



The Canopy Network Heist

Grade 8 math · Exponents, Square roots, Pythagorean theorem, Order of operations, Two-step equations · Reading level grades 7-9

Detective: _____ Date: _____

Someone has bypassed the biometric security of the Great Oak Archive and stolen the Prototype Glider Plans! As lead detective of the Canopy Network, you must analyze the physical evidence, track the culprit's flight path, and identify the rogue agent from our roster before they escape the forest canopy.

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 rogue agent is _____

Possible suspects

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

NAME	PRIMARY GADGET	SPECIAL ESCAPE GEAR	GLOVE PREFERENCE	HELMET COLOR	ALLERGY TRIGGER
Agent Ivy	drone controller	smoke pellets	left-handed glove	forest green helmet	oak sap
Agent Jax	laser decoder	grapple line	left-handed glove	neon orange helmet	oak sap
Agent Fay	climbing spikes	mini glider	left-handed glove	bright blue helmet	oak sap
Agent Roy	climbing spikes	rocket boots	left-handed glove	bright blue helmet	oak sap
Agent Max	climbing spikes	mini glider	left-handed glove	neon orange helmet	wild berries
Agent Cal	drone controller	stealth cloak	left-handed glove	forest green helmet	wild berries
Agent Mia	climbing spikes	grapple line	left-handed glove	bright blue helmet	wild berries
Agent Eli	grappling sling	smoke pellets	left-handed glove	neon orange helmet	wild berries
Agent Sam	grappling sling	smoke pellets	left-handed glove	neon orange helmet	pine pollen
Agent Nia	climbing spikes	mini glider	right-handed glove	bright blue helmet	oak sap
Agent Jon	sonic jammer	grapple line	left-handed glove	bright blue helmet	oak sap
Agent Meg	sonic jammer	smoke pellets	left-handed glove	neon orange helmet	wild berries
Agent Dan	climbing spikes	smoke pellets	left-handed glove	forest green helmet	oak sap
Agent Kai	drone controller	grapple line	right-handed glove	bright blue helmet	oak sap
Agent Ava	climbing spikes	rocket boots	left-handed glove	forest green helmet	oak sap
Agent Kim	grappling sling	rocket boots	left-handed glove	forest green helmet	wild berries
Agent Leo	sonic jammer	smoke pellets	left-handed glove	bright blue helmet	oak sap
Agent Ben	grappling sling	stealth cloak	right-handed glove	neon orange helmet	pine pollen
Agent Amy	sonic jammer	stealth cloak	left-handed glove	bright blue helmet	oak sap
Agent Eva	sonic jammer	smoke pellets	right-handed glove	forest green helmet	oak sap
Agent Joy	sonic jammer	mini glider	left-handed glove	neon orange helmet	wild berries

CLUE 1 Exponents

The security terminal recorded a power surge that multiplied exponentially with each bypass attempt. By solving the power level equation, we can unlock the security footage and narrow down the suspect's gear.

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

9 16 343 169 8 25 32 324 49 9 64 289 343 225 196 289 9

8 225 343 216 225 9 343 216 25 9 16 169 25 289 216 100

$$3^2 = \boxed{} \rightarrow \boxed{\text{T}}$$

$$2^5 = \boxed{} \rightarrow \boxed{\text{P}}$$

$$17^2 = \boxed{} \rightarrow \boxed{0}$$

$$13^2 = \boxed{} \rightarrow \boxed{\mathbf{C}}$$

$$7^2 = \boxed{} \rightarrow \boxed{1}$$

$$2^6 = \boxed{} \rightarrow \boxed{\mathbf{D}}$$

$$6^3 = \boxed{} \rightarrow \boxed{\text{A}}$$

$$7^3 = \boxed{} \rightarrow \boxed{\text{E}}$$

$$14^2 = \boxed{} \rightarrow \boxed{\text{N}}$$

$$2^3 = \boxed{} \rightarrow \boxed{\text{U}}$$

$$15^2 = \boxed{} \rightarrow \boxed{\text{S}}$$

$$18^2 = \boxed{} \rightarrow \boxed{\mathbf{R}}$$

$4^2 = \square \rightarrow \boxed{\text{H}}$

$10^2 = \boxed{} \rightarrow \boxed{\text{K}}$

$$5^2 = \boxed{} \rightarrow \boxed{\text{L}}$$

Scratch space:

CLUE 2 Square roots

The thief fled across a perfectly square landing pad at the base of the Great Oak. Knowing the pad's total area, we must find its side length to estimate where the rogue agent made their jump.

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

L					L												
8	6	4	19	24	8	22	11	6	9	25	16	3	19	25	20	6	14

										L			
19	20	6	3	16	25	20	5	11	6	8	22	25	2

$\sqrt{64} = \square \rightarrow$ L	$\sqrt{25} = \square \rightarrow$ I	$\sqrt{400} = \square \rightarrow$ H
$\sqrt{625} = \square \rightarrow$ C	$\sqrt{361} = \square \rightarrow$ T	$\sqrt{256} = \square \rightarrow$ R
$\sqrt{484} = \square \rightarrow$ O	$\sqrt{16} = \square \rightarrow$ F	$\sqrt{9} = \square \rightarrow$ A
$\sqrt{121} = \square \rightarrow$ V	$\sqrt{4} = \square \rightarrow$ K	$\sqrt{576} = \square \rightarrow$ G
$\sqrt{36} = \square \rightarrow$ E	$\sqrt{196} = \square \rightarrow$ D	$\sqrt{81} = \square \rightarrow$ S

Scratch space:

CLUE 3

Pythagorean theorem

To escape, the culprit rigged a secret zip line from the top of the observatory to a distant pine tree. We know the height of the platform and the ground distance, so finding the hypotenuse reveals the speed of their escape.

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

T								T								
10	50	65	51	26	65	37	10	58	51	87	20	10	74	50	17	
68	52	29	5	68	52	65	87	50	29	51	13	87	51	25		

legs 6 and 8, hypotenuse = → **T**

legs 24 and 70, hypotenuse = → **C**

legs 3 and 4, hypotenuse = → **M**

legs 8 and 15, hypotenuse = → **Y**

legs 60 and 63, hypotenuse = → **S**

legs 20 and 48, hypotenuse = → **R**

legs 7 and 24, hypotenuse = → **P**

legs 12 and 35, hypotenuse = → **N**

legs 25 and 60, hypotenuse = → **E**

legs 32 and 60, hypotenuse = → **F**

legs 12 and 16, hypotenuse = → **I**

legs 30 and 40, hypotenuse = → **H**

legs 20 and 21, hypotenuse = → **O**

legs 40 and 42, hypotenuse = → **W**

legs 5 and 12, hypotenuse = → **K**

legs 10 and 24, hypotenuse = → **G**

legs 24 and 45, hypotenuse = → **A**

Scratch space:

CLUE 4 Order of operations

The archive's backup system encrypted its sensor logs with a complex, multi-step math lock. Solving the operations in the correct order reveals the exact physical evidence left at the escape hatch.

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

B																		
9	53	52	41	17	72	35	48	115	83	70	35	17	79	29	41	28	41	
									B									
53	41	93	115	20	48	115	70	41	9	41	72	85						

$6 \times 2 - 3 = \square \rightarrow$ B	$10 \times 8 - 28 = \square \rightarrow$ U	$75 + 5 \times 8 = \square \rightarrow$ T
$9 \times 7 - 10 = \square \rightarrow$ L	$10 \times 10 - 30 = \square \rightarrow$ H	$7 + 7 \times 4 = \square \rightarrow$ I
$14 + 3 \times 5 = \square \rightarrow$ W	$11 \times 9 - 14 = \square \rightarrow$ M	$10 + 9 \times 2 = \square \rightarrow$ R
$6 \times 9 - 6 = \square \rightarrow$ N	$17 + 8 \times 3 = \square \rightarrow$ E	$85 + 4 \times 2 = \square \rightarrow$ F
$8 + 6 \times 2 = \square \rightarrow$ O	$52 + 3 \times 9 = \square \rightarrow$ S	$5 \times 9 - 28 = \square \rightarrow$ P
$9 \times 11 - 27 = \square \rightarrow$ A	$10 \times 10 - 17 = \square \rightarrow$ C	

Scratch space:

CLUE 5**Two-step equations - the last clue**

We tracked the villain's glider speed against the steady headwind blowing through the canyon. Solving this final rate equation pinpointed the exact landing spot and the culprit's allergy triggers.

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:

$2x + 4 = 16, x = \boxed{}$

$5x + 1 = 16, x = \boxed{}$

$6x + 3 = 45, x = \boxed{}$

$2x + 4 = 24, x = \boxed{}$

$4x + 4 = 48, x = \boxed{}$

$2x + 8 = 26, x = \boxed{}$

$4x + 7 = 23, x = \boxed{}$

$4x + 4 = 8, x = \boxed{}$

$2x + 12 = 22, x = \boxed{}$

$4x + 3 = 35, x = \boxed{}$

$3x + 7 = 43, x = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain bypassed the laser grid, then vanished into the brush.
2. The villain disabled the security camera, then escaped via the high canopy.
3. The villain disabled the security camera, then slid down the main zip line.
4. The villain scrambled the motion sensors, then escaped via the high canopy.
5. The villain bypassed the laser grid, then escaped via the high canopy.
6. The villain scrambled the motion sensors, then fled across the rope bridge.
7. The villain scrambled the motion sensors, then parachuted into the valley.
8. The villain cracked the digital safe, then escaped via the high canopy.
9. The villain scrambled the motion sensors, then slid down the main zip line.
10. The villain disabled the security camera, then fled across the rope bridge.
11. The villain hacked the main terminal, then vanished into the brush.
12. The villain cracked the digital safe, then parachuted into the valley.

Answer Key

The Canopy Network Heist

Culprit: Agent Roy

climbing spikes · rocket boots · left-handed glove · bright blue helmet · oak sap

Trail: Start 21 → Clue 1 18 → Clue 2 15 → Clue 3 8 → Clue 4 4 → Clue 5 1

Clue 1 (Exponents): "THE CULPRIT DOES NOT USE A STEALTH CLOAK"

$3^2 = 9$ (T) · $2^5 = 32$ (P) · $17^2 = 289$ (O) · $13^2 = 169$ (C) · $7^2 = 49$ (I) · $2^6 = 64$ (D) · $6^3 = 216$ (A) · $7^3 = 343$ (E) · $14^2 = 196$ (N) · $2^3 = 8$ (U) · $15^2 = 225$ (S) · $18^2 = 324$ (R) · $4^2 = 16$ (H) · $10^2 = 100$ (K) · $5^2 = 25$ (L)

Clue 2 (Square roots): "LEFT GLOVE SCRATCHED THE ARCHIVE LOCK"

$\sqrt{64} = 8$ (L) · $\sqrt{25} = 5$ (I) · $\sqrt{400} = 20$ (H) · $\sqrt{625} = 25$ (C) · $\sqrt{361} = 19$ (T) · $\sqrt{256} = 16$ (R) · $\sqrt{484} = 22$ (O) · $\sqrt{16} = 4$ (F) · $\sqrt{9} = 3$ (A) · $\sqrt{121} = 11$ (V) · $\sqrt{4} = 2$ (K) · $\sqrt{576} = 24$ (G) · $\sqrt{36} = 6$ (E) · $\sqrt{196} = 14$ (D) · $\sqrt{81} = 9$ (S)

Clue 3 (Pythagorean theorem): "THE AGENT WAS ITCHY FROM FRESH OAK SAP"

legs 6 and 8, hypotenuse = 10 (T) · legs 24 and 70, hypotenuse = 74 (C) · legs 3 and 4, hypotenuse = 5 (M) · legs 8 and 15, hypotenuse = 17 (Y) · legs 60 and 63, hypotenuse = 87 (S) · legs 20 and 48, hypotenuse = 52 (R) · legs 7 and 24, hypotenuse = 25 (P) · legs 12 and 35, hypotenuse = 37 (N) · legs 25 and 60, hypotenuse = 65 (E) · legs 32 and 60, hypotenuse = 68 (F) · legs 12 and 16, hypotenuse = 20 (I) · legs 30 and 40, hypotenuse = 50 (H) · legs 20 and 21, hypotenuse = 29 (O) · legs 40 and 42, hypotenuse = 58 (W) · legs 5 and 12, hypotenuse = 13 (K) · legs 10 and 24, hypotenuse = 26 (G) · legs 24 and 45, hypotenuse = 51 (A)

Clue 4 (Order of operations): "BLUE PAINT CHIPS WERE LEFT ON THE BEAM"

$6 \times 2 - 3 = 9$ (B) · $10 \times 8 - 28 = 52$ (U) · $75 + 5 \times 8 = 115$ (T) · $9 \times 7 - 10 = 53$ (L) · $10 \times 10 - 30 = 70$ (H) · $7 + 7 \times 4 = 35$ (I) · $14 + 3 \times 5 = 29$ (W) · $11 \times 9 - 14 = 85$ (M) · $10 + 9 \times 2 = 28$ (R) · $6 \times 9 - 6 = 48$ (N) · $17 + 8 \times 3 = 41$ (E) · $85 + 4 \times 2 = 93$ (F) · $8 + 6 \times 2 = 20$ (O) · $52 + 3 \times 9 = 79$ (S) · $5 \times 9 - 28 = 17$ (P) · $9 \times 11 - 27 = 72$ (A) · $10 \times 10 - 17 = 83$ (C)

Clue 5 (Two-step equations): surviving statement is box 2 → Agent Roy

$2x + 4 = 16, x = 6$ · $5x + 1 = 16, x = 3$ · $6x + 3 = 45, x = 7$ · $2x + 4 = 24, x = 10$ · $4x + 4 = 48, x = 11$ · $2x + 8 = 26, x = 9$ · $4x + 7 = 23, x = 4$ · $4x + 4 = 8, x = 1$ · $2x + 12 = 22, x = 5$ · $4x + 3 = 35, x = 8$ · $3x + 7 = 43, x = 12$