The All-Star Trophy Heist

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

Detective: _____ **Date:** _____

The golden championship trophy has vanished from the arena vault right before the big game! The Sneaker Saboteur broke past security, leaving nothing but scuffed court lines and a deflated game ball. Detective, we must analyze the clues and catch the thief before tip-off!

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 The Sneaker Saboteur is _____

Possible suspects

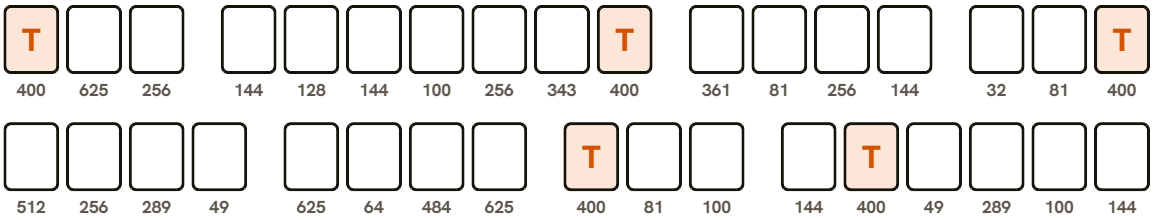
Cross off a row as each clue rules it out. The one left at the end is the culprit.

NAME	SIGNATURE MOVE	SHOE TECH	SHOOTING HAND	SWEATBAND COLOR	VULNERABILITY
Jimmy Butler	Fadeaway Jumper	High-Top Ankle Straps	Right-Handed Shooter	Blue Sweatband	Loud Crowd Noise
Jayson Tatum	Eurostep	Spring-Loaded Soles	Right-Handed Shooter	Red Sweatband	Loud Crowd Noise
Chris Paul	Crossover Dribble	Neon Glow Laces	Right-Handed Shooter	Red Sweatband	Squeaky Court Floors
Joel Embiid	Crossover Dribble	Neon Glow Laces	Right-Handed Shooter	Green Sweatband	Loud Crowd Noise
Anthony Davis	Fadeaway Jumper	Sticky Grip Outsoles	Right-Handed Shooter	Green Sweatband	Loud Crowd Noise
Bam Adebayo	Eurostep	Neon Glow Laces	Left-Handed Shooter	Green Sweatband	Loud Crowd Noise
Nikola Jokic	Stepback Three	Sticky Grip Outsoles	Right-Handed Shooter	Green Sweatband	Loud Crowd Noise
Kyrie Irving	Stepback Three	High-Top Ankle Straps	Right-Handed Shooter	Green Sweatband	Double-Team Pressure
Damian Lillard	Crossover Dribble	Spring-Loaded Soles	Left-Handed Shooter	Red Sweatband	Squeaky Court Floors
Devin Booker	Skyhook	Sticky Grip Outsoles	Right-Handed Shooter	Red Sweatband	Squeaky Court Floors
DeAaron Fox	Crossover Dribble	Neon Glow Laces	Left-Handed Shooter	Green Sweatband	Loud Crowd Noise
Kevin Durant	Skyhook	Sticky Grip Outsoles	Left-Handed Shooter	Red Sweatband	Double-Team Pressure
Luka Doncic	Eurostep	Sticky Grip Outsoles	Right-Handed Shooter	Blue Sweatband	Double-Team Pressure
Kawhi Leonard	Stepback Three	Sticky Grip Outsoles	Right-Handed Shooter	Red Sweatband	Loud Crowd Noise
Trae Young	Fadeaway Jumper	High-Top Ankle Straps	Left-Handed Shooter	Green Sweatband	Double-Team Pressure
Stephen Curry	Skyhook	Neon Glow Laces	Right-Handed Shooter	Blue Sweatband	Loud Crowd Noise
Ja Morant	Eurostep	High-Top Ankle Straps	Right-Handed Shooter	Green Sweatband	Loud Crowd Noise
Draymond Green	Stepback Three	Spring-Loaded Soles	Right-Handed Shooter	Green Sweatband	Loud Crowd Noise
Paul George	Crossover Dribble	Spring-Loaded Soles	Right-Handed Shooter	Red Sweatband	Double-Team Pressure
Giannis Antetokounmpo	Crossover Dribble	Neon Glow Laces	Left-Handed Shooter	Blue Sweatband	Loud Crowd Noise
Russell Westbrook	Eurostep	Sticky Grip Outsoles	Right-Handed Shooter	Green Sweatband	Squeaky Court Floors

CLUE 1 Exponents

> To unlock the encrypted security keypad on the vault door, you must solve a sequence where the system's passcode options grow exponentially.

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



20^2 = ☐ → T

2^7 = ☐ → U

16^2 = ☐ → E

8^3 = ☐ → W

22^2 = ☐ → G

7^3 = ☐ → C

2^5 = ☐ → N

19^2 = ☐ → D

3^4 = ☐ → O

17^2 = ☐ → A

7^2 = ☐ → R

5^4 = ☐ → H

12^2 = ☐ → S

10^2 = ☐ → P

8^2 = ☐ → I

Scratch space:

CLUE 2

Square roots

The arena security footage is split into perfect squares, meaning you must calculate the square root of the grid areas to find the active camera angle.

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

R				
12	21	5	11	8

11	22	7	17	23	17

11	2	2	10

		R		
19	22	12	16	15

		R	
18	23	12	23

2	7

8	11	23

4	22	6	6

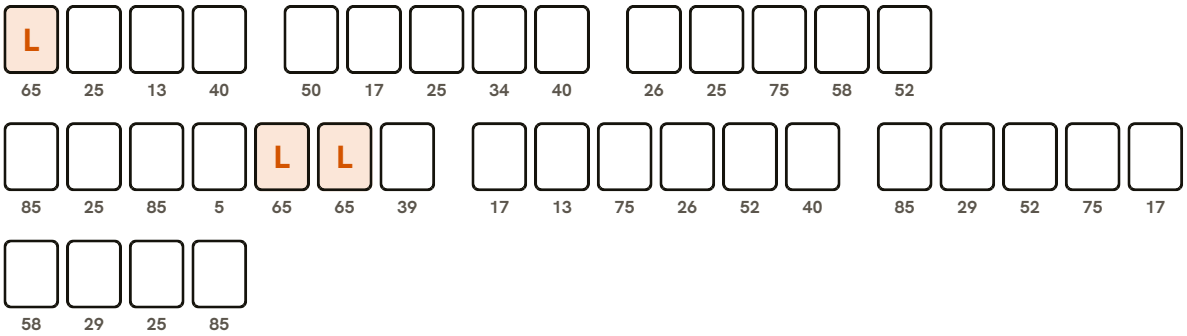
sqrt(144) = ☐ → R
sqrt(49) = ☐ → N
sqrt(64) = ☐ → T
sqrt(441) = ☐ → I
sqrt(529) = ☐ → E
sqrt(256) = ☐ → K
sqrt(36) = ☐ → L
sqrt(324) = ☐ → W
sqrt(16) = ☐ → B
sqrt(4) = ☐ → O
sqrt(25) = ☐ → G
sqrt(361) = ☐ → M
sqrt(100) = ☐ → P
sqrt(121) = ☐ → H
sqrt(484) = ☐ → A
sqrt(289) = ☐ → D
sqrt(225) = ☐ → S

Scratch space:

CLUE 3 Pythagorean theorem

> The thief escaped by running diagonally across the court floor, and you can calculate their exact speed using the Pythagorean theorem.

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



legs 25 and 60, hypotenuse = ☐ → **L**

legs 21 and 72, hypotenuse = ☐ → **I**

legs 20 and 21, hypotenuse = ☐ → **H**

legs 16 and 30, hypotenuse = ☐ → **W**

legs 40 and 75, hypotenuse = ☐ → **T**

legs 15 and 36, hypotenuse = ☐ → **Y**

legs 8 and 15, hypotenuse = ☐ → **R**

legs 20 and 48, hypotenuse = ☐ → **E**

legs 40 and 42, hypotenuse = ☐ → **S**

legs 24 and 32, hypotenuse = ☐ → **D**

legs 7 and 24, hypotenuse = ☐ → **O**

legs 3 and 4, hypotenuse = ☐ → **A**

legs 14 and 48, hypotenuse = ☐ → **C**

legs 5 and 12, hypotenuse = ☐ → **U**

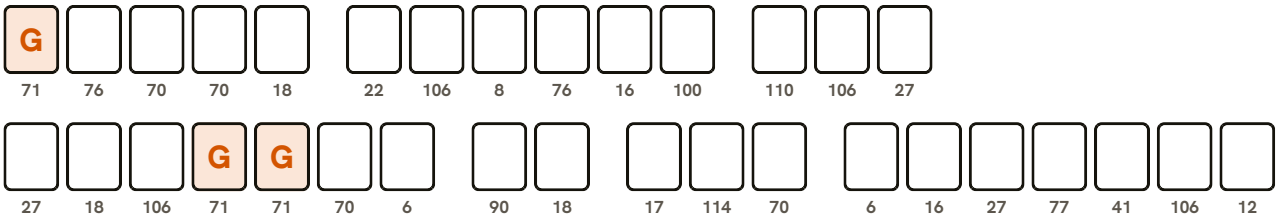
legs 10 and 24, hypotenuse = ☐ → **N**

Scratch space:

CLUE 4 Order of operations

> Analyzing the scrambled digital stats log requires using the strict mathematical order of operations to reveal the suspect's court time.

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



35 + 6 × 6 = ☐ → G	3 + 7 × 2 = ☐ → T	6 + 3 × 2 = ☐ → Y
17 + 4 × 6 = ☐ → L	7 + 3 × 3 = ☐ → I	3 + 3 × 8 = ☐ → S
6 + 8 × 2 = ☐ → F	8 × 11 - 18 = ☐ → E	82 + 4 × 2 = ☐ → O
3 × 11 - 27 = ☐ → D	4 + 2 × 7 = ☐ → N	2 + 2 × 3 = ☐ → B
70 + 6 × 5 = ☐ → C	82 + 3 × 8 = ☐ → A	44 + 8 × 4 = ☐ → R
11 × 8 - 11 = ☐ → P	11 × 12 - 18 = ☐ → H	10 × 12 - 10 = ☐ → W

Scratch space:

CLUE 5 Two-step equations - the last clue

> The suspect left a mysterious practice schedule, and you must solve a two-step algebraic equation to find their total target score.

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:

4x + 4 = 36, x = ☐	4x + 2 = 42, x = ☐	4x + 3 = 51, x = ☐	3x + 11 = 32, x = ☐
2x + 12 = 34, x = ☐	4x + 12 = 48, x = ☐	2x + 11 = 19, x = ☐	6x + 10 = 46, x = ☐
5x + 12 = 22, x = ☐	2x + 11 = 21, x = ☐	3x + 8 = 11, x = ☐	

Step 2 - cross out the sentence with each answer:

1. The villain slices through the lane with a eurostep, then leaves dusty tread marks from sticky grip outsoles.
2. The villain steps back for a deep three-pointer, then flashes neon glow laces in the dark locker room.
3. The villain shakes the defender with a crossover, then flashes neon glow laces in the dark locker room.
4. The villain slices through the lane with a eurostep, then flashes neon glow laces in the dark locker room.
5. The villain fades away for a baseline jumper, then cushions the heavy landing with shock-absorbing gel.
6. The villain lofts a high skyhook over the defense, then leaves dusty tread marks from sticky grip outsoles.
7. The villain fades away for a baseline jumper, then leaps incredibly high using spring-loaded soles.
8. The villain fades away for a baseline jumper, then leaves dusty tread marks from sticky grip outsoles.
9. The villain slices through the lane with a eurostep, then adjusts tight high-top ankle straps before escaping.
10. The villain steps back for a deep three-pointer, then leaps incredibly high using spring-loaded soles.
11. The villain steps back for a deep three-pointer, then adjusts tight high-top ankle straps before escaping.
12. The villain steps back for a deep three-pointer, then leaves dusty tread marks from sticky grip outsoles.

TEACHER / PARENT

Answer Key

The All-Star Trophy Heist

Culprit: Joel Embiid

Crossover Dribble · Neon Glow Laces · Right-Handed Shooter · Green Sweatband · Loud Crowd Noise

Trail: Start 21 → Clue 1 17 → Clue 2 12 → Clue 3 7 → Clue 4 4 → Clue 5 1

Clue 1 (Exponents): "THE SUSPECT DOES NOT WEAR HIGH TOP STRAPS"

20^2 = 400 (T) · 2^7 = 128 (U) · 16^2 = 256 (E) · 8^3 = 512 (W) · 22^2 = 484 (G) · 7^3 = 343 (C) · 2^5 = 32 (N) · 19^2 = 361 (D) · 3^4 = 81 (O) · 17^2 = 289 (A) · 7^2 = 49 (R) · 5^4 = 625 (H) · 12^2 = 144 (S) · 10^2 = 100 (P) · 8^2 = 64 (I)

Clue 2 (Square roots): "RIGHT HANDED HOOP MARKS WERE ON THE BALL"

sqrt(144) = 12 (R) · sqrt(49) = 7 (N) · sqrt(64) = 8 (T) · sqrt(441) = 21 (I) · sqrt(529) = 23 (E) · sqrt(256) = 16 (K) · sqrt(36) = 6 (L) · sqrt(324) = 18 (W) · sqrt(16) = 4 (B) · sqrt(4) = 2 (O) · sqrt(25) = 5 (G) · sqrt(361) = 19 (M) · sqrt(100) = 10 (P) · sqrt(121) = 11 (H) · sqrt(484) = 22 (A) · sqrt(289) = 17 (D) · sqrt(225) = 15 (S)

Clue 3 (Pythagorean theorem): "LOUD CROWD NOISE TOTALLY RUINED THEIR SHOT"

legs 25 and 60, hypotenuse = 65 (L) · legs 21 and 72, hypotenuse = 75 (I) · legs 20 and 21, hypotenuse = 29 (H) · legs 16 and 30, hypotenuse = 34 (W) · legs 40 and 75, hypotenuse = 85 (T) · legs 15 and 36, hypotenuse = 39 (Y) · legs 8 and 15, hypotenuse = 17 (R) · legs 20 and 48, hypotenuse = 52 (E) · legs 40 and 42, hypotenuse = 58 (S) · legs 24 and 32, hypotenuse = 40 (D) · legs 7 and 24, hypotenuse = 25 (O) · legs 3 and 4, hypotenuse = 5 (A) · legs 14 and 48, hypotenuse = 50 (C) · legs 5 and 12, hypotenuse = 13 (U) · legs 10 and 24, hypotenuse = 26 (N)

Clue 4 (Order of operations): "GREEN FABRIC WAS SNAGGED ON THE DISPLAY"

35 + 6 × 6 = 71 (G) · 3 + 7 × 2 = 17 (T) · 6 + 3 × 2 = 12 (Y) · 17 + 4 × 6 = 41 (L) · 7 + 3 × 3 = 16 (I) · 3 + 3 × 8 = 27 (S) · 6 + 8 × 2 = 22 (F) · 8 × 11 - 18 = 70 (E) · 82 + 4 × 2 = 90 (O) · 3 × 11 - 27 = 6 (D) · 4 + 2 × 7 = 18 (N) · 2 + 2 × 3 = 8 (B) · 70 + 6 × 5 = 100 (C) · 82 + 3 × 8 = 106 (A) · 44 + 8 × 4 = 76 (R) · 11 × 8 - 11 = 77 (P) · 11 × 12 - 18 = 114 (H) · 10 × 12 - 10 = 110 (W)

Clue 5 (Two-step equations): surviving statement is box 3 → Joel Embiid

4x + 4 = 36, x = 8 · 4x + 2 = 42, x = 10 · 4x + 3 = 51, x = 12 · 3x + 11 = 32, x = 7 · 2x + 12 = 34, x = 11 · 4x + 12 = 48, x = 9 · 2x + 11 = 19, x = 4 · 6x + 10 = 46, x = 6 · 5x + 12 = 22, x = 2 · 2x + 11 = 21, x = 5 · 3x + 8 = 11, x = 1