



The Championship Game Ball Caper

Grade 10 math · Pythagorean theorem, Square roots, Exponents, Order of operations · Reading level grades 5-6

Detective: _____ Date: _____

Minutes before the final buzzer of the championship, someone swapped the official game ball with a heavy lead replica!

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 ball swiper is _____

Possible suspects

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

NAME	PLAY STYLE	GEAR CHOICE	DOMINANT HAND	HAIRSTYLE	DROPPED ITEM
Luka Doncic	Three Point Sniper	Finger Tape	Left Handed	Buzz Cut	Squeaky Shoes
James Harden	Dunk Specialist	Finger Tape	Right Handed	Curly Afro	Loud Whistle
Jayson Tatum	Ankle Breaker	Custom Sneaker	Left Handed	Buzz Cut	Bright Towel
Devin Booker	Lockdown Defender	Custom Sneaker	Left Handed	Buzz Cut	Squeaky Shoes
Michael Jordan	Dunk Specialist	Grip Powder	Left Handed	Braided Hair	Squeaky Shoes
Larry Bird	Lockdown Defender	Finger Tape	Left Handed	Buzz Cut	Squeaky Shoes
Kobe Bryant	Ankle Breaker	Custom Sneaker	Right Handed	Braided Hair	Bright Towel
Anthony Davis	Fast Break Leader	Grip Powder	Right Handed	Buzz Cut	Squeaky Shoes
Allen Iverson	Lockdown Defender	Headband	Left Handed	Braided Hair	Bright Towel
Tim Duncan	Dunk Specialist	Wristband	Left Handed	Curly Afro	Squeaky Shoes
Kawhi Leonard	Three Point Sniper	Finger Tape	Right Handed	Buzz Cut	Squeaky Shoes
Chris Paul	Fast Break Leader	Custom Sneaker	Right Handed	Curly Afro	Loud Whistle
Russell Westbrook	Dunk Specialist	Wristband	Left Handed	Buzz Cut	Loud Whistle
Steph Curry	Ankle Breaker	Wristband	Right Handed	Buzz Cut	Loud Whistle
Giannis Antetokounmpo	Lockdown Defender	Wristband	Right Handed	Braided Hair	Bright Towel
Kevin Durant	Ankle Breaker	Wristband	Left Handed	Buzz Cut	Squeaky Shoes
Nikola Jokic	Fast Break Leader	Wristband	Right Handed	Buzz Cut	Bright Towel
Damian Lillard	Lockdown Defender	Headband	Left Handed	Buzz Cut	Squeaky Shoes
Charles Barkley	Fast Break Leader	Wristband	Left Handed	Curly Afro	Squeaky Shoes
Magic Johnson	Fast Break Leader	Grip Powder	Left Handed	Braided Hair	Loud Whistle
Dwyane Wade	Three Point Sniper	Headband	Right Handed	Buzz Cut	Bright Towel

Pythagorean theorem

To find the diagonal path the thief ran across the court, solve for the missing hypotenuse distance.

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

A number line from 0 to 1000 with boxes for numbers. The boxes are arranged in two rows. The first row contains boxes for 111, 85, 50, 85, 29, 29, 13, 111, 85, 30, 50, 39, 65, 30, 65, 82, 29, and 111. The second row contains boxes for 37, 50, 75, 68, 75, 85, 50, 75, 65, 116, 75, 82, and 65. The boxes for 111, 85, 30, 50, 39, 65, 30, 65, 82, 29, and 111 in the first row are shaded orange and contain the letter 'T'.

legs 36 and 105, hypotenuse = → **T**

legs 21 and 72, hypotenuse = → **A**

legs 25 and 60, hypotenuse = $\rightarrow$ **D**

legs 15 and 36, hypotenuse = → **F**

legs 14 and 48, hypotenuse = → **E**

legs 5 and 12, hypotenuse = $\rightarrow$ **P**

legs 20 and 21, hypotenuse = $\rightarrow$ **0**

legs 32 and 60, hypotenuse = → **R**

legs 12 and 35, hypotenuse = $\rightarrow$ **W**

legs 40 and 75, hypotenuse = → **H**

legs 18 and 80, hypotenuse = → **N**

legs 18 and 24, hypotenuse = $\rightarrow$

legs 80 and 84, hypotenuse = $\rightarrow$ **B**

Scratch space:

CLUE 2

Square roots

The court security tile layout forms a perfect square, so find the side length using a square root.

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

T																	
19	11	18	4	9	12	12	7	9	23	24	21	9	25	25	12	18	24
		T		T								T					
20	9	19	11	19	11	18	9	21	12	18	6	19	11	7	23	24	

$\sqrt{361} = \square \rightarrow \boxed{\text{T}}$

$\sqrt{529} = \square \rightarrow \boxed{\text{N}}$

$\sqrt{121} = \square \rightarrow \boxed{\text{H}}$

$\sqrt{36} = \square \rightarrow \boxed{\text{F}}$

$\sqrt{81} = \square \rightarrow \boxed{\text{I}}$

$\sqrt{324} = \square \rightarrow \boxed{\text{E}}$

$\sqrt{400} = \square \rightarrow \boxed{\text{W}}$

$\sqrt{441} = \square \rightarrow \boxed{\text{R}}$

$\sqrt{625} = \square \rightarrow \boxed{\text{B}}$

$\sqrt{144} = \square \rightarrow \boxed{\text{L}}$

$\sqrt{16} = \square \rightarrow \boxed{\text{V}}$

$\sqrt{49} = \square \rightarrow \boxed{\text{A}}$

$\sqrt{576} = \square \rightarrow \boxed{\text{D}}$

Scratch space:

CLUE 3 Exponents

The arena crowd noise doubles with every second, so compute the total energy using exponents.

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

T																			
121	256	289	8	400	8	32	289	144	121	243	289	100	121	484	289	256	64	625	36
8	361	400	289	343	128	9	8	256	216	289	8								

$11^2 = \square \rightarrow \text{T}$	$10^2 = \square \rightarrow \text{F}$	$20^2 = \square \rightarrow \text{U}$	$5^4 = \square \rightarrow \text{N}$
$6^2 = \square \rightarrow \text{D}$	$6^3 = \square \rightarrow \text{O}$	$17^2 = \square \rightarrow \text{E}$	$3^2 = \square \rightarrow \text{Y}$
$4^3 = \square \rightarrow \text{I}$	$12^2 = \square \rightarrow \text{C}$	$2^3 = \square \rightarrow \text{S}$	$19^2 = \square \rightarrow \text{Q}$
$4^4 = \square \rightarrow \text{H}$	$7^3 = \square \rightarrow \text{A}$	$3^5 = \square \rightarrow \text{L}$	$2^5 = \square \rightarrow \text{P}$
$2^7 = \square \rightarrow \text{K}$	$22^2 = \square \rightarrow \text{B}$		

Scratch space:

CLUE 4

The referee score board uses a set formula, so follow the order of operations to decode it.

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

Diagram illustrating the sequence of operations and values:

Row 1: T , 70, 7, 31, 87, 92, 31, 58, 31, 7, 46, 6, 46, 60, 44, 21, 21, 92, 44, T , 70

Row 2: 7, 46, 106, 12, 87, T , 70, 12, 46, 58, 6

$$22 + 6 \times 8 = \boxed{} \rightarrow \boxed{\text{T}}$$

$$4 \times 7 - 7 = \boxed{} \rightarrow \boxed{\mathbf{Z}}$$

$$10 \times 9 - 30 = \boxed{} \rightarrow \boxed{\mathbf{B}}$$

$$34 + 5 \times 2 = \boxed{} \rightarrow \boxed{\text{U}}$$

$$4 \times 4 - 9 = \boxed{} \rightarrow \boxed{\text{H}}$$

$$61 + 5 \times 9 = \boxed{} \rightarrow \boxed{\text{I}}$$

$$11 \times 2 - 16 = \boxed{} \rightarrow \boxed{\mathbf{D}}$$

$$68 + 6 \times 4 = \boxed{} \rightarrow \boxed{\text{C}}$$

$$8 \times 11 - 1 = \boxed{} \rightarrow \boxed{\mathbf{S}}$$

$$2 \times 10^{-8} = \boxed{} \rightarrow \boxed{\mathbf{R}}$$

$11 \times 6 - 20 = \boxed{} \rightarrow \boxed{\mathbf{A}}$

$$42 + 8 \times 2 = \boxed{} \rightarrow \boxed{\text{N}}$$

$$5 \times 12 - 29 = \boxed{} \rightarrow \boxed{\text{E}}$$

Scratch space:

CLUE 5**Square roots - the last clue**

The team locker layout is an equal square grid, so compute the square root to clear the zone.

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:

$\text{sqrt}(4) = \boxed{}$

$\text{sqrt}(100) = \boxed{}$

$\text{sqrt}(144) = \boxed{}$

$\text{sqrt}(121) = \boxed{}$

$\text{sqrt}(16) = \boxed{}$

$\text{sqrt}(81) = \boxed{}$

$\text{sqrt}(36) = \boxed{}$

$\text{sqrt}(9) = \boxed{}$

$\text{sqrt}(1) = \boxed{}$

$\text{sqrt}(64) = \boxed{}$

$\text{sqrt}(49) = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain threw a fast break pass, then spilled grip powder.
2. The villain dunked over defender, then snapped a wristband.
3. The villain dunked over defender, then dropped a headband.
4. The villain stole the basketball, then dropped a headband.
5. The villain stole the basketball, then unraveled finger tape.
6. The villain dribbled down court, then snapped a wristband.
7. The villain dribbled down court, then unraveled finger tape.
8. The villain sank a long three pointer, then snapped a wristband.
9. The villain sank a long three pointer, then dropped a headband.
10. The villain stole the basketball, then left a custom sneaker.
11. The villain threw a fast break pass, then dropped a headband.
12. The villain sank a long three pointer, then unraveled finger tape.

Answer Key

The Championship Game Ball Caper

Culprit: Larry Bird

Lockdown Defender · Finger Tape · Left Handed · Buzz Cut · Squeaky Shoes

Trail: Start 21 → Clue 1 18 → Clue 2 10 → Clue 3 7 → Clue 4 4 → Clue 5 1

Clue 1 (Pythagorean theorem): "THE HOOP THIEF DID NOT WEAR A HEADBAND"

legs 36 and 105, hypotenuse = 111 (T) · legs 21 and 72, hypotenuse = 75 (A) · legs 25 and 60, hypotenuse = 65 (D) · legs 15 and 36, hypotenuse = 39 (F) · legs 14 and 48, hypotenuse = 50 (E) · legs 5 and 12, hypotenuse = 13 (P) · legs 20 and 21, hypotenuse = 29 (O) · legs 32 and 60, hypotenuse = 68 (R) · legs 12 and 35, hypotenuse = 37 (W) · legs 40 and 75, hypotenuse = 85 (H) · legs 18 and 80, hypotenuse = 82 (N) · legs 18 and 24, hypotenuse = 30 (I) · legs 80 and 84, hypotenuse = 116 (B)

Clue 2 (Square roots): "THE VILLAIN DRIBBLED WITH THEIR LEFT HAND"

$\sqrt{361} = 19$ (T) · $\sqrt{529} = 23$ (N) · $\sqrt{121} = 11$ (H) · $\sqrt{36} = 6$ (F) · $\sqrt{81} = 9$ (I) · $\sqrt{324} = 18$ (E) · $\sqrt{400} = 20$ (W) · $\sqrt{441} = 21$ (R) · $\sqrt{625} = 25$ (B) · $\sqrt{144} = 12$ (L) · $\sqrt{16} = 4$ (V) · $\sqrt{49} = 7$ (A) · $\sqrt{576} = 24$ (D)

Clue 3 (Exponents): "THE SUSPECT LEFT BEHIND SQUEAKY SHOES"

$11^2 = 121$ (T) · $10^2 = 100$ (F) · $20^2 = 400$ (U) · $5^4 = 625$ (N) · $6^2 = 36$ (D) · $6^3 = 216$ (O) · $17^2 = 289$ (E) · $3^2 = 9$ (Y) · $4^3 = 64$ (I) · $12^2 = 144$ (C) · $2^3 = 8$ (S) · $19^2 = 361$ (Q) · $4^4 = 256$ (H) · $7^3 = 343$ (A) · $3^5 = 243$ (L) · $2^5 = 32$ (P) · $2^7 = 128$ (K) · $22^2 = 484$ (B)

Clue 4 (Order of operations): "THE SCENE HAD A BUZZ CUT HAIR STRAND"

$22 + 6 \times 8 = 70$ (T) · $4 \times 7 - 7 = 21$ (Z) · $10 \times 9 - 30 = 60$ (B) · $34 + 5 \times 2 = 44$ (U) · $4 \times 4 - 9 = 7$ (H) · $61 + 5 \times 9 = 106$ (I) · $11 \times 2 - 16 = 6$ (D) · $68 + 6 \times 4 = 92$ (C) · $8 \times 11 - 1 = 87$ (S) · $2 \times 10 - 8 = 12$ (R) · $11 \times 6 - 20 = 46$ (A) · $42 + 8 \times 2 = 58$ (N) · $5 \times 12 - 29 = 31$ (E)

Clue 5 (Square roots): surviving statement is box 5 → Larry Bird

$\sqrt{4} = 2$ · $\sqrt{100} = 10$ · $\sqrt{144} = 12$ · $\sqrt{121} = 11$ · $\sqrt{16} = 4$ · $\sqrt{81} = 9$ · $\sqrt{36} = 6$ · $\sqrt{9} = 3$ · $\sqrt{1} = 1$ · $\sqrt{64} = 8$ · $\sqrt{49} = 7$