



The Golden Compass Heist

Grade 5 math · Fractions of a number, Order of operations, Multiplication, Rounding · Reading level grades 5-6

Detective: _____ Date: _____

A rogue cadet has taken the Golden Compass from the Headmaster's study and hidden it somewhere in the floating academy! As a junior detective, you must track down the culprit before they escape on an airship.

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 rogue cadet is _____

Possible suspects

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

NAME	PRIMARY GEAR	SPECIALTY SKILL	SIGNATURE TELL	HAIR COLOR	WEAKNESS
Cadet Roy	Grappling Hook	Animal Charming	Right Handed	Silver Hair	SQUEAKY TOYS
Cadet Pip	Magnetic Boots	Pocket Telescope	Right Handed	Orange Hair	Shiny Coins
Cadet Dan	Grappling Hook	Codebreaking	Left Handed	Orange Hair	Shiny Coins
Cadet Ned	Magnetic Boots	Mapmaking	Left Handed	Orange Hair	Shiny Coins
Cadet Wes	Glider Cape	Lockpicking	Left Handed	Silver Hair	Lemon Juice
Cadet Amy	Magnetic Boots	Mapmaking	Right Handed	Blue Hair	Shiny Coins
Cadet Eli	Smoke Bombs	Mapmaking	Right Handed	Orange Hair	Shiny Coins
Cadet Kit	Grappling Hook	Lockpicking	Right Handed	Blue Hair	Shiny Coins
Cadet Leo	Grappling Hook	Codebreaking	Left Handed	Blue Hair	SQUEAKY TOYS
Cadet Toby	Glider Cape	Pocket Telescope	Right Handed	Blue Hair	Shiny Coins
Cadet Guy	Magnetic Boots	Animal Charming	Right Handed	Orange Hair	Shiny Coins
Cadet Rex	Smoke Bombs	Lockpicking	Left Handed	Blue Hair	Lemon Juice
Cadet Eva	Glider Cape	Mapmaking	Right Handed	Silver Hair	Lemon Juice
Cadet Ben	Magnetic Boots	Lockpicking	Left Handed	Blue Hair	Shiny Coins
Cadet Fay	Grappling Hook	Codebreaking	Right Handed	Blue Hair	SQUEAKY TOYS
Cadet Zoe	Grappling Hook	Animal Charming	Right Handed	Orange Hair	Shiny Coins
Cadet Mia	Glider Cape	Lockpicking	Right Handed	Orange Hair	SQUEAKY TOYS
Cadet Ivy	Glider Cape	Codebreaking	Left Handed	Orange Hair	Lemon Juice
Cadet Sam	Grappling Hook	Pocket Telescope	Right Handed	Blue Hair	Lemon Juice
Cadet Max	Grappling Hook	Codebreaking	Right Handed	Orange Hair	SQUEAKY TOYS
Cadet Jax	Smoke Bombs	Codebreaking	Right Handed	Orange Hair	Shiny Coins

CLUE 1 Fractions of a number

We found a torn list of the culprit's gear, but several sections are missing. If we can calculate the fraction of the supplies that remain, we can identify their gear.

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

A number line from 0 to 100 with boxes for numbers. The boxes are arranged in two rows. The first row contains boxes for 17, 23, 3, 31, 26, 39, 10, 18, 21, 17, 22, 36, 3, 28, 6, 36, and 17. The second row contains boxes for 26, 28, 3, 5, 33, 10, 5, 33, 4, 21, 6, and 11. The boxes for 17, 21, and 17 in the first row are highlighted in orange and contain the letter 'T'.

2/4 of 34 = → **T**

$$\frac{1}{5} \text{ of } 115 = \boxed{} \rightarrow \boxed{\text{H}}$$

$3/4$ of 8 = $\rightarrow$ **N**

$\frac{2}{3}$ of 33 = $\rightarrow$ **D**

$$\frac{1}{2} \text{ of } 78 = \boxed{} \rightarrow \boxed{\text{L}}$$

$$\frac{3}{6} \text{ of } 20 = \boxed{} \rightarrow \boxed{\text{P}}$$

$\frac{3}{4}$ of 44 = $\rightarrow$ **A**

3/6 of 22 = → **G**

$$1/2 \text{ of } 52 = \boxed{} \rightarrow \boxed{\text{U}}$$

$1/2$ of 6 = $\rightarrow$ **E**

3/6 of 62 = → **C**

5/10 of 10 = → **M**

$\frac{3}{4}$ of 28 = $\rightarrow$

4/10 of 10 = → **K**

$2/6$ of $84 = \square \rightarrow \boxed{\text{S}}$

4/5 of 45 = →

$3/6$ of $36 = \square \rightarrow \boxed{\mathbf{R}}$

Scratch space:

CLUE 2
Order of operations

To bypass the locked laboratory door, you must crack the multi-step keypad code. Solve this sequence of calculations in the exact correct order to step inside.

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

W																	
68	45	36	43	8	74	59	17	74	55	25	51	70	17	74	25	43	74
51	38	45	69	17	23	38	51	25	17	59	45						

$50 + 6 \times 3 = \square \rightarrow \text{W}$

$66 + 2 \times 4 = \square \rightarrow \text{N}$

$13 + 2 \times 6 = \square \rightarrow \text{S}$

$8 \times 6 - 5 = \square \rightarrow \text{O}$

$10 \times 7 - 19 = \square \rightarrow \text{T}$

$10 \times 3 - 7 = \square \rightarrow \text{G}$

$43 + 9 \times 3 = \square \rightarrow \text{A}$

$10 \times 8 - 11 = \square \rightarrow \text{R}$

$3 \times 10 - 22 = \square \rightarrow \text{U}$

$6 \times 10 - 24 = \square \rightarrow \text{F}$

$27 + 9 \times 2 = \square \rightarrow \text{E}$

$17 + 7 \times 3 = \square \rightarrow \text{H}$

$8 \times 8 - 5 = \square \rightarrow \text{D}$

$10 \times 8 - 25 = \square \rightarrow \text{K}$

$7 + 2 \times 5 = \square \rightarrow \text{I}$

Scratch space:

Multiplication facts (1-12)

A witness saw the suspect carrying several identical crates of gear away from the docks. Multiply the number of rows by the boxes in each row to find the total cargo weight.

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

60 50 99 6 100 54 132 132 2 132 100 2 6 25 25 60 14 20

70 14 28 25 50 54 12 6 84 14 54 12 25

$$6 \times 10 = \boxed{} \rightarrow \boxed{\text{T}}$$

$$10 \times 10 = \boxed{} \rightarrow \boxed{\mathbf{W}}$$

$10 \times 7 = \boxed{} \rightarrow \boxed{\text{F}}$

$10 \times 5 = \boxed{} \rightarrow \mathbf{H}$

$$9 \times 11 = \boxed{} \rightarrow \boxed{\mathbf{E}}$$

$2 \times 1 = \square \rightarrow \mathbf{A}$

$9 \times 6 = \boxed{} \rightarrow \boxed{} \mid$

$11 \times 12 = \boxed{} \rightarrow \boxed{\text{L}}$

$1 \times 6 = \boxed{} \rightarrow \boxed{\mathbf{Y}}$

$$7 \times 2 = \boxed{} \rightarrow \boxed{0}$$

$7 \times 4 = \boxed{} \rightarrow \boxed{\text{R}}$

$5 \times 5 = \square \rightarrow \mathbf{S}$

$7 \times 12 = \boxed{} \rightarrow \boxed{\text{C}}$

$$2 \times 6 = \boxed{} \rightarrow \boxed{\text{N}}$$

$4 \times 5 = \square \rightarrow \mathbf{P}$

Scratch space:

CLUE 4 Rounding

The steam pressure gauge on the escape airship is blurry, and the dial only points to the nearest tens place. Round the measurement to find the exact pressure.

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

A									A					A		
7000	1100	900	50	700	1300	430	170	1700	7000	50	700	430	3000	7000	900	1700

	A											
500	7000	1100	1300	430	200	130	4300	430	3000	900	50	90

Round 7,024 to the nearest thousand → **A**

Round 1,131 to the nearest hundred → **S**

Round 503 to the nearest hundred → **W**

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

Round 4,283 to the nearest hundred → **B**

Round 1,263 to the nearest hundred → **L**

Round 166 to the nearest ten → **O**

Round 2,592 to the nearest thousand → **H**

Round 725 to the nearest hundred → **G**

Round 49 to the nearest ten → **N**

Round 89 to the nearest ten → **D**

Round 433 to the nearest ten → **E**

Round 133 to the nearest ten → **T**

Round 164 to the nearest hundred → **F**

Round 1,688 to the nearest hundred → **R**

Scratch space:

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

The security robot needs a specific fraction of its battery level recharged to scan for the suspect's final clue. Calculate the exact remaining energy portion.

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:

$2/10 \text{ of } 35 = \boxed{}$

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

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

$3/6 \text{ of } 8 = \boxed{}$

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

$4/6 \text{ of } 3 = \boxed{}$

$3/10 \text{ of } 10 = \boxed{}$

$1/4 \text{ of } 36 = \boxed{}$

$1/8 \text{ of } 40 = \boxed{}$

$1/4 \text{ of } 32 = \boxed{}$

$1/2 \text{ of } 20 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain vanishes inside smoke bombs, then cracks the safe using codebreaking.
2. The villain swings on a grappling hook, then scouts the horizon with a pocket telescope.
3. The villain blasts off with a steam jetpack, then plots an escape route with mapmaking.
4. The villain vanishes inside smoke bombs, then plots an escape route with mapmaking.
5. The villain swings on a grappling hook, then plots an escape route with mapmaking.
6. The villain climbs the hull with magnetic boots, then scouts the horizon with a pocket telescope.
7. The villain climbs the hull with magnetic boots, then distracts the guard owl with animal charming.
8. The villain vanishes inside smoke bombs, then scouts the horizon with a pocket telescope.
9. The villain vanishes inside smoke bombs, then distracts the guard owl with animal charming.
10. The villain soars down with a glider cape, then bypasses the vault by lockpicking.
11. The villain vanishes inside smoke bombs, then bypasses the vault by lockpicking.
12. The villain swings on a grappling hook, then distracts the guard owl with animal charming.

Answer Key

The Golden Compass Heist

Culprit: Cadet Pip

Magnetic Boots · Pocket Telescope · Right Handed · Orange Hair · Shiny Coins

Trail: Start 21 → Clue 1 17 → Clue 2 11 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Fractions of a number): "THE CULPRIT DOES NOT USE MAPMAKING"

$\frac{2}{4}$ of 34 = 17 (T) · $\frac{1}{5}$ of 115 = 23 (H) · $\frac{3}{4}$ of 8 = 6 (N) · $\frac{2}{3}$ of 33 = 22 (D) · $\frac{1}{2}$ of 78 = 39 (L) · $\frac{3}{6}$ of 20 = 10 (P) · $\frac{3}{4}$ of 44 = 33 (A) · $\frac{3}{6}$ of 22 = 11 (G) · $\frac{1}{2}$ of 52 = 26 (U) · $\frac{1}{2}$ of 6 = 3 (E) · $\frac{3}{6}$ of 62 = 31 (C) · $\frac{5}{10}$ of 10 = 5 (M) · $\frac{3}{4}$ of 28 = 21 (I) · $\frac{4}{10}$ of 10 = 4 (K) · $\frac{2}{6}$ of 84 = 28 (S) · $\frac{4}{5}$ of 45 = 36 (O) · $\frac{3}{6}$ of 36 = 18 (R)

Clue 2 (Order of operations): "WE FOUND INK STAINS ON THE RIGHT SIDE"

$50 + 6 \times 3 = 68$ (W) · $66 + 2 \times 4 = 74$ (N) · $13 + 2 \times 6 = 25$ (S) · $8 \times 6 - 5 = 43$ (O) · $10 \times 7 - 19 = 51$ (T) · $10 \times 3 - 7 = 23$ (G) · $43 + 9 \times 3 = 70$ (A) · $10 \times 8 - 11 = 69$ (R) · $3 \times 10 - 22 = 8$ (U) · $6 \times 10 - 24 = 36$ (F) · $27 + 9 \times 2 = 45$ (E) · $17 + 7 \times 3 = 38$ (H) · $8 \times 8 - 5 = 59$ (D) · $10 \times 8 - 25 = 55$ (K) · $7 + 2 \times 5 = 17$ (I)

Clue 3 (Multiplication facts (1-12)): "THEY WILL ALWAYS STOP FOR SHINY COINS"

$6 \times 10 = 60$ (T) · $10 \times 10 = 100$ (W) · $10 \times 7 = 70$ (F) · $10 \times 5 = 50$ (H) · $9 \times 11 = 99$ (E) · $2 \times 1 = 2$ (A) · $9 \times 6 = 54$ (I) · $11 \times 12 = 132$ (L) · $1 \times 6 = 6$ (Y) · $7 \times 2 = 14$ (O) · $7 \times 4 = 28$ (R) · $5 \times 5 = 25$ (S) · $7 \times 12 = 84$ (C) · $2 \times 6 = 12$ (N) · $4 \times 5 = 20$ (P)

Clue 4 (Rounding): "A SINGLE ORANGE HAIR WAS LEFT BEHIND"

Round 7,024 to the nearest thousand = 7000 (A) · Round 1,131 to the nearest hundred = 1100 (S) · Round 503 to the nearest hundred = 500 (W) · Round 912 to the nearest hundred = 900 (I) · Round 4,283 to the nearest hundred = 4300 (B) · Round 1,263 to the nearest hundred = 1300 (L) · Round 166 to the nearest ten = 170 (O) · Round 2,592 to the nearest thousand = 3000 (H) · Round 725 to the nearest hundred = 700 (G) · Round 49 to the nearest ten = 50 (N) · Round 89 to the nearest ten = 90 (D) · Round 433 to the nearest ten = 430 (E) · Round 133 to the nearest ten = 130 (T) · Round 164 to the nearest hundred = 200 (F) · Round 1,688 to the nearest hundred = 1700 (R)

Clue 5 (Fractions of a number): surviving statement is box 6 → Cadet Pip

$\frac{2}{10}$ of 35 = 7 · $\frac{3}{4}$ of 16 = 12 · $\frac{1}{2}$ of 2 = 1 · $\frac{3}{6}$ of 8 = 4 · $\frac{1}{5}$ of 55 = 11 · $\frac{4}{6}$ of 3 = 2 · $\frac{3}{10}$ of 10 = 3 · $\frac{1}{4}$ of 36 = 9 · $\frac{1}{8}$ of 40 = 5 · $\frac{1}{4}$ of 32 = 8 · $\frac{1}{2}$ of 20 = 10