



The Case of the Missing Star Crystal

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

Detective: _____ Date: _____

Someone snuck into the Enchanted Cloud Meadow and snatched the Star Crystal right off the altar! Detective Hoof is on the case to find out which unicorn did it.

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 Unicorn Bandit is _____

Possible suspects

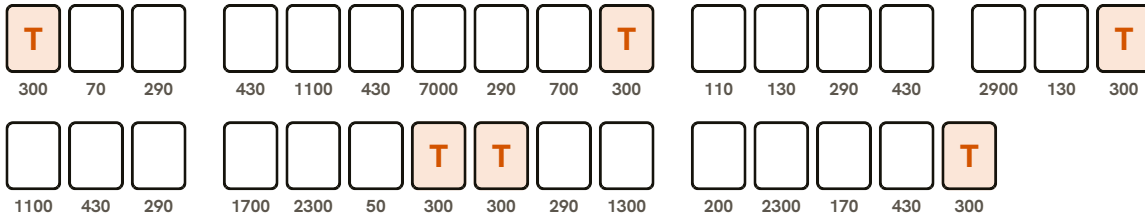
Cross off a row as each clue rules it out. The one left at the end is the culprit.

NAME	MAGIC BEAM	SPECIAL TRICK	HOOF LEAD	MANE COLOR	ALLERGY
Prism Dancer	Cloud Jump	Sugar Swirl	Left Hoofed	Pink Mane	Soggy Marshmallows
Crystal Gallop	Rainbow Beam	Sugar Swirl	Left Hoofed	Golden Mane	Soggy Marshmallows
Sparkle Star	Starlight Shield	Floral Ring	Left Hoofed	Silver Mane	Dull Stones
Blossom Bound	Sun Sparkle	Sugar Swirl	Right Hoofed	Golden Mane	Dull Stones
Glimmer Hoof	Sun Sparkle	Floral Ring	Right Hoofed	Silver Mane	Sour Berries
Cloud Jumper	Sun Sparkle	Glitter Blast	Left Hoofed	Pink Mane	Sour Berries
Twinkle Horn	Starlight Shield	Moon Dust	Right Hoofed	Golden Mane	Soggy Marshmallows
Rainbow Dash	Starlight Shield	Moon Dust	Left Hoofed	Golden Mane	Dull Stones
Petal Sprinter	Sun Sparkle	Floral Ring	Right Hoofed	Golden Mane	Sour Berries
Moonlight Echo	Rainbow Beam	Floral Ring	Left Hoofed	Golden Mane	Soggy Marshmallows
Jewel Canter	Rainbow Beam	Floral Ring	Right Hoofed	Silver Mane	Dull Stones
Dewdrop Trot	Crystal Dash	Prism Burst	Right Hoofed	Pink Mane	Soggy Marshmallows
Sunburst Tail	Rainbow Beam	Moon Dust	Left Hoofed	Golden Mane	Sour Berries
Golden Glade	Starlight Shield	Moon Dust	Right Hoofed	Golden Mane	Sour Berries
Starlight Whisper	Crystal Dash	Prism Burst	Left Hoofed	Silver Mane	Dull Stones
Silver Streak	Rainbow Beam	Prism Burst	Right Hoofed	Golden Mane	Sour Berries
Astral Wanderer	Crystal Dash	Glitter Blast	Left Hoofed	Silver Mane	Dull Stones
Dawn Trotter	Sun Sparkle	Sugar Swirl	Left Hoofed	Golden Mane	Soggy Marshmallows
Radiant Meadow	Starlight Shield	Floral Ring	Left Hoofed	Pink Mane	Soggy Marshmallows
Glitter Mane	Sun Sparkle	Moon Dust	Left Hoofed	Golden Mane	Soggy Marshmallows
Shimmer Breeze	Rainbow Beam	Glitter Blast	Left Hoofed	Golden Mane	Soggy Marshmallows

CLUE 1 Rounding

To see who was near the altar, Detective Hoof draws bar models comparing the lengths of magical trails left in the grass.

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



Round 264 to the nearest hundred → **T**

Round 2,252 to the nearest hundred → **L**

Round 709 to the nearest hundred → **C**

Round 1,729 to the nearest hundred → **G**

Round 169 to the nearest ten → **A**

Round 1,287 to the nearest hundred → **R**

Round 2,904 to the nearest hundred → **N**

Round 153 to the nearest hundred → **B**

Round 128 to the nearest ten → **O**

Round 67 to the nearest ten → **H**

Round 6,655 to the nearest thousand → **P**

Round 46 to the nearest ten → **I**

Round 110 to the nearest ten → **D**

Round 428 to the nearest ten → **S**

Round 1,125 to the nearest hundred → **U**

Round 290 to the nearest ten → **E**

Scratch space:

CLUE 2

Bar model word problems

A magical sensor scanner checks power levels, but its glowing screen only shows rounded estimates.

Draw a bar model to solve each word problem, then write its letter in the boxes to fill in the missing word.

A witness saw the villain was

L									
132	59	61	71	47	83	83	61	59	93

.

The red team has 159 cloud marshmallows and the blue team has 27 cloud marshmallows. How many more cloud marshmallows does the red team have?

draw a bar model

Answer: → **L**

One group collected 30 sugar gems and another group collected 17 sugar gems. How many sugar gems in all?

draw a bar model

Answer: → **H**

There were 96 glitter oats in all. 37 glitter oats were used. How many glitter oats are left?

draw a bar model

Answer: → **E**

One group collected 56 magic berries and another group collected 5 magic berries. How many magic berries in all?

draw a bar model

Answer: → **F**

One group collected 2 cloud marshmallows and another group collected 81 cloud marshmallows. How many cloud marshmallows in all?

draw a bar model

Answer: → **O**

There were 98 magic berries in all. 27 magic berries were used. How many magic berries are left?

draw a bar model

Answer: → **T**

One group collected 53 cloud marshmallows and another group collected 40 cloud marshmallows. How many cloud marshmallows in all?

draw a bar model

Answer: → **D**

CLUE 3 Addition

The detective totals up all the fallen sugar crystals gathered from the scene to count the clue points.

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

S								S									S
8343	7778	8779	8779	4758	3351	3606	2868	8343	7181	3351	3606	7598	7598	7778	8268	8343	

S										S									
8343	9140	7778	5163	5163	9011	7137	9140	7181	9011	8343	5304	9011	3606	6984	2325	7778	7598	7137	

$2645 + 5698 = \square \rightarrow$ S	$2561 + 5037 = \square \rightarrow$ L	$1000 + 1325 = \square \rightarrow$ C
$1660 + 1208 = \square \rightarrow$ R	$5251 + 3889 = \square \rightarrow$ T	$4618 + 2563 = \square \rightarrow$ H
$1565 + 3193 = \square \rightarrow$ Y	$2939 + 2224 = \square \rightarrow$ P	$4647 + 4364 = \square \rightarrow$ E
$3071 + 2233 = \square \rightarrow$ N	$2800 + 5468 = \square \rightarrow$ W	$2807 + 4330 = \square \rightarrow$ D
$2282 + 1324 = \square \rightarrow$ A	$4244 + 3534 = \square \rightarrow$ O	$1209 + 2142 = \square \rightarrow$ M
$6087 + 2692 = \square \rightarrow$ G	$3061 + 3923 = \square \rightarrow$ K	

Scratch space:

CLUE 4

Detective Hoof subtracts the baseline magic energy from the meadow total to find the leftover energy.

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

Diagram illustrating a sequence of numbers arranged in two rows, with some numbers highlighted in orange boxes labeled 'A'.

Top Row (14 boxes):

- Box 1: Orange, labeled 'A' (Value: 2953)
- Box 2: White (Value: 8146)
- Box 3: White (Value: 6016)
- Box 4: White (Value: 3984)
- Box 5: White (Value: 3283)
- Box 6: White (Value: 2907)
- Box 7: White (Value: 4237)
- Box 8: White (Value: 8146)
- Box 9: White (Value: 8146)
- Box 10: White (Value: 3984)
- Box 11: White (Value: 6016)
- Box 12: White (Value: 2679)
- Box 13: White (Value: 1504)
- Box 14: White (Value: 4237)

Bottom Row (14 boxes):

- Box 1: White (Value: 2647)
- Box 2: Orange, labeled 'A' (Value: 2953)
- Box 3: White (Value: 2907)
- Box 4: White (Value: 2352)
- Box 5: White (Value: 3283)
- Box 6: Orange, labeled 'A' (Value: 2953)
- Box 7: White (Value: 5177)
- Box 8: White (Value: 2907)
- Box 9: White (Value: 4237)
- Box 10: White (Value: 4061)
- Box 11: White (Value: 2647)
- Box 12: White (Value: 1504)
- Box 13: White (Value: 8146)
- Box 14: White (Value: 2352)

$4712 - 1759 = \square \rightarrow \boxed{\text{A}}$

$$6234 - 1997 = \boxed{} \rightarrow \boxed{\text{N}}$$

$$5471 - 2792 = \boxed{} \rightarrow \boxed{\text{D}}$$

$$4942 - 2590 = \boxed{} \rightarrow \boxed{\text{R}}$$

$$5339 - 162 = \boxed{} \rightarrow \boxed{\text{S}}$$

2495 - 991 = → **E**

$$9329 - 1183 = \boxed{} \rightarrow \boxed{\text{G}}$$

$$8963 - 2947 = \boxed{} \rightarrow \boxed{\text{L}}$$

3901 - 994 = →

$12241 - 3954 = \boxed{} \rightarrow \boxed{\text{M}}$

$$7497 - 3436 = \boxed{} \rightarrow \boxed{\text{T}}$$

$4989 - 1706 = \boxed{} \rightarrow \boxed{W}$

$$5189 - 2542 = \boxed{} \rightarrow \boxed{\text{H}}$$

$$6938 - 2954 = \boxed{} \rightarrow \boxed{0}$$

Scratch space:

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

The guard divides the total star fruit treat snacks into equal portions for the detective team.

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:

$54 \div 9 = \boxed{}$

$6 \div 6 = \boxed{}$

$22 \div 2 = \boxed{}$

$21 \div 7 = \boxed{}$

$35 \div 7 = \boxed{}$

$80 \div 8 = \boxed{}$

$28 \div 7 = \boxed{}$

$4 \div 2 = \boxed{}$

$36 \div 4 = \boxed{}$

$32 \div 4 = \boxed{}$

$42 \div 6 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain blasted a rainbow beam, then swirled sugar cloud dust.
2. The villain performed a cloud jump, then fired a prism burst.
3. The villain flashed a sun sparkle, then created a floral ring.
4. The villain raised a starlight shield, then sprinkled moon dust everywhere.
5. The villain blasted a rainbow beam, then fired a prism burst.
6. The villain blasted a rainbow beam, then created a floral ring.
7. The villain flashed a sun sparkle, then fired a prism burst.
8. The villain performed a cloud jump, then sprinkled moon dust everywhere.
9. The villain blasted a rainbow beam, then sprinkled moon dust everywhere.
10. The villain made a crystal dash, then swirled sugar cloud dust.
11. The villain flashed a sun sparkle, then sprinkled moon dust everywhere.
12. The villain flashed a sun sparkle, then swirled sugar cloud dust.

Answer Key

The Case of the Missing Star Crystal

Culprit: Dawn Trotter

Sun Sparkle · Sugar Swirl · Left Hoofed · Golden Mane · Soggy Marshmallows

Trail: Start 21 → Clue 1 18 → Clue 2 10 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Rounding): "THE SUSPECT DOES NOT USE GLITTER BLAST"

Round 264 to the nearest hundred = 300 (T) · Round 2,252 to the nearest hundred = 2300 (L) · Round 709 to the nearest hundred = 700 (C) · Round 1,729 to the nearest hundred = 1700 (G) · Round 169 to the nearest ten = 170 (A) · Round 1,287 to the nearest hundred = 1300 (R) · Round 2,904 to the nearest hundred = 2900 (N) · Round 153 to the nearest hundred = 200 (B) · Round 128 to the nearest ten = 130 (O) · Round 67 to the nearest ten = 70 (H) · Round 6,655 to the nearest thousand = 7000 (P) · Round 46 to the nearest ten = 50 (I) · Round 110 to the nearest ten = 110 (D) · Round 428 to the nearest ten = 430 (S) · Round 1,125 to the nearest hundred = 1100 (U) · Round 290 to the nearest ten = 290 (E)

Clue 2 (Bar model word problems): "LEFT HOOFED"

The red team has 159 cloud marshmallows and the blue team has 27 cloud marshmallows. How many more cloud marshmallows does the red team have? = 132 (L) · One group collected 30 sugar gems and another group collected 17 sugar gems. How many sugar gems in all? = 47 (H) · There were 96 glitter oats in all. 37 glitter oats were used. How many glitter oats are left? = 59 (E) · One group collected 56 magic berries and another group collected 5 magic berries. How many magic berries in all? = 61 (F) · One group collected 2 cloud marshmallows and another group collected 81 cloud marshmallows. How many cloud marshmallows in all? = 83 (O) · There were 98 magic berries in all. 27 magic berries were used. How many magic berries are left? = 71 (T) · One group collected 53 cloud marshmallows and another group collected 40 cloud marshmallows. How many cloud marshmallows in all? = 93 (D)

Clue 3 (Addition): "SOGGY MARSHMALLOWS STOPPED THE SNEAK COLD"

$2645 + 5698 = 8343$ (S) · $2561 + 5037 = 7598$ (L) · $1000 + 1325 = 2325$ (C) · $1660 + 1208 = 2868$ (R) · $5251 + 3889 = 9140$ (T) · $4618 + 2563 = 7181$ (H) · $1565 + 3193 = 4758$ (Y) · $2939 + 2224 = 5163$ (P) · $4647 + 4364 = 9011$ (E) · $3071 + 2233 = 5304$ (N) · $2800 + 5468 = 8268$ (W) · $2807 + 4330 = 7137$ (D) · $2282 + 1324 = 3606$ (A) · $4244 + 3534 = 7778$ (O) · $1209 + 2142 = 3351$ (M) · $6087 + 2692 = 8779$ (G) · $3061 + 3923 = 6984$ (K)

Clue 4 (Subtraction): "A GLOWING GOLDEN MANE HAIR WAS IN THE GRASS"

$4712 - 1759 = 2953$ (A) · $6234 - 1997 = 4237$ (N) · $5471 - 2792 = 2679$ (D) · $4942 - 2590 = 2352$ (R) · $5339 - 162 = 5177$ (S) · $2495 - 991 = 1504$ (E) · $9329 - 1183 = 8146$ (G) · $8963 - 2947 = 6016$ (L) · $3901 - 994 = 2907$ (I) · $12241 - 3954 = 8287$ (M) · $7497 - 3436 = 4061$ (T) · $4989 - 1706 = 3283$ (W) · $5189 - 2542 = 2647$ (H) · $6938 - 2954 = 3984$ (O)

Clue 5 (Division facts (1-12)): surviving statement is box 12 → Dawn Trotter

$54 \div 9 = 6$ · $6 \div 6 = 1$ · $22 \div 2 = 11$ · $21 \div 7 = 3$ · $35 \div 7 = 5$ · $80 \div 8 = 10$ · $28 \div 7 = 4$ · $4 \div 2 = 2$ · $36 \div 4 = 9$ · $32 \div 4 = 8$ · $42 \div 6 = 7$