



# 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

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.

$$3^2 = \boxed{\phantom{00}} \rightarrow \boxed{\text{T}}$$

$$2^5 = \boxed{\phantom{000}} \rightarrow \boxed{\text{P}}$$

$$17^2 = \boxed{\phantom{000}} \rightarrow \boxed{C}$$

$$13^2 = \boxed{\phantom{00}} \rightarrow \boxed{\text{C}}$$

$$7^2 = \boxed{\phantom{00}} \rightarrow \boxed{1}$$

$2^6 = \boxed{\phantom{000}} \rightarrow \boxed{\text{D}}$

$6^3 = \square \rightarrow \boxed{\mathbf{A}}$

$$7^3 = \boxed{\phantom{000}} \rightarrow \boxed{\text{E}}$$

$$14^2 = \boxed{\phantom{00}} \rightarrow \boxed{\text{N}}$$

$2^3 = \boxed{\phantom{000}} \rightarrow \boxed{\text{U}}$

$$15^2 = \boxed{\phantom{000}} \rightarrow \boxed{\text{S}}$$

$18^2 = \boxed{\phantom{000}} \rightarrow \boxed{\text{R}}$

$$4^2 = \boxed{\phantom{00}} \rightarrow \boxed{\text{H}}$$

$10^2 = \boxed{\phantom{00}} \rightarrow \boxed{\text{K}}$

$$5^2 = \boxed{\phantom{00}} \rightarrow \boxed{\text{L}}$$

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>B</b> |    |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |  |
| 9        | 53 | 52 | 41 | 17 | 72 | 35 | 48 | 115 | 83 | 70 | 35 | 17 | 79 | 29 | 41 | 28 | 41 |  |

  

|    |    |    |     |    |    |     |          |    |   |    |    |    |
|----|----|----|-----|----|----|-----|----------|----|---|----|----|----|
|    |    |    |     |    |    |     | <b>B</b> |    |   |    |    |    |
| 53 | 41 | 93 | 115 | 20 | 48 | 115 | 70       | 41 | 9 | 41 | 72 | 85 |

$6 \times 2 - 3 = \square \rightarrow \text{B}$

$10 \times 8 - 28 = \square \rightarrow \text{U}$

$75 + 5 \times 8 = \square \rightarrow \text{T}$

$9 \times 7 - 10 = \square \rightarrow \text{L}$

$10 \times 10 - 30 = \square \rightarrow \text{H}$

$7 + 7 \times 4 = \square \rightarrow \text{I}$

$14 + 3 \times 5 = \square \rightarrow \text{W}$

$11 \times 9 - 14 = \square \rightarrow \text{M}$

$10 + 9 \times 2 = \square \rightarrow \text{R}$

$6 \times 9 - 6 = \square \rightarrow \text{N}$

$17 + 8 \times 3 = \square \rightarrow \text{E}$

$85 + 4 \times 2 = \square \rightarrow \text{F}$

$8 + 6 \times 2 = \square \rightarrow \text{O}$

$52 + 3 \times 9 = \square \rightarrow \text{S}$

$5 \times 9 - 28 = \square \rightarrow \text{P}$

$9 \times 11 - 27 = \square \rightarrow \text{A}$

$10 \times 10 - 17 = \square \rightarrow \text{C}$

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:**

$2x + 4 = 16, x = \boxed{\phantom{00}}$

$5x + 1 = 16, x = \boxed{\phantom{00}}$

$6x + 3 = 45, x = \boxed{\phantom{00}}$

$2x + 4 = 24, x = \boxed{\phantom{00}}$

$4x + 4 = 48, x = \boxed{\phantom{00}}$

$2x + 8 = 26, x = \boxed{\phantom{00}}$

$4x + 7 = 23, x = \boxed{\phantom{00}}$

$4x + 4 = 8, x = \boxed{\phantom{00}}$

$2x + 12 = 22, x = \boxed{\phantom{00}}$

$4x + 3 = 35, x = \boxed{\phantom{00}}$

$3x + 7 = 43, x = \boxed{\phantom{00}}$

**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

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