 6 magic gems yesterday and 88 more today. How many magic gems in all? = 94 (H) · There were 40 golden apples. 6 were used up. How many golden apples are left? = 34 (T) · There were 141 golden apples. 25 were used up. How many golden apples are left? = 116 (D)

Clue 3 (Multiplication facts (1-12)): "THE SNEAK FLEEING SNEEZED AT PEPPERMINT"

$8 \times 8 = 64$ (T) · $12 \times 12 = 144$ (L) · $3 \times 10 = 30$ (Z) · $10 \times 8 = 80$ (K) · $4 \times 8 = 32$ (R) · $5 \times 10 = 50$ (P) · $9 \times 11 = 99$ (M) · $3 \times 9 = 27$ (E) · $7 \times 3 = 21$ (A) · $11 \times 6 = 66$ (N) · $10 \times 10 = 100$ (F) · $2 \times 1 = 2$ (H) · $1 \times 3 = 3$ (I) · $9 \times 9 = 81$ (D) · $8 \times 1 = 8$ (G) · $11 \times 10 = 110$ (S)

Clue 4 (Integers): "WE DETECTED BLUE MANE STRANDS AT THE SCENE"

$(-15) + 18 = 3$ (W) · $20 - (-10) = 30$ (A) · $7 - (-6) = 13$ (L) · $(-8) + 32 = 24$ (M) · $(-15) + 44 = 29$ (D) · $(-1) + 10 = 9$ (T) · $6 - (-13) = 19$ (E) · $(-11) + 22 = 11$ (C) · $(-5) + 9 = 4$ (U) · $(-15) + 31 = 16$ (S) · $(-10) + 11 = 1$ (N) · $(-14) + 24 = 10$ (B) · $(-6) + 12 = 6$ (R) · $(-14) + 36 = 22$ (H)

Clue 5 (Fractions of a number): surviving statement is box 8 → Onyx

$1/4$ of 36 = 9 · $1/2$ of 6 = 3 · $2/10$ of 60 = 12 · $1/2$ of 14 = 7 · $1/6$ of 12 = 2 · $1/3$ of 18 = 6 · $1/10$ of 100 = 10 · $1/4$ of 44 = 11 · $1/3$ of 3 = 1 · $1/10$ of 40 = 4 · $1/10$ of 50 = 5