



The Great Carat Caper

Grade 9 math · Rounding, Word problems, Fractions of a number, Two-step equations · Reading level grades 7-9

Detective: _____ **Date:** _____

A daring heist has shocked Glitter City! The priceless Hope Star Diamond has been stolen from the Grand Vault of Carats. Detective Facet has arrived at the scene, but the thief has left a series of encrypted math locks on the security database. To identify the diamond thief and recover the gem, you must decode the clues left behind!

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 diamond thief is _____

Possible suspects

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

NAME	HEIST GEAR	ESCAPE METHOD	DOMINANT HAND	HAIR COLOR	VULNERABILITY
Ruby Regent	Magnet Glove	Jet Pack	Right-handed	Glitter Gold	Sticky Foam
Eska Emery	Acid Spray	Gravity Belt	Right-handed	Glitter Gold	Sticky Foam
Jasper Carbon	Laser Cutter	Smoke Grenade	Left-handed	Glitter Gold	Bright Flashlight
Crystal Sterling	Acid Spray	Hologram Cloak	Right-handed	Neon Pink	Sticky Foam
Shimmer Shaw	Sonic Drill	Gravity Belt	Left-handed	Glitter Gold	High Pitch Whistle
Alissa Hope	Magnet Glove	Gravity Belt	Left-handed	Silver	Sticky Foam
Gemma Stone	Laser Cutter	Hologram Cloak	Left-handed	Silver	Bright Flashlight
Karat Vance	Magnet Glove	Jet Pack	Left-handed	Silver	High Pitch Whistle
Beryl Bragg	Glass Boots	Jet Pack	Right-handed	Glitter Gold	High Pitch Whistle
Carbon Cole	Sonic Drill	Jet Pack	Left-handed	Glitter Gold	High Pitch Whistle
Mica Miller	Glass Boots	Jet Pack	Right-handed	Glitter Gold	Bright Flashlight
Flint Frost	Laser Cutter	Gravity Belt	Left-handed	Glitter Gold	High Pitch Whistle
Facet Finch	Acid Spray	Gravity Belt	Left-handed	Glitter Gold	High Pitch Whistle
Glimmer Gray	Acid Spray	Hologram Cloak	Left-handed	Silver	High Pitch Whistle
Jewel Jordan	Sonic Drill	Glider Wings	Right-handed	Silver	Sticky Foam
Luster Lane	Laser Cutter	Jet Pack	Right-handed	Neon Pink	Bright Flashlight
Prism Pierce	Glass Boots	Smoke Grenade	Right-handed	Silver	Bright Flashlight
Sterling Flint	Acid Spray	Smoke Grenade	Right-handed	Glitter Gold	High Pitch Whistle
Tiffany Co	Glass Boots	Gravity Belt	Left-handed	Glitter Gold	High Pitch Whistle
Opal Orlov	Sonic Drill	Jet Pack	Right-handed	Neon Pink	Bright Flashlight
Spark Sterling	Glass Boots	Hologram Cloak	Right-handed	Neon Pink	High Pitch Whistle

CLUE 1 Rounding

The vault inventory ledger is encoded in a word puzzle about diamond weights. Solve the math problem to unlock the suspect's gear profile.

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

T			T											T				
110	900	2300	110	900	700	2300	2900	1100	170	2300	3000	2000	170	110	1700	3000	2300	290
		T																
4300	2300	110	9000	290	500	430												

Round 112 to the nearest ten → **T**

Round 2,924 to the nearest hundred → **F**

Round 1,853 to the nearest thousand → **N**

Round 171 to the nearest ten → **O**

Round 912 to the nearest hundred → **H**

Round 512 to the nearest hundred → **C**

Round 712 to the nearest hundred → **I**

Round 1,726 to the nearest hundred → **U**

Round 2,298 to the nearest hundred → **E**

Round 1,067 to the nearest hundred → **D**

Round 3,375 to the nearest thousand → **S**

Round 4,307 to the nearest hundred → **J**

Round 428 to the nearest ten → **K**

Round 290 to the nearest ten → **A**

Round 8,924 to the nearest thousand → **P**

Scratch space:

CLUE 2

Word problems

A security scanner caught a blurry laser distance reading. Since the sensors only display rounded numbers, you must round the values to decode the thief's physical tell.

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

A witness saw the villain was L D D .

39 73 56 25 69 65 68 73

Detective Facet found 22 carats of diamond yesterday and 17 more today. How many carats of diamond in all?

Answer: → L

There were 93 polishing cloths. 28 were used up. How many polishing cloths are left?

Answer: → A

Detective Facet found 16 security badges yesterday and 57 more today. How many security badges in all?

Answer: → E

Detective Facet found 23 carats of diamond yesterday and 46 more today. How many carats of diamond in all?

Answer: → H

There were 79 security badges. 23 were used up. How many security badges are left?

Answer: → F

Detective Facet lined up 5 rows of 5 carats of diamond. How many carats of diamond in all?

Answer: → T

There were 88 carats of diamond. 20 were used up. How many carats of diamond are left?

Answer: → N

Scratch space:

CLUE 3

Fractions of a number

The vault floor was littered with fractioned gem fragments. Work out the exact fractional weight to discover what weapon the guards used to fend off the thief.

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

T																
36	6	45	50	55	31	31	54	55	21	12	6	56	55	21	46	12

											T				
26	56	35	11	31	35	44	16	60	6	55	12	36	31	45	12

$2/3 \text{ of } 54 = \square \rightarrow \boxed{\text{T}}$

$1/3 \text{ of } 132 = \square \rightarrow \boxed{\text{U}}$

$2/6 \text{ of } 165 = \square \rightarrow \boxed{\text{I}}$

$4/8 \text{ of } 92 = \square \rightarrow \boxed{\text{K}}$

$1/5 \text{ of } 55 = \square \rightarrow \boxed{\text{M}}$

$2/5 \text{ of } 15 = \square \rightarrow \boxed{\text{H}}$

$4/6 \text{ of } 90 = \square \rightarrow \boxed{\text{W}}$

$3/4 \text{ of } 28 = \square \rightarrow \boxed{\text{N}}$

$1/3 \text{ of } 168 = \square \rightarrow \boxed{\text{R}}$

$7/8 \text{ of } 40 = \square \rightarrow \boxed{\text{O}}$

$3/6 \text{ of } 62 = \square \rightarrow \boxed{\text{L}}$

$4/8 \text{ of } 52 = \square \rightarrow \boxed{\text{F}}$

$1/4 \text{ of } 200 = \square \rightarrow \boxed{\text{V}}$

$2/4 \text{ of } 32 = \square \rightarrow \boxed{\text{D}}$

$1/10 \text{ of } 120 = \square \rightarrow \boxed{\text{S}}$

$9/10 \text{ of } 60 = \square \rightarrow \boxed{\text{A}}$

$5/10 \text{ of } 90 = \square \rightarrow \boxed{\text{E}}$

Scratch space:

CLUE 4

Two-step equations

A dual-stage pressure lock blocks the security cameras. Solve the two-step frequency equation to power up the video and reveal the thief's hair color.

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

W															
11	13	19	5	10	16	4	7	2	3	8	16	4	7	5	19
18	21	17	2	2	13	3	18	5	21	4	20	8	17	3	

$4x + 5 = 49, x = \square \rightarrow \boxed{W}$

$3x + 9 = 21, x = \square \rightarrow \boxed{D}$

$6x + 12 = 138, x = \square \rightarrow \boxed{L}$

$4x + 7 = 79, x = \square \rightarrow \boxed{G}$

$9x + 11 = 38, x = \square \rightarrow \boxed{R}$

$5x + 10 = 20, x = \square \rightarrow \boxed{T}$

$5x + 5 = 30, x = \square \rightarrow \boxed{O}$

$9x + 3 = 156, x = \square \rightarrow \boxed{I}$

$5x + 6 = 56, x = \square \rightarrow \boxed{U}$

$5x + 1 = 66, x = \square \rightarrow \boxed{E}$

$4x + 2 = 34, x = \square \rightarrow \boxed{A}$

$7x + 4 = 116, x = \square \rightarrow \boxed{N}$

$3x + 3 = 63, x = \square \rightarrow \boxed{H}$

$9x + 11 = 182, x = \square \rightarrow \boxed{F}$

$5x + 9 = 44, x = \square \rightarrow \boxed{S}$

Scratch space:

CLUE 5**Fractions of a number - the last clue**

The thief dropped a fraction of their stolen loot during the getaway. Calculate the exact count of recovered gems to open the final evidence file.

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:

$1/10 \text{ of } 80 = \boxed{}$

$2/10 \text{ of } 45 = \boxed{}$

$7/8 \text{ of } 8 = \boxed{}$

$2/10 \text{ of } 55 = \boxed{}$

$3/4 \text{ of } 16 = \boxed{}$

$1/2 \text{ of } 10 = \boxed{}$

$2/10 \text{ of } 20 = \boxed{}$

$4/8 \text{ of } 2 = \boxed{}$

$2/4 \text{ of } 12 = \boxed{}$

$4/10 \text{ of } 5 = \boxed{}$

$2/6 \text{ of } 9 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain melted the steel security bars with acid, then fooled the guards with a hologram decoy.
2. The villain shattered the floor pressure plates with boots, then vanished in a thick cloud of smoke.
3. The villain snatched the gemstone with a magnetic glove, then floated over the pressure-sensitive floor.
4. The villain snatched the gemstone with a magnetic glove, then fooled the guards with a hologram decoy.
5. The villain melted the steel security bars with acid, then sailed off the roof on sleek wings.
6. The villain drilled through the vault door silently, then vanished in a thick cloud of smoke.
7. The villain sliced the glass display case with a laser, then floated over the pressure-sensitive floor.
8. The villain melted the steel security bars with acid, then floated over the pressure-sensitive floor.
9. The villain drilled through the vault door silently, then floated over the pressure-sensitive floor.
10. The villain shattered the floor pressure plates with boots, then floated over the pressure-sensitive floor.
11. The villain drilled through the vault door silently, then fooled the guards with a hologram decoy.
12. The villain snatched the gemstone with a magnetic glove, then escaped out the skylight using a rocket.

Answer Key

The Great Carat Caper

Culprit: Tiffany Co

Glass Boots · Gravity Belt · Left-handed · Glitter Gold · High Pitch Whistle

Trail: Start 21 → Clue 1 14 → Clue 2 8 → Clue 3 5 → Clue 4 4 → Clue 5 1

Clue 1 (Rounding): "THE THIEF DOES NOT USE A JET PACK"

Round 112 to the nearest ten = 110 (T) · Round 2,924 to the nearest hundred = 2900 (F) · Round 1,853 to the nearest thousand = 2000 (N) · Round 171 to the nearest ten = 170 (O) · Round 912 to the nearest hundred = 900 (H) · Round 512 to the nearest hundred = 500 (C) · Round 712 to the nearest hundred = 700 (I) · Round 1,726 to the nearest hundred = 1700 (U) · Round 2,298 to the nearest hundred = 2300 (E) · Round 1,067 to the nearest hundred = 1100 (D) · Round 3,375 to the nearest thousand = 3000 (S) · Round 4,307 to the nearest hundred = 4300 (J) · Round 428 to the nearest ten = 430 (K) · Round 290 to the nearest ten = 290 (A) · Round 8,924 to the nearest thousand = 9000 (P)

Clue 2 (Word problems): "LEFT HANDED"

Detective Facet found 22 carats of diamond yesterday and 17 more today. How many carats of diamond in all? = 39 (L) · There were 93 polishing cloths. 28 were used up. How many polishing cloths are left? = 65 (A) · Detective Facet found 16 security badges yesterday and 57 more today. How many security badges in all? = 73 (E) · Detective Facet found 23 carats of diamond yesterday and 46 more today. How many carats of diamond in all? = 69 (H) · There were 79 security badges. 23 were used up. How many security badges are left? = 56 (F) · Detective Facet lined up 5 rows of 5 carats of diamond. How many carats of diamond in all? = 25 (T) · There were 88 carats of diamond. 20 were used up. How many carats of diamond are left? = 68 (N)

Clue 3 (Fractions of a number): "THE VILLAIN SHRINKS FROM LOUD WHISTLES"

$\frac{2}{3}$ of 54 = 36 (T) · $\frac{1}{3}$ of 132 = 44 (U) · $\frac{2}{6}$ of 165 = 55 (I) · $\frac{4}{8}$ of 92 = 46 (K) · $\frac{1}{5}$ of 55 = 11 (M) · $\frac{2}{5}$ of 15 = 6 (H) · $\frac{4}{6}$ of 90 = 60 (W) · $\frac{3}{4}$ of 28 = 21 (N) · $\frac{1}{3}$ of 168 = 56 (R) · $\frac{7}{8}$ of 40 = 35 (O) · $\frac{3}{6}$ of 62 = 31 (L) · $\frac{4}{8}$ of 52 = 26 (F) · $\frac{1}{4}$ of 200 = 50 (V) · $\frac{2}{4}$ of 32 = 16 (D) · $\frac{1}{10}$ of 120 = 12 (S) · $\frac{9}{10}$ of 60 = 54 (A) · $\frac{5}{10}$ of 90 = 45 (E)

Clue 4 (Two-step equations): "WE FOUND STRANDS OF GLITTER GOLD HAIR"

$4x + 5 = 49$, $x = 11$ (W) · $3x + 9 = 21$, $x = 4$ (D) · $6x + 12 = 138$, $x = 21$ (L) · $4x + 7 = 79$, $x = 18$ (G) · $9x + 11 = 38$, $x = 3$ (R) · $5x + 10 = 20$, $x = 2$ (T) · $5x + 5 = 30$, $x = 5$ (O) · $9x + 3 = 156$, $x = 17$ (I) · $5x + 6 = 56$, $x = 10$ (U) · $5x + 1 = 66$, $x = 13$ (E) · $4x + 2 = 34$, $x = 8$ (A) · $7x + 4 = 116$, $x = 16$ (N) · $3x + 3 = 63$, $x = 20$ (H) · $9x + 11 = 182$, $x = 19$ (F) · $5x + 9 = 44$, $x = 7$ (S)

Clue 5 (Fractions of a number): surviving statement is box 10 → Tiffany Co

$\frac{1}{10}$ of 80 = 8 · $\frac{2}{10}$ of 45 = 9 · $\frac{7}{8}$ of 8 = 7 · $\frac{2}{10}$ of 55 = 11 · $\frac{3}{4}$ of 16 = 12 · $\frac{1}{2}$ of 10 = 5 · $\frac{2}{10}$ of 20 = 4 · $\frac{4}{8}$ of 2 = 1 · $\frac{2}{4}$ of 12 = 6 · $\frac{4}{10}$ of 5 = 2 · $\frac{2}{6}$ of 9 = 3