



The Case of the Missing Golden Crust

Grade 10 math · Pythagorean theorem, Word problems, Multi-step word problems, Bar models, Missing addends · Reading level grades 7-9

Detective: _____ Date: _____

The legendary Golden Crown Crust has been stolen right from the palace stone oven! Analyze the clues and complete the puzzle to find out which suspect committed the royal crime.

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 Pizza Thief is _____

Possible suspects

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

NAME	KITCHEN POWER	ESCAPE SKILL	HAND DOMINANCE	HAIR COLOR	SECRET WEAKNESS
Donnie Romanus	Garlic Shield	Basil Sprint	Right Handed	Red Hair	Fresh Oregano
King Roman II	Sauce Blast	Olive Blast	Left Handed	Red Hair	Fresh Oregano
Count Roman	Cheese Zap	Tomato Surfing	Left Handed	Black Hair	Fresh Oregano
Roman Donnie Jr	Dough Knead	Mushroom Glide	Right Handed	Red Hair	Fresh Oregano
Roman Donnybrook	Cheese Zap	Pepperoni Dash	Right Handed	Red Hair	Pineapple Slices
Donnie Jr	Garlic Shield	Olive Blast	Right Handed	Black Hair	Ice Water
Prince Donnie	Cheese Zap	Tomato Surfing	Right Handed	Red Hair	Pineapple Slices
Donnie DeRoman	Garlic Shield	Mushroom Glide	Right Handed	Black Hair	Fresh Oregano
Romanov Donnie	Dough Knead	Tomato Surfing	Right Handed	Red Hair	Fresh Oregano
Emperor Don	Garlic Shield	Tomato Surfing	Right Handed	Black Hair	Ice Water
Baron Roman	Dough Knead	Basil Sprint	Left Handed	Black Hair	Ice Water
Roman the Don	Sauce Blast	Tomato Surfing	Right Handed	Red Hair	Ice Water
Donnie Rex	Cheese Zap	Pepperoni Dash	Left Handed	Red Hair	Fresh Oregano
Donnie Romanoff	Garlic Shield	Tomato Surfing	Left Handed	Red Hair	Ice Water
Donnie McDonald	Garlic Shield	Olive Blast	Right Handed	Blonde Hair	Ice Water
Duke Donnie	Dough Knead	Olive Blast	Left Handed	Red Hair	Pineapple Slices
Roman Donnie	Pizza Toss	Mushroom Glide	Right Handed	Blonde Hair	Ice Water
Roman O Donnie	Pizza Toss	Mushroom Glide	Right Handed	Red Hair	Fresh Oregano
Don Roman	Dough Knead	Mushroom Glide	Right Handed	Blonde Hair	Pineapple Slices
Donnie the Great	Cheese Zap	Basil Sprint	Left Handed	Blonde Hair	Fresh Oregano
Donnie King	Pizza Toss	Olive Blast	Right Handed	Red Hair	Fresh Oregano

CLUE 1 Pythagorean theorem

We compared dough block lengths using bar models to track the escape path.

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

52 5 74 82 15 30 30 37 15 125 75 85 74 111 125 85 52

17 111 74 85 30 15 82 74 20 30 37 111 52

legs 20 and 48, hypotenuse = $\rightarrow$ **T**

legs 21 and 72, hypotenuse = $\rightarrow$ **D**

legs 9 and 12, hypotenuse = $\rightarrow$

legs 3 and 4, hypotenuse = $\rightarrow$ **H**

legs 36 and 105, hypotenuse = $\rightarrow$ **S**

legs 35 and 120, hypotenuse = → **N**

legs 12 and 35, hypotenuse = → **A**

legs 24 and 70, hypotenuse = → **E**

legs 40 and 75, hypotenuse = $\rightarrow$

legs 8 and 15, hypotenuse = → **U**

legs 18 and 80, hypotenuse = $\rightarrow$ **V**

legs 18 and 24, hypotenuse = $\rightarrow$ **L**

legs 12 and 16, hypotenuse = $\rightarrow$ **B**

Scratch space:

CLUE 2

Word problems

Next we solved word problems about royal pizza deliveries to decrypt the kitchen log.

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

A witness saw the villain was R D E D .

78 24 33 106 80 106 79 64

Baker Donnie found 59 cannolis yesterday and 19 more today. How many cannolis in all?

Answer: → R

Baker Donnie lined up 8 rows of 3 calzones. How many calzones in all?

Answer: → I

There were 65 cannolis. 32 were used up. How many cannolis are left?

Answer: → G

There were 87 calzones. 7 were used up. How many calzones are left?

Answer: → T

Baker Donnie found 69 pizzas yesterday and 10 more today. How many pizzas in all?

Answer: → A

Baker Donnie found 2 pizzas yesterday and 62 more today. How many pizzas in all?

Answer: → N

Baker Donnie found 80 garlic knots yesterday and 26 more today. How many garlic knots in all?

Answer: → H

Scratch space:

CLUE 3

Multi-step word problems

We then tackled multi-step word problems regarding recipe prep to reveal a hidden code.

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

Someone scared the villain off with F A N .

42 30 35 31 59 15 30 35 6 15

Baker Donnie earned 3 calzones in each of 6 rounds, plus 39 bonus calzones. Then 15 calzones were lost. How many calzones are left?

Answer: → F

Baker Donnie earned 5 pizzas in each of 3 rounds, plus 28 bonus pizzas. Then 8 pizzas were lost. How many pizzas are left?

Answer: → E

Baker Donnie filled 8 boxes with 7 calzones each, then found 3 more calzones. How many calzones are there in all?

Answer: → H

There were 308 calzones in all. 38 calzones were set aside. The rest were shared equally among 9 The Royal Culinary Squad. How many calzones did each get?

Answer: → R

There were 293 garlic knots in all. 14 garlic knots were set aside. The rest were shared equally among 9 The Royal Culinary Squad. How many garlic knots did each get?

Answer: → S

There were 110 pizzas in all. 2 The Royal Culinary Squad used 40 pizzas each. The other 2 The Royal Culinary Squad shared the rest equally. How many pizzas did each of the other The Royal Culinary Squad get?

Answer: → O

Baker Donnie collected 7 cannolis in the morning and 23 cannolis in the afternoon, then split them equally among 5 The Royal Culinary Squad. How many cannolis did each get?

Answer: → G

Scratch space:

CLUE 4

Bar model word problems

Using the Pythagorean theorem, we calculated the diagonal ladder path across the pantry wall.

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

A strand of

R						R
64	30	94	135	109	15	64

 hair turned up at the scene.

There were 88 breadsticks in all. 24 breadsticks were used.
How many breadsticks are left?

draw a bar model

Answer: →

R

There were 138 garlic knots in all. 3 garlic knots were used.
How many garlic knots are left?

draw a bar model

Answer: →

H

Baker Donnie has 218 pizzas, packed 2 to a bag. How many
bags can be filled?

draw a bar model

Answer: →

A

Baker Donnie has 180 garlic knots, packed 12 to a bag. How
many bags can be filled?

draw a bar model

Answer: →

I

One group collected 20 pizzas and another group collected
10 pizzas. How many pizzas in all?

draw a bar model

Answer: →

E

There were 122 calzones in all. 28 calzones were used.
How many calzones are left?

draw a bar model

Answer: →

D

CLUE 5**Missing addends - the last clue**

Finally we solved missing addend equations to balance the oven temperature logs.

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:

$12 + \underline{\quad} = 13$

$7 + \underline{\quad} = 12$

$33 + \underline{\quad} = 40$

$20 + \underline{\quad} = 29$

$16 + \underline{\quad} = 18$

$22 + \underline{\quad} = 30$

$20 + \underline{\quad} = 24$

$4 + \underline{\quad} = 15$

$34 + \underline{\quad} = 40$

$37 + \underline{\quad} = 47$

$6 + \underline{\quad} = 18$

Step 2 - cross out the sentence with each answer:

1. The villain activated garlic shield, then zoomed away with basil sprint.
2. The villain performed a pizza toss, then used pepperoni dash.
3. The villain performed a pizza toss, then engaged mushroom glide.
4. The villain launched a sauce blast, then executed olive blast.
5. The villain used dough knead, then engaged mushroom glide.
6. The villain triggered a cheese zap, then activated tomato surfing.
7. The villain used dough knead, then activated tomato surfing.
8. The villain used dough knead, then executed olive blast.
9. The villain activated garlic shield, then used pepperoni dash.
10. The villain launched a sauce blast, then used pepperoni dash.
11. The villain activated garlic shield, then executed olive blast.
12. The villain performed a pizza toss, then executed olive blast.

Answer Key

The Case of the Missing Golden Crust

Culprit: Roman O Donnie

Pizza Toss · Mushroom Glide · Right Handed · Red Hair · Fresh Oregano

Trail: Start 21 → Clue 1 16 → Clue 2 11 → Clue 3 5 → Clue 4 4 → Clue 5 1

Clue 1 (Pythagorean theorem): "THE VILLAIN DOES NOT USE OLIVE BLAST"

legs 20 and 48, hypotenuse = 52 (T) · legs 21 and 72, hypotenuse = 75 (D) · legs 9 and 12, hypotenuse = 15 (I) · legs 3 and 4, hypotenuse = 5 (H) · legs 36 and 105, hypotenuse = 111 (S) · legs 35 and 120, hypotenuse = 125 (N) · legs 12 and 35, hypotenuse = 37 (A) · legs 24 and 70, hypotenuse = 74 (E) · legs 40 and 75, hypotenuse = 85 (O) · legs 8 and 15, hypotenuse = 17 (U) · legs 18 and 80, hypotenuse = 82 (V) · legs 18 and 24, hypotenuse = 30 (L) · legs 12 and 16, hypotenuse = 20 (B)

Clue 2 (Word problems): "RIGHT HANDED"

Baker Donnie found 59 cannolis yesterday and 19 more today. How many cannolis in all? = 78 (R) · Baker Donnie lined up 8 rows of 3 calzones. How many calzones in all? = 24 (I) · There were 65 cannolis. 32 were used up. How many cannolis are left? = 33 (G) · There were 87 calzones. 7 were used up. How many calzones are left? = 80 (T) · Baker Donnie found 69 pizzas yesterday and 10 more today. How many pizzas in all? = 79 (A) · Baker Donnie found 2 pizzas yesterday and 62 more today. How many pizzas in all? = 64 (N) · Baker Donnie found 80 garlic knots yesterday and 26 more today. How many garlic knots in all? = 106 (H)

Clue 3 (Multi-step word problems): "FRESH OREGANO"

Baker Donnie earned 3 calzones in each of 6 rounds, plus 39 bonus calzones. Then 15 calzones were lost. How many calzones are left? = 42 (F) · Baker Donnie earned 5 pizzas in each of 3 rounds, plus 28 bonus pizzas. Then 8 pizzas were lost. How many pizzas are left? = 35 (E) · Baker Donnie filled 8 boxes with 7 calzones each, then found 3 more calzones. How many calzones are there in all? = 59 (H) · There were 308 calzones in all. 38 calzones were set aside. The rest were shared equally among 9 The Royal Culinary Squad. How many calzones did each get? = 30 (R) · There were 293 garlic knots in all. 14 garlic knots were set aside. The rest were shared equally among 9 The Royal Culinary Squad. How many garlic knots did each get? = 31 (S) · There were 110 pizzas in all. 2 The Royal Culinary Squad used 40 pizzas each. The other 2 The Royal Culinary Squad shared the rest equally. How many pizzas did each of the other The Royal Culinary Squad get? = 15 (O) · Baker Donnie collected 7 cannolis in the morning and 23 cannolis in the afternoon, then split them equally among 5 The Royal Culinary Squad. How many cannolis did each get? = 6 (G)

Clue 4 (Bar model word problems): "RED HAIR"

There were 88 breadsticks in all. 24 breadsticks were used. How many breadsticks are left? = 64 (R) · There were 138 garlic knots in all. 3 garlic knots were used. How many garlic knots are left? = 135 (H) · Baker Donnie has 218 pizzas, packed 2 to a bag. How many bags can be filled? = 109 (A) · Baker Donnie has 180 garlic knots, packed 12 to a bag. How many bags can be filled? = 15 (I) · One group collected 20 pizzas and another group collected 10 pizzas. How many pizzas in all? = 30 (E) · There were 122 calzones in all. 28 calzones were used. How many calzones are left? = 94 (D)

Clue 5 (Missing addends): surviving statement is box 3 → Roman O Donnie

$12 + \underline{\quad} = 13 = 1$ · $7 + \underline{\quad} = 12 = 5$ · $33 + \underline{\quad} = 40 = 7$ · $20 + \underline{\quad} = 29 = 9$ · $16 + \underline{\quad} = 18 = 2$ · $22 + \underline{\quad} = 30 = 8$ · $20 + \underline{\quad} = 24 = 4$ · $4 + \underline{\quad} = 15 = 11$ · $34 + \underline{\quad} = 40 = 6$ · $37 + \underline{\quad} = 47 = 10$ · $6 + \underline{\quad} = 18 = 12$