



# The Case of the Missing Diamond Collar

Grade 5 math · Fractions of a number, Word problems, Order of operations, Multiplication, Division · Reading level grades 5-6

Detective: \_\_\_\_\_ Date: \_\_\_\_\_

During the grand finale of the annual Whiskered Manor Cat Show, the priceless Diamond Collar vanished from its velvet display pillow. Detective Whiskers and the Purr Patrol are on the scene to examine clues, crack codes, and unmask the sneaky culprit before they slip away.

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 Cat Burglar is** \_\_\_\_\_

## Possible suspects

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

| NAME            | PRIMARY SKILL | GADGET USED   | DOMINANT PAW       | FUR COLOR    | BIGGEST FEAR   |
|-----------------|---------------|---------------|--------------------|--------------|----------------|
| Otis Orange     | Wall Dash     | Laser Pointer | Right Paw Dominant | Orange Tabby | Vacuum Cleaner |
| Felix Whiskers  | Silent Paws   | Feather Wand  | Right Paw Dominant | Jet Black    | Spray Bottle   |
| Bella Bouncer   | Wall Dash     | Squeaky Toy   | Right Paw Dominant | Jet Black    | Loud Thunder   |
| Oliver Scratch  | Pounce Attack | Catnip Bomb   | Left Paw Dominant  | Jet Black    | Loud Thunder   |
| Nala Nip        | Night Vision  | Laser Pointer | Right Paw Dominant | Orange Tabby | Vacuum Cleaner |
| Barnaby Paws    | Wall Dash     | Yarn Launcher | Left Paw Dominant  | Calico       | Loud Thunder   |
| Duchess Fluff   | Pounce Attack | Squeaky Toy   | Right Paw Dominant | Orange Tabby | Loud Thunder   |
| Callie Calico   | Night Vision  | Feather Wand  | Right Paw Dominant | Jet Black    | Loud Thunder   |
| Milo Meow       | High Leap     | Yarn Launcher | Right Paw Dominant | Calico       | Loud Thunder   |
| Daisy Duster    | Night Vision  | Catnip Bomb   | Right Paw Dominant | Orange Tabby | Spray Bottle   |
| Pumpkin Patch   | High Leap     | Yarn Launcher | Right Paw Dominant | Orange Tabby | Vacuum Cleaner |
| Simba Swiperson | Wall Dash     | Feather Wand  | Right Paw Dominant | Calico       | Loud Thunder   |
| Smokey Furr     | High Leap     | Squeaky Toy   | Left Paw Dominant  | Calico       | Loud Thunder   |
| Hazel Hiss      | Wall Dash     | Yarn Launcher | Right Paw Dominant | Jet Black    | Vacuum Cleaner |
| Luna Tailor     | Pounce Attack | Catnip Bomb   | Right Paw Dominant | Calico       | Loud Thunder   |
| Pepper Paws     | Night Vision  | Feather Wand  | Right Paw Dominant | Calico       | Loud Thunder   |
| Cleo Clawson    | Silent Paws   | Feather Wand  | Right Paw Dominant | Orange Tabby | Loud Thunder   |
| Penny Pouncer   | Pounce Attack | Squeaky Toy   | Right Paw Dominant | Calico       | Loud Thunder   |
| Ziggy Zoomer    | Wall Dash     | Catnip Bomb   | Right Paw Dominant | Calico       | Vacuum Cleaner |
| Shadow Stealth  | Pounce Attack | Yarn Launcher | Right Paw Dominant | Jet Black    | Spray Bottle   |
| Mittens McPhee  | Night Vision  | Feather Wand  | Right Paw Dominant | Calico       | Spray Bottle   |

## Fractions of a number

Detective Whiskers inventories the show supplies and organizes notes across the manor to eliminate early suspects.

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

39 15 24 37 34 30 30 28 34 11 17 34 17 11 26 39 14 33 24

$3/8$  of 104 =   $\rightarrow$  **T**

$$\frac{1}{2} \text{ of } 80 = \boxed{\phantom{00}} \rightarrow \boxed{\text{R}}$$

3/6 of 4 =  → **Y**

5/10 of 68 =   $\rightarrow$

2/6 of 33 =  → **N**

$$\frac{1}{8} \text{ of } 104 = \boxed{\phantom{00}} \rightarrow \mathbf{C}$$

$2/10$  of 85 =   $\rightarrow$  **D**

5/10 of 56 =  → **A**

$$1/2 \text{ of } 66 = \boxed{\phantom{00}} \rightarrow \boxed{\text{S}}$$

$\frac{1}{4}$  of 96 =   $\rightarrow$  **E**

$$\frac{1}{6} \text{ of } 90 = \boxed{\phantom{00}} \rightarrow \boxed{\text{H}}$$

$$4/8 \text{ of } 74 = \boxed{\phantom{000}} \rightarrow \boxed{\mathbf{v}}$$

7/10 of 20 =  → **U**

$2/5$  of 65 =   $\rightarrow$

$$2/4 \text{ of } 60 = \boxed{\phantom{00}} \rightarrow \boxed{\text{L}}$$

Scratch space:

## CLUE 2

## Word problems

Analyzing the pantry inventory, the detective calculates what fraction of gourmet salmon cans were disturbed during the robbery.

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

A witness saw the villain was

|    |    |     |     |     |    |    |  |   |   |   |   |    |    |  |     |  |
|----|----|-----|-----|-----|----|----|--|---|---|---|---|----|----|--|-----|--|
| R  |    |     |     |     |    |    |  | W | D | O | M |    | N  |  | N   |  |
| 16 | 42 | 104 | 120 | 112 | 86 | 81 |  |   |   |   |   | 42 | 81 |  | 112 |  |

Detective Whiskers lined up 2 rows of 8 grooming brushes. How many grooming brushes in all?

Answer:  → **R**

Detective Whiskers found 27 grooming brushes yesterday and 77 more today. How many grooming brushes in all?

Answer:  → **G**

Detective Whiskers found 8 feather toys yesterday and 78 more today. How many feather toys in all?

Answer:  → **P**

There were 93 feather toys. 12 were used up. How many feather toys are left?

Answer:  → **A**

Detective Whiskers lined up 7 rows of 6 catnip pouches. How many catnip pouches in all?

Answer:  → **I**

Detective Whiskers found 4 cans of salmon yesterday and 116 more today. How many cans of salmon in all?

Answer:  → **H**

Detective Whiskers found 48 catnip pouches yesterday and 64 more today. How many catnip pouches in all?

Answer:  → **T**

Scratch space:

**CLUE 3**
**Order of operations**

To unlock the vault security log, you must evaluate a multi-step keypad code using the order of operations.

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

|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|
| T  |    |    |    |    |    |    |    |    |    | T  |    |    |    |    |    |    |    |    |  |
| 43 | 58 | 70 | 9  | 31 | 80 | 74 | 60 | 41 | 43 | 58 | 41 | 24 | 70 | 63 | 42 | 58 | 70 | 29 |  |
|    |    |    |    | T  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| 80 | 66 | 31 | 24 | 43 | 58 | 31 | 29 | 24 | 70 | 60 | 60 | 31 | 33 | 12 | 80 | 70 | 63 |    |  |

$25 + 3 \times 6 = \square \rightarrow \boxed{T}$

$15 + 8 \times 6 = \square \rightarrow \boxed{S}$

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

$5 \times 12 - 19 = \square \rightarrow \boxed{I}$

$26 + 6 \times 9 = \square \rightarrow \boxed{L}$

$6 \times 11 - 6 = \square \rightarrow \boxed{R}$

$4 \times 12 - 6 = \square \rightarrow \boxed{W}$

$13 + 3 \times 6 = \square \rightarrow \boxed{U}$

$3 \times 10 - 18 = \square \rightarrow \boxed{B}$

$9 \times 10 - 16 = \square \rightarrow \boxed{P}$

$35 + 5 \times 7 = \square \rightarrow \boxed{E}$

$10 \times 3 - 1 = \square \rightarrow \boxed{N}$

$10 + 7 \times 8 = \square \rightarrow \boxed{O}$

$7 \times 6 - 9 = \square \rightarrow \boxed{M}$

$42 + 2 \times 8 = \square \rightarrow \boxed{H}$

$12 + 2 \times 6 = \square \rightarrow \boxed{D}$

Scratch space:

**CLUE 4**
**Multiplication facts (1-12)**

Examining grids of cat scratching posts, the detective multiplies rows and columns to find where the thief dropped evidence.

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

|          |    |    |    |     |          |     |    |     |    |     |    |    |          |    |    |     |
|----------|----|----|----|-----|----------|-----|----|-----|----|-----|----|----|----------|----|----|-----|
| <b>A</b> |    |    |    |     | <b>A</b> |     |    |     |    |     |    |    | <b>A</b> |    |    |     |
| 25       | 8  | 99 | 12 | 108 | 25       | 120 | 1  | 108 | 63 | 110 | 21 | 24 | 25       | 44 | 49 | 110 |
|          |    |    |    |     |          |     |    |     |    |     |    |    |          |    |    |     |
| 12       | 99 | 24 | 99 | 120 | 99       | 8   | 21 | 66  | 99 | 80  | 1  | 44 | 49       |    |    |     |

$5 \times 5 = \square \rightarrow \text{A}$

$7 \times 9 = \square \rightarrow \text{O}$

$11 \times 4 = \square \rightarrow \text{N}$

$12 \times 2 = \square \rightarrow \text{R}$

$6 \times 11 = \square \rightarrow \text{B}$

$7 \times 7 = \square \rightarrow \text{D}$

$12 \times 9 = \square \rightarrow \text{C}$

$1 \times 8 = \square \rightarrow \text{F}$

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

$12 \times 10 = \square \rightarrow \text{L}$

$9 \times 11 = \square \rightarrow \text{E}$

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

$4 \times 3 = \square \rightarrow \text{W}$

$10 \times 8 = \square \rightarrow \text{H}$

$7 \times 3 = \square \rightarrow \text{T}$

Scratch space:

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

The detective divides the remaining treats equally among shelter helpers to determine who was present in the hall.

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:**

$33 \div 3 = \boxed{\phantom{00}}$

$5 \div 1 = \boxed{\phantom{00}}$

$60 \div 6 = \boxed{\phantom{00}}$

$48 \div 6 = \boxed{\phantom{00}}$

$36 \div 3 = \boxed{\phantom{00}}$

$2 \div 1 = \boxed{\phantom{00}}$

$3 \div 3 = \boxed{\phantom{00}}$

$60 \div 10 = \boxed{\phantom{00}}$

$4 \div 1 = \boxed{\phantom{00}}$

$84 \div 12 = \boxed{\phantom{00}}$

$72 \div 8 = \boxed{\phantom{00}}$

**Step 2 - cross out the sentence with each answer:**

1. The villain snuck in with silent paws, then entangled the hallway with a yarn launcher.
2. The villain leaped over the security fence, then dropped a smelly catnip bomb.
3. The villain navigated in pitch darkness, then waved a shiny feather wand.
4. The villain leaped over the security fence, then entangled the hallway with a yarn launcher.
5. The villain pounced from the rafters, then squeaked a loud toy to confuse everyone.
6. The villain navigated in pitch darkness, then dropped a smelly catnip bomb.
7. The villain snuck in with silent paws, then squeaked a loud toy to confuse everyone.
8. The villain snuck in with silent paws, then dropped a smelly catnip bomb.
9. The villain leaped over the security fence, then distracted guards with a laser pointer.
10. The villain pounced from the rafters, then dropped a smelly catnip bomb.
11. The villain dashed along the high wall, then waved a shiny feather wand.
12. The villain dashed along the high wall, then entangled the hallway with a yarn launcher.

# Answer Key

## The Case of the Missing Diamond Collar

### Culprit: Pepper Paws

Night Vision · Feather Wand · Right Paw Dominant · Calico · Loud Thunder

Trail: Start 21 → Clue 1 16 → Clue 2 14 → Clue 3 8 → Clue 4 4 → Clue 5 1

#### Clue 1 (Fractions of a number): "THE VILLAIN DID NOT USE A YARN LAUNCHER"

$\frac{3}{8}$  of 104 = 39 (T) ·  $\frac{1}{2}$  of 80 = 40 (R) ·  $\frac{3}{6}$  of 4 = 2 (Y) ·  $\frac{5}{10}$  of 68 = 34 (I) ·  $\frac{2}{6}$  of 33 = 11 (N) ·  $\frac{1}{8}$  of 104 = 13 (C) ·  $\frac{2}{10}$  of 85 = 17 (D) ·  $\frac{5}{10}$  of 56 = 28 (A) ·  $\frac{1}{2}$  of 66 = 33 (S) ·  $\frac{1}{4}$  of 96 = 24 (E) ·  $\frac{1}{6}$  of 90 = 15 (H) ·  $\frac{4}{8}$  of 74 = 37 (V) ·  $\frac{7}{10}$  of 20 = 14 (U) ·  $\frac{2}{5}$  of 65 = 26 (O) ·  $\frac{2}{4}$  of 60 = 30 (L)

#### Clue 2 (Word problems): "RIGHT PAW DOMINANT"

Detective Whiskers lined up 2 rows of 8 grooming brushes. How many grooming brushes in all? = 16 (R) · Detective Whiskers found 27 grooming brushes yesterday and 77 more today. How many grooming brushes in all? = 104 (G) · Detective Whiskers found 8 feather toys yesterday and 78 more today. How many feather toys in all? = 86 (P) · There were 93 feather toys. 12 were used up. How many feather toys are left? = 81 (A) · Detective Whiskers lined up 7 rows of 6 catnip pouches. How many catnip pouches in all? = 42 (I) · Detective Whiskers found 4 cans of salmon yesterday and 116 more today. How many cans of salmon in all? = 120 (H) · Detective Whiskers found 48 catnip pouches yesterday and 64 more today. How many catnip pouches in all? = 112 (T)

#### Clue 3 (Order of operations): "THE CULPRIT HIDES WHEN LOUD THUNDER RUMBLES"

$25 + 3 \times 6 = 43$  (T) ·  $15 + 8 \times 6 = 63$  (S) ·  $5 + 2 \times 2 = 9$  (C) ·  $5 \times 12 - 19 = 41$  (I) ·  $26 + 6 \times 9 = 80$  (L) ·  $6 \times 11 - 6 = 60$  (R) ·  $4 \times 12 - 6 = 42$  (W) ·  $13 + 3 \times 6 = 31$  (U) ·  $3 \times 10 - 18 = 12$  (B) ·  $9 \times 10 - 16 = 74$  (P) ·  $35 + 5 \times 7 = 70$  (E) ·  $10 \times 3 - 1 = 29$  (N) ·  $10 + 7 \times 8 = 66$  (O) ·  $7 \times 6 - 9 = 33$  (M) ·  $42 + 2 \times 8 = 58$  (H) ·  $12 + 2 \times 6 = 24$  (D)

#### Clue 4 (Multiplication facts (1-12)): "A FEW CALICO STRANDS WERE LEFT BEHIND"

$5 \times 5 = 25$  (A) ·  $7 \times 9 = 63$  (O) ·  $11 \times 4 = 44$  (N) ·  $12 \times 2 = 24$  (R) ·  $6 \times 11 = 66$  (B) ·  $7 \times 7 = 49$  (D) ·  $12 \times 9 = 108$  (C) ·  $1 \times 8 = 8$  (F) ·  $1 \times 1 = 1$  (I) ·  $12 \times 10 = 120$  (L) ·  $9 \times 11 = 99$  (E) ·  $11 \times 10 = 110$  (S) ·  $4 \times 3 = 12$  (W) ·  $10 \times 8 = 80$  (H) ·  $7 \times 3 = 21$  (T)

#### Clue 5 (Division facts (1-12)): surviving statement is box 3 → Pepper Paws

$33 \div 3 = 11$  ·  $5 \div 1 = 5$  ·  $60 \div 6 = 10$  ·  $48 \div 6 = 8$  ·  $36 \div 3 = 12$  ·  $2 \div 1 = 2$  ·  $3 \div 3 = 1$  ·  $60 \div 10 = 6$  ·  $4 \div 1 = 4$  ·  $84 \div 12 = 7$  ·  $72 \div 8 = 9$