The Mystery of the Fossil Thief

Grade 6 math · Fractions of a number, Bar models, Percentages, Exponents · Reading level grades 3-4

Detective: _____ **Date:** _____

Someone snuck into the dig tent and swiped the golden T-Rex tooth! Follow the clues around the fossil site to catch the culprit.

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 Fossil Snatcher is _____

Possible suspects

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

NAME	DIG TOOL	DINO TAG	DOMINANT HAND	HAT COLOR	DINO DISTRACTION
Chisel Charlie	Plaster Mold	Velociraptor	Right Handed	Green Sun Visor	Berry Scent
Geologist Gabe	Rock Hammer	Ankylosaurus	Left Handed	Green Sun Visor	Flashlight Beam
Fossil Fiona	Plaster Mold	Velociraptor	Right Handed	Green Sun Visor	Flashlight Beam
Digging Dan	Sonic Scanner	Triceratops	Right Handed	Green Sun Visor	Flashlight Beam
Picks Parker	Sonic Scanner	Stegosaurus	Left Handed	Green Sun Visor	Squeaky Toy
Brisk Bruno	Laser Chisel	Triceratops	Left Handed	Tan Bucket Hat	Squeaky Toy
Trench Toby	Dusting Brush	Triceratops	Left Handed	Tan Bucket Hat	Berry Scent
Prof Roy	Rock Hammer	Triceratops	Left Handed	Red Baseball Cap	Berry Scent
Dr Grant	Plaster Mold	Triceratops	Left Handed	Tan Bucket Hat	Squeaky Toy
Scout Maya	Laser Chisel	Stegosaurus	Left Handed	Green Sun Visor	Berry Scent
Saurian Sue	Laser Chisel	Brachiosaurus	Left Handed	Tan Bucket Hat	Berry Scent
Dusty Sam	Laser Chisel	Ankylosaurus	Right Handed	Tan Bucket Hat	Flashlight Beam
Dr Ellie	Rock Hammer	Brachiosaurus	Right Handed	Green Sun Visor	Flashlight Beam
T Rex Tina	Dusting Brush	Brachiosaurus	Right Handed	Red Baseball Cap	Berry Scent
Shovel Sadie	Rock Hammer	Triceratops	Right Handed	Red Baseball Cap	Flashlight Beam
Mary Anning	Laser Chisel	Stegosaurus	Left Handed	Green Sun Visor	Squeaky Toy
Dino Dave	Plaster Mold	Triceratops	Left Handed	Red Baseball Cap	Flashlight Beam
Excavator Eva	Laser Chisel	Velociraptor	Left Handed	Green Sun Visor	Berry Scent
Tracker Jack	Sonic Scanner	Ankylosaurus	Right Handed	Green Sun Visor	Squeaky Toy
Gideon Mantell	Plaster Mold	Triceratops	Right Handed	Green Sun Visor	Flashlight Beam
Dr Barnum	Laser Chisel	Triceratops	Right Handed	Green Sun Visor	Flashlight Beam

make your own at mathcrackers.com

CLUE 1 Fractions of a number

Compare the length of the dig trenches on the bar chart to find the first hidden clue.

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

| | | |

CLUE 2 Bar model word problems

Look at the fraction of fossil crates unpacked today to decode the next secret message.

Draw a bar model to solve each word problem, then write its letter in the boxes to fill in the missing word.

A witness saw the villain was

R								D	E	D
11	75	79	25	91	25	34	31			

.

There were 18 dino teeth in all. 7 dino teeth were used. How many dino teeth are left?

draw a bar model

Answer: ☐ → R

The red team has 48 sample jars and the blue team has 23 sample jars. How many more sample jars does the red team have?

draw a bar model

Answer: ☐ → H

There were 93 dino teeth in all. 2 dino teeth were used. How many dino teeth are left?

draw a bar model

Answer: ☐ → T

One group collected 30 dino teeth and another group collected 1 dino teeth. How many dino teeth in all?

draw a bar model

Answer: ☐ → N

Paleontologist has 237 fossil brushes, packed 3 to a bag. How many bags can be filled?

draw a bar model

Answer: ☐ → G

The red team has 90 magnifying glasses and the blue team has 15 magnifying glasses. How many more magnifying glasses does the red team have?

draw a bar model

Answer: ☐ → I

The red team has 68 rock hammers and the blue team has 34 rock hammers. How many more rock hammers does the red team have?

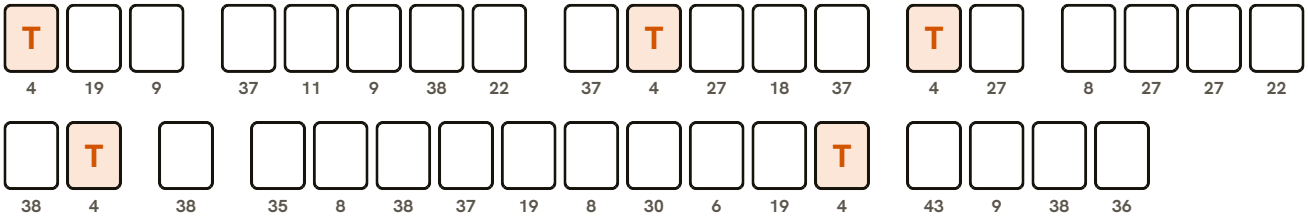
draw a bar model

Answer: ☐ → A

CLUE 3 Percentages

Check the percentage of cleaned bones on the lab report to reveal another clue.

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



5% of 80 = ☐ → T

50% of 38 = ☐ → H

75% of 48 = ☐ → M

25% of 152 = ☐ → A

5% of 540 = ☐ → O

60% of 30 = ☐ → P

10% of 80 = ☐ → L

50% of 60 = ☐ → I

40% of 55 = ☐ → K

50% of 70 = ☐ → F

5% of 860 = ☐ → B

25% of 44 = ☐ → N

50% of 18 = ☐ → E

40% of 15 = ☐ → G

20% of 185 = ☐ → S

Scratch space:

CLUE 4

Exponents

Solve the power equation on the generator display to unlock the clue stored inside.

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

A																A			
169	144	64	343	343	100	216	9	100	27	125	216	32	64	121	169	216			
8	343	256	324	225	36	324	25	343	256	32	216	216	125	8					

13^2 = ☐ → A

6^2 = ☐ → Y

2^5 = ☐ → O

11^2 = ☐ → W

3^3 = ☐ → V

18^2 = ☐ → T

4^4 = ☐ → F

3^2 = ☐ → U

5^3 = ☐ → I

7^3 = ☐ → E

15^2 = ☐ → B

6^3 = ☐ → S

4^3 = ☐ → R

12^2 = ☐ → G

5^2 = ☐ → H

2^3 = ☐ → L

10^2 = ☐ → N

Scratch space:

CLUE 5

Fractions of a number - the last clue

Calculate the fraction of footprint tracks cataloged to find the final piece of evidence.

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:

5/10 of 14 = ☐	6/10 of 5 = ☐	4/8 of 16 = ☐	1/6 of 72 = ☐
2/10 of 5 = ☐	3/6 of 8 = ☐	1/10 of 100 = ☐	2/4 of 12 = ☐
5/10 of 4 = ☐	2/4 of 22 = ☐	5/6 of 6 = ☐	

Step 2 - cross out the sentence with each answer:

1. The villain brushed away the sand, then stuck a brachiosaurus decal.
2. The villain cut through the shale, then stuck a brachiosaurus decal.
3. The villain scanned the stone layer, then left a triceratops badge.
4. The villain brushed away the sand, then stamped a stegosaurus mark.
5. The villain cut through the shale, then attached an ankylosaurus patch.
6. The villain scanned the stone layer, then attached an ankylosaurus patch.
7. The villain cut through the shale, then left a triceratops badge.
8. The villain chipped the ancient rock, then stuck a brachiosaurus decal.
9. The villain poured quick plaster, then left a triceratops badge.
10. The villain cut through the shale, then stamped a stegosaurus mark.
11. The villain poured quick plaster, then attached an ankylosaurus patch.
12. The villain brushed away the sand, then dropped a velociraptor pin.

make your own at mathcrackers.com

TEACHER / PARENT

Answer Key

The Mystery of the Fossil Thief

Culprit: Gideon Mantell

Plaster Mold · Triceratops · Right Handed · Green Sun Visor · Flashlight Beam

Trail: Start 21 → Clue 1 18 → Clue 2 8 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Fractions of a number): "THE CULPRIT DOES NOT WEAR A VELOCIRAPTOR TAG"

3/5 of 55 = 33 (T) · 1/2 of 70 = 35 (U) · 1/2 of 42 = 21 (I) · 1/8 of 48 = 6 (H) · 4/10 of 45 = 18 (L) · 4/5 of 20 = 16 (R) · 3/6 of 74 = 37 (G) · 2/8 of 108 = 27 (D) · 1/2 of 28 = 14 (O) · 1/4 of 44 = 11 (S) · 1/8 of 152 = 19 (W) · 2/10 of 130 = 26 (P) · 3/10 of 30 = 9 (V) · 1/6 of 174 = 29 (N) · 4/8 of 30 = 15 (C) · 3/10 of 130 = 39 (A) · 4/8 of 26 = 13 (E)

Clue 2 (Bar model word problems): "RIGHT HANDED"

There were 18 dino teeth in all. 7 dino teeth were used. How many dino teeth are left? = 11 (R) · The red team has 48 sample jars and the blue team has 23 sample jars. How many more sample jars does the red team have? = 25 (H) · There were 93 dino teeth in all. 2 dino teeth were used. How many dino teeth are left? = 91 (T) · One group collected 30 dino teeth and another group collected 1 dino teeth. How many dino teeth in all? = 31 (N) · Paleontologist has 237 fossil brushes, packed 3 to a bag. How many bags can be filled? = 79 (G) · The red team has 90 magnifying glasses and the blue team has 15 magnifying glasses. How many more magnifying glasses does the red team have? = 75 (I) · The red team has 68 rock hammers and the blue team has 34 rock hammers. How many more rock hammers does the red team have? = 34 (A)

Clue 3 (Percentages): "THE SNEAK STOPS TO LOOK AT A FLASHLIGHT BEAM"

5% of 80 = 4 (T) · 50% of 38 = 19 (H) · 75% of 48 = 36 (M) · 25% of 152 = 38 (A) · 5% of 540 = 27 (O) · 60% of 30 = 18 (P) · 10% of 80 = 8 (L) · 50% of 60 = 30 (I) · 40% of 55 = 22 (K) · 50% of 70 = 35 (F) · 5% of 860 = 43 (B) · 25% of 44 = 11 (N) · 50% of 18 = 9 (E) · 40% of 15 = 6 (G) · 20% of 185 = 37 (S)

Clue 4 (Exponents): "A GREEN SUN VISOR WAS LEFT BY THE FOSSIL"

13^2 = 169 (A) · 6^2 = 36 (Y) · 2^5 = 32 (O) · 11^2 = 121 (W) · 3^3 = 27 (V) · 18^2 = 324 (T) · 4^4 = 256 (F) · 3^2 = 9 (U) · 5^3 = 125 (I) · 7^3 = 343 (E) · 15^2 = 225 (B) · 6^3 = 216 (S) · 4^3 = 64 (R) · 12^2 = 144 (G) · 5^2 = 25 (H) · 2^3 = 8 (L) · 10^2 = 100 (N)

Clue 5 (Fractions of a number): surviving statement is box 9 → Gideon Mantell

5/10 of 14 = 7 · 6/10 of 5 = 3 · 4/8 of 16 = 8 · 1/6 of 72 = 12 · 2/10 of 5 = 1 · 3/6 of 8 = 4 · 1/10 of 100 = 10 · 2/4 of 12 = 6 · 5/10 of 4 = 2 · 2/4 of 22 = 11 · 5/6 of 6 = 5