The Mystery of the Missing T-Rex Skull

Grade 7 math · Integers, Word problems, Multi-step word problems, Percentages, Missing addends · Reading level grades 7-9

Detective: _____ **Date:** _____

A priceless, fully intact Tyrannosaurus Rex skull has vanished overnight from the central excavation pit. Suspicion falls upon twenty-four field researchers and expedition crew members currently on location.

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 Thief is _____

Possible suspects

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

NAME	PRIMARY TOOL	SECONDARY GEAR	HABITUAL TELL	HEADWEAR COLOR	VULNERABILITY
Gideon Mantell	Sonic Bone Scanner	Amber Sample Kit	Taps Digging Trowel	Slate Gray Helmet	Distracted By Fossilized Shells
Anusuya Chinsamy	Sonic Bone Scanner	Specimen Lockbox	Whistles Trail Songs	Rust Brown Bandana	Sneezing From Chalk Dust
Jack Horner	Geological Radar	Surveying Transit	Whistles Trail Songs	Slate Gray Helmet	Distracted By Fossilized Shells
Phil Currie	Plaster Casting Rig	Isotope Analyzer	Taps Digging Trowel	Dusty Gold Cap	Distracted By Fossilized Shells
Dr Alan Grant	Pneumatic Chisel	Isotope Analyzer	Taps Digging Trowel	Slate Gray Helmet	Sneezing From Chalk Dust
Patricia Vickers	Sonic Bone Scanner	Isotope Analyzer	Taps Digging Trowel	Rust Brown Bandana	Startled By Rockfalls
Paul Barrett	Pneumatic Chisel	Specimen Lockbox	Whistles Trail Songs	Rust Brown Bandana	Startled By Rockfalls
Jingmai OConnor	Geological Radar	Surveying Transit	Taps Digging Trowel	Rust Brown Bandana	Startled By Rockfalls
Othniel Marsh	Pneumatic Chisel	Surveying Transit	Taps Digging Trowel	Dusty Gold Cap	Sneezing From Chalk Dust
Dr Ellie Sattler	Pneumatic Chisel	Specimen Lockbox	Taps Digging Trowel	Rust Brown Bandana	Distracted By Fossilized Shells
Paul Sereno	Sonic Bone Scanner	Specimen Lockbox	Taps Digging Trowel	Rust Brown Bandana	Startled By Rockfalls
Dr Ian Malcolm	Geological Radar	Surveying Transit	Whistles Trail Songs	Rust Brown Bandana	Sneezing From Chalk Dust
Steve Brusatte	Sonic Bone Scanner	Specimen Lockbox	Whistles Trail Songs	Slate Gray Helmet	Distracted By Fossilized Shells
Luis Chiappe	Pneumatic Chisel	Amber Sample Kit	Taps Digging Trowel	Rust Brown Bandana	Startled By Rockfalls
Edward Cope	Pneumatic Chisel	Magnifying Monocle	Taps Digging Trowel	Rust Brown Bandana	Startled By Rockfalls
Xu Xing	Pneumatic Chisel	Amber Sample Kit	Whistles Trail Songs	Slate Gray Helmet	Startled By Rockfalls
Barnum Brown	Plaster Casting Rig	Isotope Analyzer	Whistles Trail Songs	Dusty Gold Cap	Startled By Rockfalls
Karen Chin	Plaster Casting Rig	Surveying Transit	Whistles Trail Songs	Dusty Gold Cap	Distracted By Fossilized Shells
Lindsay Zanno	Pneumatic Chisel	Surveying Transit	Whistles Trail Songs	Slate Gray Helmet	Startled By Rockfalls
Rodolfo Coria	Pneumatic Chisel	Amber Sample Kit	Whistles Trail Songs	Rust Brown Bandana	Startled By Rockfalls
Mary Anning	Plaster Casting Rig	Surveying Transit	Taps Digging Trowel	Slate Gray Helmet	Startled By Rockfalls

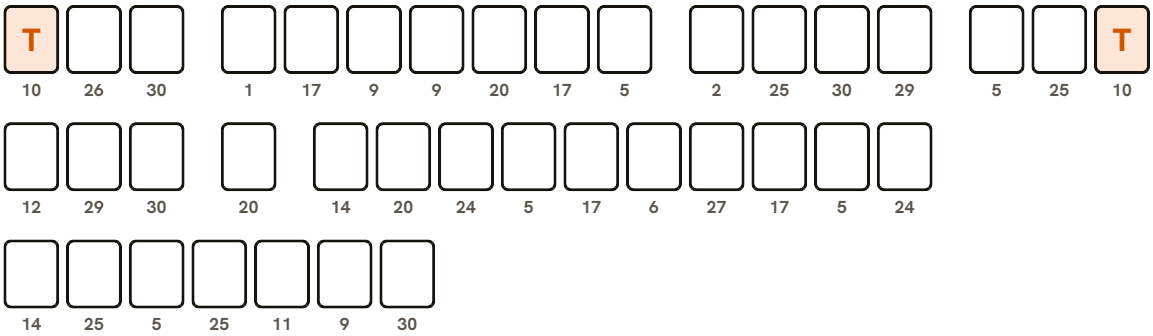
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CLUE 1

Integers

To calculate the total volume of earth moved overnight from the quarry, complete the multi-step excavation totals.

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



(-13) + 23 = ☐ → T

13 - (-4) = ☐ → I

6 - (-3) = ☐ → L

(-7) + 18 = ☐ → C

(-3) + 33 = ☐ → E

22 - (-3) = ☐ → O

6 - (-14) = ☐ → A

(-6) + 8 = ☐ → D

(-8) + 13 = ☐ → N

(-11) + 23 = ☐ → U

(-11) + 12 = ☐ → V

(-8) + 37 = ☐ → S

(-1) + 15 = ☐ → M

9 - (-15) = ☐ → G

21 - (-5) = ☐ → H

(-7) + 13 = ☐ → F

15 - (-12) = ☐ → Y

Scratch space:

CLUE 2 Word problems

Analyze these dig site supply logs to determine which paleontology stations were active during the heist.

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

A witness saw the villain was

T									N		T	R	O	W	E	L	.
48	91	45	100	85	93	15	15	93		15	48						

Dinosaur researcher found 38 measuring tapes yesterday and 10 more today. How many measuring tapes in all?

Answer: ☐ → T

There were 118 sediment samples. 33 were used up. How many sediment samples are left?

Answer: ☐ → D

Dinosaur researcher found 6 measuring tapes yesterday and 87 more today. How many measuring tapes in all?

Answer: ☐ → I

Dinosaur researcher found 48 ammonite shells yesterday and 52 more today. How many ammonite shells in all?

Answer: ☐ → S

Dinosaur researcher found 23 raptor claws yesterday and 68 more today. How many raptor claws in all?

Answer: ☐ → A

Dinosaur researcher found 3 ammonite shells yesterday and 12 more today. How many ammonite shells in all?

Answer: ☐ → G

Dinosaur researcher found 8 ammonite shells yesterday and 37 more today. How many ammonite shells in all?

Answer: ☐ → P

Scratch space:

CLUE 3 Multi-step word problems

Check the depth readings and elevation changes relative to sea level across the dig grid.

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

Someone scared the villain off with

S								B	Y		O	C	K	F				S	.
78	51	37	14	51	54	68	74			14					37	54	54	78						

There were 419 sediment samples in all. 1 expedition crew used 29 sediment samples each. The other 5 expedition crew shared the rest equally. How many sediment samples did each of the other expedition crew get?

Answer: ☐ → S

Dinosaur researcher collected 22 raptor claws in the morning and 6 raptor claws in the afternoon, then split them equally among 2 expedition crew. How many raptor claws did each get?

Answer: ☐ → R

There were 177 sediment samples in all. 3 expedition crew used 22 sediment samples each. The other 3 expedition crew shared the rest equally. How many sediment samples did each of the other expedition crew get?

Answer: ☐ → A

Dinosaur researcher filled 9 boxes with 5 fossilized teeth each, then found 9 more fossilized teeth. How many fossilized teeth are there in all?

Answer: ☐ → L

Dinosaur researcher collected 282 measuring tapes in the morning and 88 measuring tapes in the afternoon, then split them equally among 5 expedition crew. How many measuring tapes did each get?

Answer: ☐ → D

Dinosaur researcher earned 8 fossilized teeth in each of 5 rounds, plus 34 bonus fossilized teeth. Then 6 fossilized teeth were lost. How many fossilized teeth are left?

Answer: ☐ → E

Dinosaur researcher collected 68 measuring tapes in the morning and 187 measuring tapes in the afternoon, then split them equally among 5 expedition crew. How many measuring tapes did each get?

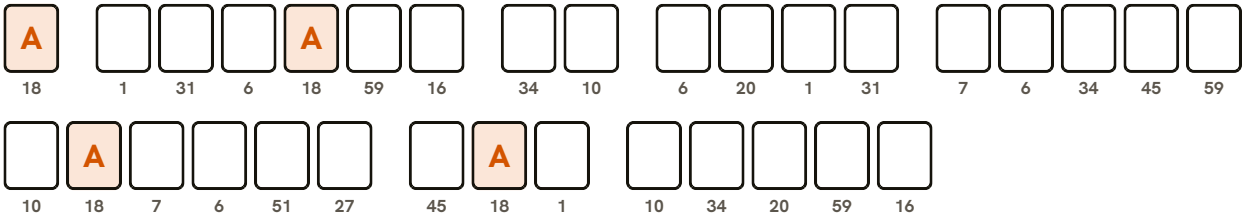
Answer: ☐ → T

Scratch space:

CLUE 4 Percentages

Determine the mineral concentration percentages found in the surrounding rock strata samples.

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



5% of 360 = ☐ → A

75% of 60 = ☐ → W

5% of 680 = ☐ → O

5% of 140 = ☐ → B

5% of 20 = ☐ → S

60% of 45 = ☐ → C

50% of 32 = ☐ → D

5% of 620 = ☐ → T

60% of 10 = ☐ → R

40% of 25 = ☐ → F

25% of 204 = ☐ → I

20% of 295 = ☐ → N

25% of 80 = ☐ → U

Scratch space:

CLUE 5 Missing addends - the last clue

Fill in the missing bone fragment tallies to finish auditing the quarry inventory log.

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:

30 + ___ = 41 ☐	22 + ___ = 34 ☐	35 + ___ = 38 ☐	27 + ___ = 34 ☐
30 + ___ = 34 ☐	5 + ___ = 10 ☐	5 + ___ = 6 ☐	19 + ___ = 21 ☐
17 + ___ = 27 ☐	11 + ___ = 17 ☐	7 + ___ = 15 ☐	

Step 2 - cross out the sentence with each answer:

1. The villain calibrated the sonic bone scanner, then packed an amber sample kit.
2. The villain scanned with geological radar, then ran the isotope analyzer.
3. The villain scanned with geological radar, then leveled a surveying transit.
4. The villain applied a plaster casing, then secured the specimen lockbox.
5. The villain scanned with geological radar, then packed an amber sample kit.
6. The villain calibrated the sonic bone scanner, then adjusted a magnifying monocle.
7. The villain flew a laser mapping drone, then packed an amber sample kit.
8. The villain applied a plaster casing, then ran the isotope analyzer.
9. The villain chiseled through heavy shale, then packed an amber sample kit.
10. The villain flew a laser mapping drone, then leveled a surveying transit.
11. The villain calibrated the sonic bone scanner, then ran the isotope analyzer.
12. The villain calibrated the sonic bone scanner, then secured the specimen lockbox.

TEACHER / PARENT

Answer Key

The Mystery of the Missing T-Rex Skull

Culprit: Luis Chiappe

Pneumatic Chisel · Amber Sample Kit · Taps Digging Trowel · Rust Brown Bandana · Startled By Rockfalls

Trail: Start 21 → Clue 1 20 → Clue 2 10 → Clue 3 5 → Clue 4 4 → Clue 5 1

Clue 1 (Integers): "THE VILLAIN DOES NOT USE A MAGNIFYING MONOCLE"

(-13) + 23 = 10 (T) · 13 - (-4) = 17 (I) · 6 - (-3) = 9 (L) · (-7) + 18 = 11 (C) · (-3) + 33 = 30 (E) · 22 - (-3) = 25 (O) · 6 - (-14) = 20 (A) · (-6) + 8 = 2 (D) · (-8) + 13 = 5 (N) · (-11) + 23 = 12 (U) · (-11) + 12 = 1 (V) · (-8) + 37 = 29 (S) · (-1) + 15 = 14 (M) · 9 - (-15) = 24 (G) · 21 - (-5) = 26 (H) · (-7) + 13 = 6 (F) · 15 - (-12) = 27 (Y)

Clue 2 (Word problems): "TAPS DIGGING TROWEL"

Dinosaur researcher found 38 measuring tapes yesterday and 10 more today. How many measuring tapes in all? = 48 (T) · There were 118 sediment samples. 33 were used up. How many sediment samples are left? = 85 (D) · Dinosaur researcher found 6 measuring tapes yesterday and 87 more today. How many measuring tapes in all? = 93 (I) · Dinosaur researcher found 48 ammonite shells yesterday and 52 more today. How many ammonite shells in all? = 100 (S) · Dinosaur researcher found 23 raptor claws yesterday and 68 more today. How many raptor claws in all? = 91 (A) · Dinosaur researcher found 3 ammonite shells yesterday and 12 more today. How many ammonite shells in all? = 15 (G) · Dinosaur researcher found 8 ammonite shells yesterday and 37 more today. How many ammonite shells in all? = 45 (P)

Clue 3 (Multi-step word problems): "STARTLED BY ROCKFALLS"

There were 419 sediment samples in all. 1 expedition crew used 29 sediment samples each. The other 5 expedition crew shared the rest equally. How many sediment samples did each of the other expedition crew get? = 78 (S) · Dinosaur researcher collected 22 raptor claws in the morning and 6 raptor claws in the afternoon, then split them equally among 2 expedition crew. How many raptor claws did each get? = 14 (R) · There were 177 sediment samples in all. 3 expedition crew used 22 sediment samples each. The other 3 expedition crew shared the rest equally. How many sediment samples did each of the other expedition crew get? = 37 (A) · Dinosaur researcher filled 9 boxes with 5 fossilized teeth each, then found 9 more fossilized teeth. How many fossilized teeth are there in all? = 54 (L) · Dinosaur researcher collected 282 measuring tapes in the morning and 88 measuring tapes in the afternoon, then split them equally among 5 expedition crew. How many measuring tapes did each get? = 74 (D) · Dinosaur researcher earned 8 fossilized teeth in each of 5 rounds, plus 34 bonus fossilized teeth. Then 6 fossilized teeth were lost. How many fossilized teeth are left? = 68 (E) · Dinosaur researcher collected 68 measuring tapes in the morning and 187 measuring tapes in the afternoon, then split them equally among 5 expedition crew. How many measuring tapes did each get? = 51 (T)

Clue 4 (Percentages): "A STRAND OF RUST BROWN FABRIC WAS FOUND"

5% of 360 = 18 (A) · 75% of 60 = 45 (W) · 5% of 680 = 34 (O) · 5% of 140 = 7 (B) · 5% of 20 = 1 (S) · 60% of 45 = 27 (C) · 50% of 32 = 16 (D) · 5% of 620 = 31 (T) · 60% of 10 = 6 (R) · 40% of 25 = 10 (F) · 25% of 204 = 51 (I) · 20% of 295 = 59 (N) · 25% of 80 = 20 (U)

Clue 5 (Missing addends): surviving statement is box 9 → Luis Chiappe

30 + ___ = 41 = 11 · 22 + ___ = 34 = 12 · 35 + ___ = 38 = 3 · 27 + ___ = 34 = 7 · 30 + ___ = 34 = 4 · 5 + ___ = 10 = 5 · 5 + ___ = 6 = 1 · 19 + ___ = 21 = 2 · 17 + ___ = 27 = 10 · 11 + ___ = 17 = 6 · 7 + ___ = 15 = 8