



The Great Meso-Dome Heist

Grade 8 math · Exponents, Multi-step word problems, Square roots, Pythagorean theorem, Two-step equations · Reading level grades 5-6

Detective: _____ **Date:** _____

Someone has breached the high-tech Mesozoic Dome, tampered with the incubator logs, and stolen a rare, unhatched Golden Raptor Egg! Chief Paleontologist Dr. Aris Thorne needs your team of junior trackers to crack the security codes, solve the math puzzles, and identify the thief before the egg hatches.

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 Dino-Thief is _____

Possible suspects

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

NAME	DINO-RIDING SKILL	SADDLE GEAR	WRITE-UP STYLE	FOSSIL DUST COLOR	DINO COUNTERMEASURE
Lex Murphy	T-Rex Wrangler	Electric Containment Net	Right Handed Writing	Yellow Silt Dust	Super Bright Flares
Henry Osborn	Triceratops Charger	Electric Containment Net	Left Handed Writing	Red Clay Dust	Sticky Tar Pellets
Roy Andrews	Ankylosaurus Driver	Sonic Dino Caller	Right Handed Writing	Yellow Silt Dust	Super Bright Flares
Ian Malcolm	Triceratops Charger	Electric Containment Net	Left Handed Writing	Yellow Silt Dust	High Pitch Dog Whistle
Billy Brennan	T-Rex Wrangler	Sonic Dino Caller	Right Handed Writing	Yellow Silt Dust	Super Bright Flares
Luis Alvarez	Triceratops Charger	Night Vision Goggles	Left Handed Writing	Yellow Silt Dust	High Pitch Dog Whistle
Claire Dearing	Raptor Jockey	Night Vision Goggles	Left Handed Writing	Yellow Silt Dust	Super Bright Flares
Paul Sereno	Ankylosaurus Driver	Thermal Heat Sensor	Right Handed Writing	Red Clay Dust	Sticky Tar Pellets
Ellie Sattler	Raptor Jockey	Thermal Heat Sensor	Left Handed Writing	Red Clay Dust	Sticky Tar Pellets
Sarah Harding	T-Rex Wrangler	Night Vision Goggles	Right Handed Writing	Red Clay Dust	Super Bright Flares
Charles Knight	Pterodactyl Glider	Electric Containment Net	Right Handed Writing	Red Clay Dust	High Pitch Dog Whistle
Owen Grady	T-Rex Wrangler	Sonic Dino Caller	Left Handed Writing	Yellow Silt Dust	Super Bright Flares
Mary Anning	Pterodactyl Glider	Laser Targeting Scope	Right Handed Writing	Yellow Silt Dust	Super Bright Flares
Gideon Mantell	Raptor Jockey	Thermal Heat Sensor	Right Handed Writing	Yellow Silt Dust	Sticky Tar Pellets
Jack Horner	Ankylosaurus Driver	Laser Targeting Scope	Right Handed Writing	Grey Shale Dust	Sticky Tar Pellets
Alan Grant	T-Rex Wrangler	Laser Targeting Scope	Left Handed Writing	Grey Shale Dust	Sticky Tar Pellets
Robert Bakker	Triceratops Charger	Thermal Heat Sensor	Left Handed Writing	Grey Shale Dust	High Pitch Dog Whistle
Barnum Brown	Pterodactyl Glider	Sonic Dino Caller	Right Handed Writing	Grey Shale Dust	Sticky Tar Pellets
Othniel Marsh	Raptor Jockey	Night Vision Goggles	Right Handed Writing	Red Clay Dust	Super Bright Flares
Tim Murphy	Raptor Jockey	Night Vision Goggles	Left Handed Writing	Red Clay Dust	Super Bright Flares
Patricia Vickers	Triceratops Charger	Sonic Dino Caller	Right Handed Writing	Yellow Silt Dust	Super Bright Flares

CLUE 1 Exponents

We need to pack our tracking kits. To find the path to the incubator, calculate the total weight of our water canteens, fossil brushes, and heavy-duty rope.

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

T			T									
225	8	4	225	8	196	4	361	8	27	256	289	9

				T						T
4	64	4	400	225	36	196	400	289	4	225

$15^2 = \square \rightarrow$ T	$2^2 = \square \rightarrow$ E	$19^2 = \square \rightarrow$ F	$8^2 = \square \rightarrow$ L
$20^2 = \square \rightarrow$ C	$2^3 = \square \rightarrow$ H	$3^2 = \square \rightarrow$ O	$16^2 = \square \rightarrow$ S
$6^2 = \square \rightarrow$ R	$3^3 = \square \rightarrow$ A	$17^2 = \square \rightarrow$ N	$14^2 = \square \rightarrow$ I

Scratch space:

CLUE 2

Multi-step word problems

The stolen egg belongs to a line of genetically enhanced raptors. Their cell division grows rapidly, and we must find the total cells after several hours.

Solve each problem, then write its letter in the boxes to fill in the missing word.

A witness saw the villain was

R									D	E	D	W	R						
27	60	39	31	49	31	73	18					27	60	49	60	18	39		

There were 69 tracking beacons in all. 1 Dino Patrol used 15 tracking beacons each. The other 2 Dino Patrol shared the rest equally. How many tracking beacons did each of the other Dino Patrol get?

Answer: → **R**

There were 90 dino treats in all. 4 Dino Patrol used 7 dino treats each. The other 2 Dino Patrol shared the rest equally. How many dino treats did each of the other Dino Patrol get?

Answer: → **H**

There were 286 amber stones in all. 13 amber stones were set aside. The rest were shared equally among 7 Dino Patrol. How many amber stones did each get?

Answer: → **G**

There were 336 tracking beacons in all. 4 Dino Patrol used 35 tracking beacons each. The other 4 Dino Patrol shared the rest equally. How many tracking beacons did each of the other Dino Patrol get?

Answer: → **T**

Ranger earned 7 dino treats in each of 3 rounds, plus 48 bonus dino treats. Then 9 dino treats were lost. How many dino treats are left?

Answer: → **I**

Ranger earned 3 dino treats in each of 2 rounds, plus 80 bonus dino treats. Then 13 dino treats were lost. How many dino treats are left?

Answer: → **A**

There were 161 raptor claws in all. 35 raptor claws were set aside. The rest were shared equally among 7 Dino Patrol. How many raptor claws did each get?

Answer: → **N**

Scratch space:

CLUE 3 Square roots

The thief ran across a perfectly square dinosaur footprint field. To find the length of one side of the field, we must calculate the square root of its total area.

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

[illegible]

sqrt(484) = → **B**

sqrt(100) = → **D**

sqrt(324) = → **G**

sqrt(16) = → **E**

sqrt(36) = → **F**

sqrt(4) = → **1**

sqrt(25) = → **H**

sqrt(225) = → **R**

sqrt(144) = → **N**

$$\text{sqrt}(196) = \boxed{} \rightarrow \boxed{\text{S}}$$

sqrt(441) = → **A**

sqrt(289) = → **T**

sqrt(400) = → **L**

Scratch space:

CLUE 4

Pythagorean theorem

A stray Stegosaurus blocked the main path, forcing us to take a diagonal shortcut. Find the shortest distance across the rectangular meadow to catch the trail.

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

Y													
39	30	50	50	52	34	15	87	50	29	26	10	15	29
15	68	52	29	29	30	26	52	65	37	52	40	29	

legs 15 and 36, hypotenuse = → **Y**

legs 16 and 30, hypotenuse = → **W**

legs 20 and 48, hypotenuse = → **O**

legs 24 and 32, hypotenuse = → **A**

legs 30 and 40, hypotenuse = → **L**

legs 32 and 60, hypotenuse = → **P**

legs 25 and 60, hypotenuse = → **N**

legs 60 and 63, hypotenuse = → **I**

legs 20 and 21, hypotenuse = → **T**

legs 10 and 24, hypotenuse = → **D**

legs 6 and 8, hypotenuse = → **U**

legs 12 and 35, hypotenuse = → **C**

legs 18 and 24, hypotenuse = → **E**

legs 9 and 12, hypotenuse = → **S**

Scratch space:

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

Our tracking drones are running low on battery. Solve for the remaining flight hours before they completely run out of power in the deep jungle.

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:

$6x + 7 = 67, x = \boxed{}$

$4x + 9 = 21, x = \boxed{}$

$4x + 11 = 55, x = \boxed{}$

$2x + 9 = 33, x = \boxed{}$

$6x + 12 = 24, x = \boxed{}$

$5x + 8 = 48, x = \boxed{}$

$4x + 8 = 24, x = \boxed{}$

$2x + 1 = 13, x = \boxed{}$

$3x + 4 = 25, x = \boxed{}$

$4x + 6 = 42, x = \boxed{}$

$6x + 7 = 37, x = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain crashed through the stone barrier with an ankylosaurus, then activated a sonic caller to distract the herd.
2. The villain rode a roaring T-Rex through the gates, then scanned the dark incubators with a thermal sensor.
3. The villain rode a roaring T-Rex through the gates, then activated a sonic caller to distract the herd.
4. The villain sprinted past sensors on a swift raptor, then navigated the dark tunnels with night goggles.
5. The villain crashed through the stone barrier with an ankylosaurus, then deployed an electric net to trap the guard.
6. The villain sprinted past sensors on a swift raptor, then activated a sonic caller to distract the herd.
7. The villain rode a roaring T-Rex through the gates, then aimed a laser scope to blind the cameras.
8. The villain smashed the security fences with a triceratops, then deployed an electric net to trap the guard.
9. The villain sprinted past sensors on a swift raptor, then aimed a laser scope to blind the cameras.
10. The villain smashed the security fences with a triceratops, then activated a sonic caller to distract the herd.
11. The villain swooped down from the cliffs on a pterodactyl, then aimed a laser scope to blind the cameras.
12. The villain crashed through the stone barrier with an ankylosaurus, then scanned the dark incubators with a thermal sensor.

Answer Key

The Great Meso-Dome Heist

Culprit: Roy Andrews

Ankylosaurus Driver · Sonic Dino Caller · Right Handed Writing · Yellow Silt Dust · Super Bright Flares

Trail: Start 21 → Clue 1 17 → Clue 2 10 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Exponents): "THE THIEF HAS NO ELECTRIC NET"

$15^2 = 225$ (T) · $2^2 = 4$ (E) · $19^2 = 361$ (F) · $8^2 = 64$ (L) · $20^2 = 400$ (C) · $2^3 = 8$ (H) · $3^2 = 9$ (O) · $16^2 = 256$ (S) · $6^2 = 36$ (R) · $3^3 = 27$ (A) · $17^2 = 289$ (N) · $14^2 = 196$ (I)

Clue 2 (Multi-step word problems): "RIGHT HANDED WRITING"

There were 69 tracking beacons in all. 1 Dino Patrol used 15 tracking beacons each. The other 2 Dino Patrol shared the rest equally. How many tracking beacons did each of the other Dino Patrol get? = 27 (R) · There were 90 dino treats in all. 4 Dino Patrol used 7 dino treats each. The other 2 Dino Patrol shared the rest equally. How many dino treats did each of the other Dino Patrol get? = 31 (H) · There were 286 amber stones in all. 13 amber stones were set aside. The rest were shared equally among 7 Dino Patrol. How many amber stones did each get? = 39 (G) · There were 336 tracking beacons in all. 4 Dino Patrol used 35 tracking beacons each. The other 4 Dino Patrol shared the rest equally. How many tracking beacons did each of the other Dino Patrol get? = 49 (T) · Ranger earned 7 dino treats in each of 3 rounds, plus 48 bonus dino treats. Then 9 dino treats were lost. How many dino treats are left? = 60 (I) · Ranger earned 3 dino treats in each of 2 rounds, plus 80 bonus dino treats. Then 13 dino treats were lost. How many dino treats are left? = 73 (A) · There were 161 raptor claws in all. 35 raptor claws were set aside. The rest were shared equally among 7 Dino Patrol. How many raptor claws did each get? = 18 (N)

Clue 3 (Square roots): "BRIGHT FLARES BLINDED THE BEAST"

$\sqrt{484} = 22$ (B) · $\sqrt{100} = 10$ (D) · $\sqrt{324} = 18$ (G) · $\sqrt{16} = 4$ (E) · $\sqrt{36} = 6$ (F) · $\sqrt{4} = 2$ (I) · $\sqrt{25} = 5$ (H) · $\sqrt{225} = 15$ (R) · $\sqrt{144} = 12$ (N) · $\sqrt{196} = 14$ (S) · $\sqrt{441} = 21$ (A) · $\sqrt{289} = 17$ (T) · $\sqrt{400} = 20$ (L)

Clue 4 (Pythagorean theorem): "YELLOW SILT DUST SPOTTED ON COAT"

legs 15 and 36, hypotenuse = 39 (Y) · legs 16 and 30, hypotenuse = 34 (W) · legs 20 and 48, hypotenuse = 52 (O) · legs 24 and 32, hypotenuse = 40 (A) · legs 30 and 40, hypotenuse = 50 (L) · legs 32 and 60, hypotenuse = 68 (P) · legs 25 and 60, hypotenuse = 65 (N) · legs 60 and 63, hypotenuse = 87 (I) · legs 20 and 21, hypotenuse = 29 (T) · legs 10 and 24, hypotenuse = 26 (D) · legs 6 and 8, hypotenuse = 10 (U) · legs 12 and 35, hypotenuse = 37 (C) · legs 18 and 24, hypotenuse = 30 (E) · legs 9 and 12, hypotenuse = 15 (S)

Clue 5 (Two-step equations): surviving statement is box 1 → Roy Andrews

$6x + 7 = 67, x = 10$ · $4x + 9 = 21, x = 3$ · $4x + 11 = 55, x = 11$ · $2x + 9 = 33, x = 12$ · $6x + 12 = 24, x = 2$ · $5x + 8 = 48, x = 8$ · $4x + 8 = 24, x = 4$ · $2x + 1 = 13, x = 6$ · $3x + 4 = 25, x = 7$ · $4x + 6 = 42, x = 9$ · $6x + 7 = 37, x = 5$