



Mystery of the Whispering Canopy

Grade 8 math · Exponents, Square roots, Pythagorean theorem, Order of operations, Two-step equations · Reading level grades 5-6

Detective: _____ Date: _____

The Golden Compass has been swiped from the Chief Mapmaker's treehouse studio on the Isle of Whispering Winds! A sneaky explorer did it. We need to track down the suspect before they sail away with our island's greatest treasure.

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 Masked Marauder is _____

Possible suspects

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

NAME	SPECIAL GEAR	DISGUISE ITEM	DOMINANT HAND	HELMET DECAL	FOIL ITEM
Nora Crest	laser pointer	orange cape	left handed	star sticker	bright flashlight
Zoe Hunter	walkie talkie	yellow bandana	right handed	skull sticker	loud whistle
Kira Cross	smoke bomb	blue feather	right handed	skull sticker	loud whistle
Milo Stark	walkie talkie	red scarf	left handed	star sticker	loud whistle
Mason Thorne	grappling hook	red scarf	left handed	skull sticker	sticky honey
Beck Sharp	pocket drone	red scarf	right handed	skull sticker	sticky honey
Liam Briggs	pocket drone	orange cape	right handed	crown sticker	sticky honey
Owen Chase	pocket drone	yellow bandana	left handed	skull sticker	sticky honey
Leo Harrison	grappling hook	orange cape	right handed	skull sticker	bright flashlight
Skye Ridley	laser pointer	yellow bandana	right handed	skull sticker	loud whistle
Toby Vance	pocket drone	green goggles	left handed	crown sticker	loud whistle
Hugo Vance	smoke bomb	red scarf	left handed	crown sticker	bright flashlight
Finn Barlow	pocket drone	blue feather	left handed	skull sticker	sticky honey
Paige Gentry	walkie talkie	red scarf	right handed	star sticker	loud whistle
Maya Sterling	walkie talkie	red scarf	right handed	skull sticker	loud whistle
Dawn Rivers	pocket drone	orange cape	right handed	skull sticker	loud whistle
Jax Wilder	laser pointer	red scarf	right handed	star sticker	bright flashlight
Ava Sterling	laser pointer	red scarf	right handed	star sticker	loud whistle
Jade Archer	laser pointer	blue feather	left handed	skull sticker	loud whistle
Ruby Drake	smoke bomb	orange cape	right handed	skull sticker	bright flashlight
Cole Danger	smoke bomb	green goggles	right handed	skull sticker	sticky honey

CLUE 1 Exponents

The thief fled up the giant canopy steps. Each platform has double the leaves of the last. Calculate the total power level to find which way they went.

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

N				N												N		
16	289	289	36	625	16	8	121	100	625	216	121	144	625	441	441	121	121	16

						N			
625	400	400	64	121	441	100	121	16	121

$2^4 = \square \rightarrow \text{N}$	$10^2 = \square \rightarrow \text{C}$	$6^3 = \square \rightarrow \text{P}$	$20^2 = \square \rightarrow \text{T}$
$5^4 = \square \rightarrow \text{A}$	$11^2 = \square \rightarrow \text{E}$	$6^2 = \square \rightarrow \text{R}$	$8^2 = \square \rightarrow \text{H}$
$17^2 = \square \rightarrow \text{O}$	$2^3 = \square \rightarrow \text{G}$	$12^2 = \square \rightarrow \text{W}$	$21^2 = \square \rightarrow \text{S}$

Scratch space:

CLUE 2 Square roots

We found a square-shaped campsite crumpled in the brush. To find the path width, we must find the square root of its total area.

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

22 2 19 3 16 15 2 22 2 6 11 8 24 19 4 22 6

25 3 16 11 22 13 11 22 2 19 8 13 13 3

sqrt(484) = → **T**

sqrt(169) = → **0**

sqrt(64) = → **D**

sqrt(36) = → **A**

sqrt(361) = → **E**

sqrt(16) = → **F**

sqrt(4) = → **H**

sqrt(121) = → **N**

sqrt(256) = →

sqrt(9) = → **R**

sqrt(625) = → **P**

sqrt(225) = → **G**

sqrt(576) = → **L**

Scratch space:

CLUE 3
Pythagorean theorem

The marauder zip-lined diagonally across the canyon. Use the height and width of the gorge to find the exact length of the zip line.

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

A													A			
10	5	25	37	68	74	58	29	82	34	5	17	26	10	65	17	82
				A		A										
34	58	17	26	10	20	10	37	68	17	20	20	37	85			

legs 6 and 8, hypotenuse = → **A**

legs 12 and 16, hypotenuse = → **R**

legs 32 and 60, hypotenuse = → **D**

legs 3 and 4, hypotenuse = → **L**

legs 8 and 15, hypotenuse = → **E**

legs 7 and 24, hypotenuse = → **O**

legs 18 and 80, hypotenuse = → **S**

legs 40 and 42, hypotenuse = → **H**

legs 16 and 30, hypotenuse = → **T**

legs 12 and 35, hypotenuse = → **U**

legs 10 and 24, hypotenuse = → **M**

legs 40 and 75, hypotenuse = → **N**

legs 25 and 60, hypotenuse = → **K**

legs 24 and 70, hypotenuse = → **W**

legs 20 and 21, hypotenuse = → **I**

Scratch space:

CLUE 4

Order of operations

A locked gate blocks the secret jungle passage. We must enter the numbers in the perfect order to unlock the rusty deadbolt.

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

A																			
73	51	118	75	6	6	51	32	61	13	118	57	108	19	73	51				
6	57	66	32	23	44	32	76	57	19	73	6	6							

$33 + 5 \times 8 = \square \rightarrow \boxed{\text{A}}$

$8 \times 10 - 5 = \square \rightarrow \boxed{\text{U}}$

$16 + 4 \times 4 = \square \rightarrow \boxed{\text{T}}$

$26 + 5 \times 8 = \square \rightarrow \boxed{\text{F}}$

$9 \times 8 - 15 = \square \rightarrow \boxed{\text{E}}$

$2 + 2 \times 2 = \square \rightarrow \boxed{\text{L}}$

$84 + 8 \times 3 = \square \rightarrow \boxed{\text{R}}$

$8 \times 3 - 11 = \square \rightarrow \boxed{\text{C}}$

$64 + 6 \times 9 = \square \rightarrow \boxed{\text{K}}$

$9 \times 5 - 22 = \square \rightarrow \boxed{\text{O}}$

$7 \times 7 - 30 = \square \rightarrow \boxed{\text{W}}$

$12 + 7 \times 7 = \square \rightarrow \boxed{\text{I}}$

$2 + 6 \times 7 = \square \rightarrow \boxed{\text{N}}$

$9 \times 9 - 30 = \square \rightarrow \boxed{\text{S}}$

$13 + 7 \times 9 = \square \rightarrow \boxed{\text{H}}$

Scratch space:

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

We need to figure out how many heavy supply crates the thief carried. Let us solve for the unknown weight using the scale totals.

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:

$2x + 12 = 36, x = \boxed{}$

$6x + 6 = 30, x = \boxed{}$

$5x + 5 = 20, x = \boxed{}$

$6x + 3 = 9, x = \boxed{}$

$5x + 3 = 53, x = \boxed{}$

$6x + 2 = 68, x = \boxed{}$

$3x + 4 = 10, x = \boxed{}$

$2x + 6 = 24, x = \boxed{}$

$3x + 8 = 26, x = \boxed{}$

$6x + 6 = 36, x = \boxed{}$

$2x + 8 = 24, x = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain blinded the guards with a laser pointer, then swirled an orange cape.
2. The villain whispered coordinates into a walkie talkie, then tucked away a blue feather.
3. The villain whispered coordinates into a walkie talkie, then wrapped up in a red scarf.
4. The villain escaped behind a smoke bomb, then tucked away a blue feather.
5. The villain whispered coordinates into a walkie talkie, then pulled down green goggles.
6. The villain swung away with a grappling hook, then swirled an orange cape.
7. The villain whispered coordinates into a walkie talkie, then adjusted a yellow bandana.
8. The villain escaped behind a smoke bomb, then wrapped up in a red scarf.
9. The villain launched a pocket drone, then adjusted a yellow bandana.
10. The villain swung away with a grappling hook, then adjusted a yellow bandana.
11. The villain escaped behind a smoke bomb, then adjusted a yellow bandana.
12. The villain blinded the guards with a laser pointer, then adjusted a yellow bandana.

Answer Key

Mystery of the Whispering Canopy

Culprit: Zoe Hunter

walkie talkie · yellow bandana · right handed · skull sticker · loud whistle

Trail: Start 21 → Clue 1 16 → Clue 2 9 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Exponents): "NO ORANGE CAPE WAS SEEN AT THE SCENE"

$2^4 = 16$ (N) · $10^2 = 100$ (C) · $6^3 = 216$ (P) · $20^2 = 400$ (T) · $5^4 = 625$ (A) · $11^2 = 121$ (E) · $6^2 = 36$ (R) · $8^2 = 64$ (H) · $17^2 = 289$ (O) · $2^3 = 8$ (G) · $12^2 = 144$ (W) · $21^2 = 441$ (S)

Clue 2 (Square roots): "THE RIGHT HAND LEFT A PRINT ON THE DOOR"

$\sqrt{484} = 22$ (T) · $\sqrt{169} = 13$ (O) · $\sqrt{64} = 8$ (D) · $\sqrt{36} = 6$ (A) · $\sqrt{361} = 19$ (E) · $\sqrt{16} = 4$ (F) · $\sqrt{4} = 2$ (H) · $\sqrt{121} = 11$ (N) · $\sqrt{256} = 16$ (I) · $\sqrt{9} = 3$ (R) · $\sqrt{625} = 25$ (P) · $\sqrt{225} = 15$ (G) · $\sqrt{576} = 24$ (L)

Clue 3 (Pythagorean theorem): "A LOUD WHISTLE MAKES THE MARAUDER RUN"

legs 6 and 8, hypotenuse = 10 (A) · legs 12 and 16, hypotenuse = 20 (R) · legs 32 and 60, hypotenuse = 68 (D) · legs 3 and 4, hypotenuse = 5 (L) · legs 8 and 15, hypotenuse = 17 (E) · legs 7 and 24, hypotenuse = 25 (O) · legs 18 and 80, hypotenuse = 82 (S) · legs 40 and 42, hypotenuse = 58 (H) · legs 16 and 30, hypotenuse = 34 (T) · legs 12 and 35, hypotenuse = 37 (U) · legs 10 and 24, hypotenuse = 26 (M) · legs 40 and 75, hypotenuse = 85 (N) · legs 25 and 60, hypotenuse = 65 (K) · legs 24 and 70, hypotenuse = 74 (W) · legs 20 and 21, hypotenuse = 29 (I)

Clue 4 (Order of operations): "A SKULL STICKER WAS LEFT ON THE WALL"

$33 + 5 \times 8 = 73$ (A) · $8 \times 10 - 5 = 75$ (U) · $16 + 4 \times 4 = 32$ (T) · $26 + 5 \times 8 = 66$ (F) · $9 \times 8 - 15 = 57$ (E) · $2 + 2 \times 2 = 6$ (L) · $84 + 8 \times 3 = 108$ (R) · $8 \times 3 - 11 = 13$ (C) · $64 + 6 \times 9 = 118$ (K) · $9 \times 5 - 22 = 23$ (O) · $7 \times 7 - 30 = 19$ (W) · $12 + 7 \times 7 = 61$ (I) · $2 + 6 \times 7 = 44$ (N) · $9 \times 9 - 30 = 51$ (S) · $13 + 7 \times 9 = 76$ (H)

Clue 5 (Two-step equations): surviving statement is box 7 → Zoe Hunter

$2x + 12 = 36, x = 12$ · $6x + 6 = 30, x = 4$ · $5x + 5 = 20, x = 3$ · $6x + 3 = 9, x = 1$ · $5x + 3 = 53, x = 10$ · $6x + 2 = 68, x = 11$ · $3x + 4 = 10, x = 2$ · $2x + 6 = 24, x = 9$ · $3x + 8 = 26, x = 6$ · $6x + 6 = 36, x = 5$ · $2x + 8 = 24, x = 8$