The Case of the Golden Compass

Grade 4 math · Multiplication, Rounding, Fractions of a number, Multi-step word problems, Division · Reading level grades 5-6

Detective: _____ **Date:** _____

The legendary Golden Compass has been stolen from the Grand Cartographer's skyship! A mysterious Sky-Thief slipped past the wind-guards, leaving the entire fleet lost in the clouds. You must use your deduction skills to find the thief among the crew and recover the compass before a storm rolls in!

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 Sky-Thief is _____

Possible suspects

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

NAME	PILOT GEAR	SKYSHIP GADGET	STEERING HABIT	GOGGLE STRAP COLOR	FAVORITE SNACK
Yara Yaw	Wind Glider	Air-Horn Blaster	Left-Handed Steer	Lime Green Strap	Sour Apple Drops
Valerie Vapor	Wind Glider	Grapple Lasso	Left-Handed Steer	Neon Blue Strap	Sour Apple Drops
Wyatt Wind	Grappling Hook	Turbo Propeller	Left-Handed Steer	Bright Orange Strap	Sour Apple Drops
Kira Kite	Pocket Altimeter	Signal Flare	Left-Handed Steer	Neon Blue Strap	Cinnamon Air-Biscuits
Milo Mist	Pocket Altimeter	Air-Horn Blaster	Right-Handed Steer	Bright Orange Strap	Salted Sky-Taffy
Roxy Rotor	Brass Spyglass	Air-Horn Blaster	Right-Handed Steer	Bright Orange Strap	Sour Apple Drops
Jasper Jet	Pocket Altimeter	Smokebomb Launcher	Right-Handed Steer	Lime Green Strap	Cinnamon Air-Biscuits
Elena Eagle	Brass Spyglass	Signal Flare	Right-Handed Steer	Neon Blue Strap	Salted Sky-Taffy
Oscar Ozone	Grappling Hook	Smokebomb Launcher	Left-Handed Steer	Lime Green Strap	Sour Apple Drops
Tessa Tempest	Cloud Compass	Smokebomb Launcher	Left-Handed Steer	Bright Orange Strap	Sour Apple Drops
Leo Loft	Grappling Hook	Air-Horn Blaster	Right-Handed Steer	Lime Green Strap	Salted Sky-Taffy
Penny Pilot	Brass Spyglass	Smokebomb Launcher	Left-Handed Steer	Lime Green Strap	Salted Sky-Taffy
Hawk Hawkins	Cloud Compass	Air-Horn Blaster	Right-Handed Steer	Lime Green Strap	Salted Sky-Taffy
Sammy Soar	Wind Glider	Grapple Lasso	Right-Handed Steer	Lime Green Strap	Sour Apple Drops
Captain Amelia	Pocket Altimeter	Smokebomb Launcher	Right-Handed Steer	Lime Green Strap	Sour Apple Drops
Ivy Iris	Brass Spyglass	Grapple Lasso	Left-Handed Steer	Lime Green Strap	Salted Sky-Taffy
Baron Barnaby	Grappling Hook	Smokebomb Launcher	Right-Handed Steer	Lime Green Strap	Sour Apple Drops
Gemma Gale	Cloud Compass	Air-Horn Blaster	Right-Handed Steer	Lime Green Strap	Sour Apple Drops
Nova Nimbus	Cloud Compass	Smokebomb Launcher	Right-Handed Steer	Lime Green Strap	Sour Apple Drops
Felix Falcon	Wind Glider	Grapple Lasso	Left-Handed Steer	Neon Blue Strap	Cinnamon Air-Biscuits
Dexter Dash	Wind Glider	Air-Horn Blaster	Left-Handed Steer	Bright Orange Strap	Cinnamon Air-Biscuits

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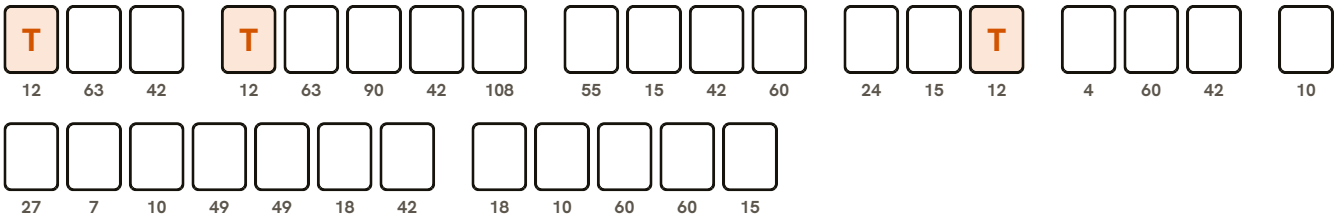
CLUE 1 Multiplication facts (1-12)

> To unlock the navigator's logbook, you must count the total number of brass gears. They are organized in equal rows across the workbench.

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



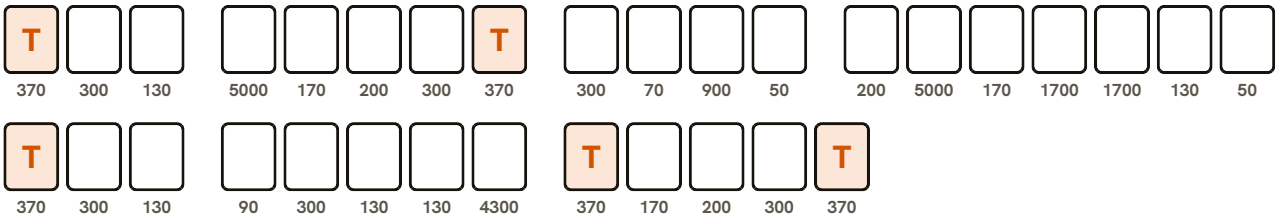
12 × 1 = ☐ → T	2 × 12 = ☐ → N	5 × 3 = ☐ → O		
7 × 6 = ☐ → E	6 × 3 = ☐ → L	5 × 12 = ☐ → S		
12 × 9 = ☐ → F	9 × 7 = ☐ → H	9 × 3 = ☐ → G	7 × 7 = ☐ → P	
11 × 5 = ☐ → D	1 × 7 = ☐ → R	4 × 1 = ☐ → U		
10 × 1 = ☐ → A	10 × 9 = ☐ → I			

Scratch space:

CLUE 2 Rounding

> The altitude gauge is slightly damaged and flickering. Round the dial's current reading to the nearest ten to find the steady frequency.

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



Round 372 to the nearest ten ☐ → **T**

Round 71 to the nearest ten ☐ → **A**

Round 127 to the nearest ten ☐ → **E**

Round 946 to the nearest hundred ☐ → **N**

Round 159 to the nearest hundred ☐ → **G**

Round 52 to the nearest ten ☐ → **D**

Round 4,608 to the nearest thousand ☐ → **R**

Round 1,705 to the nearest hundred ☐ → **P**

Round 4,314 to the nearest hundred ☐ → **L**

Round 91 to the nearest ten ☐ → **W**

Round 169 to the nearest ten ☐ → **I**

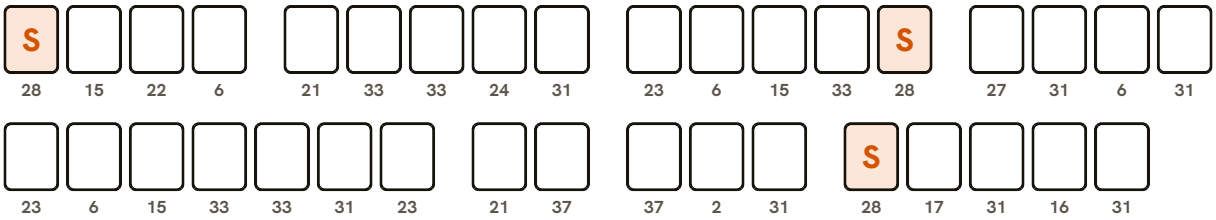
Round 348 to the nearest hundred ☐ → **H**

Scratch space:

CLUE 3 Fractions of a number

> We found a crate of shiny sky-maps in the cargo bay. Determine exactly how many maps are usable by calculating a fraction of the total pile.

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



4/5 of 35 = ☐ → **S**

2/6 of 99 = ☐ → **P**

2/4 of 46 = ☐ → **D**

3/4 of 36 = ☐ → **W**

2/3 of 3 = ☐ → **H**

3/6 of 48 = ☐ → **L**

1/2 of 30 = ☐ → **O**

5/10 of 32 = ☐ → **N**

2/8 of 148 = ☐ → **T**

4/8 of 34 = ☐ → **C**

4/8 of 12 = ☐ → **R**

1/8 of 168 = ☐ → **A**

3/6 of 44 = ☐ → **U**

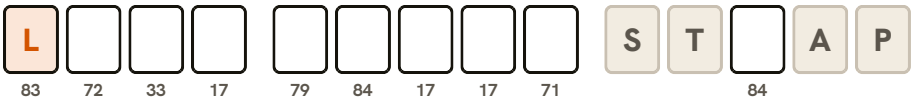
2/10 of 155 = ☐ → **E**

Scratch space:

CLUE 4 Multi-step word problems

> The crew needs to balance the fuel canisters. Calculate the final weight after loading several bundles and then throwing out the empty canisters.

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

A strand of 

hair turned up at the scene.

Navigator collected 10 cloud crystals in the morning and 322 cloud crystals in the afternoon, then split them equally among 4 Skyship Crew. How many cloud crystals did each get?

Answer: ☐ → **L**

Navigator filled 2 boxes with 4 propeller blades each, then found 9 more propeller blades. How many propeller blades are there in all?

Answer: ☐ → **E**

Navigator filled 6 boxes with 6 sky-maps each, then found 36 more sky-maps. How many sky-maps are there in all?

Answer: ☐ → **I**

Navigator collected 127 spyglass lenses in the morning and 38 spyglass lenses in the afternoon, then split them equally among 5 Skyship Crew. How many spyglass lenses did each get?

Answer: ☐ → **M**

Navigator filled 6 boxes with 4 cloud crystals each, then found 47 more cloud crystals. How many cloud crystals are there in all?

Answer: ☐ → **N**

There were 709 cloud crystals in all. 37 cloud crystals were set aside. The rest were shared equally among 8 Skyship Crew. How many cloud crystals did each get?

Answer: ☐ → **R**

Navigator collected 99 cloud crystals in the morning and 138 cloud crystals in the afternoon, then split them equally among 3 Skyship Crew. How many cloud crystals did each get?

Answer: ☐ → **G**

Scratch space:

CLUE 5 Division facts (1-12) - the last clue

> The cloud crystals must be divided equally among the scouts to power their gliders. Work out how many crystals each scout receives.

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:

44 ÷ 4 = ☐	45 ÷ 5 = ☐	2 ÷ 1 = ☐	66 ÷ 11 = ☐	45 ÷ 9 = ☐
144 ÷ 12 = ☐	7 ÷ 1 = ☐	2 ÷ 2 = ☐	40 ÷ 4 = ☐	15 ÷ 5 = ☐
36 ÷ 9 = ☐				

Step 2 - cross out the sentence with each answer:

1. The villain consulted a glowing cloud compass, then zipped away using a turbo propeller.
2. The villain swung down on a grappling hook, then vanished with a smokebomb launcher.
3. The villain peered through a brass spyglass, then fired a bright signal flare.
4. The villain swung down on a grappling hook, then distracted the guards with an air horn blaster.
5. The villain consulted a glowing cloud compass, then fired a bright signal flare.
6. The villain soared through the clouds on a wind glider, then distracted the guards with an air horn blaster.
7. The villain checked a pocket altimeter, then fired a bright signal flare.
8. The villain checked a pocket altimeter, then vanished with a smokebomb launcher.
9. The villain consulted a glowing cloud compass, then vanished with a smokebomb launcher.
10. The villain peered through a brass spyglass, then zipped away using a turbo propeller.
11. The villain consulted a glowing cloud compass, then distracted the guards with an air horn blaster.
12. The villain peered through a brass spyglass, then vanished with a smokebomb launcher.

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TEACHER / PARENT

Answer Key

The Case of the Golden Compass

Culprit: Captain Amelia

Pocket Altimeter · Smokebomb Launcher · Right-Handed Steer · Lime Green Strap · Sour Apple Drops

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

Clue 1 (Multiplication facts (1-12)): "THE THIEF DOES NOT USE A GRAPPLE LASSO"

12 × 1 = 12 (T) · 2 × 12 = 24 (N) · 5 × 3 = 15 (O) · 7 × 6 = 42 (E) · 6 × 3 = 18 (L) · 5 × 12 = 60 (S) · 12 × 9 = 108 (F) · 9 × 7 = 63 (H) · 9 × 3 = 27 (G) · 7 × 7 = 49 (P) · 11 × 5 = 55 (D) · 1 × 7 = 7 (R) · 4 × 1 = 4 (U) · 10 × 1 = 10 (A) · 10 × 9 = 90 (I)

Clue 2 (Rounding): "THE RIGHT HAND GRIPPED THE WHEEL TIGHT"

Round 372 to the nearest ten = 370 (T) · Round 71 to the nearest ten = 70 (A) · Round 127 to the nearest ten = 130 (E) · Round 946 to the nearest hundred = 900 (N) · Round 159 to the nearest hundred = 200 (G) · Round 52 to the nearest ten = 50 (D) · Round 4,608 to the nearest thousand = 5000 (R) · Round 1,705 to the nearest hundred = 1700 (P) · Round 4,314 to the nearest hundred = 4300 (L) · Round 91 to the nearest ten = 90 (W) · Round 169 to the nearest ten = 170 (I) · Round 348 to the nearest hundred = 300 (H)

Clue 3 (Fractions of a number): "SOUR APPLE DROPS WERE DROPPED AT THE SCENE"

4/5 of 35 = 28 (S) · 2/6 of 99 = 33 (P) · 2/4 of 46 = 23 (D) · 3/4 of 36 = 27 (W) · 2/3 of 3 = 2 (H) · 3/6 of 48 = 24 (L) · 1/2 of 30 = 15 (O) · 5/10 of 32 = 16 (N) · 2/8 of 148 = 37 (T) · 4/8 of 34 = 17 (C) · 4/8 of 12 = 6 (R) · 1/8 of 168 = 21 (A) · 3/6 of 44 = 22 (U) · 2/10 of 155 = 31 (E)

Clue 4 (Multi-step word problems): "LIME GREEN STRAP"

Navigator collected 10 cloud crystals in the morning and 322 cloud crystals in the afternoon, then split them equally among 4 Skyship Crew. How many cloud crystals did each get? = 83 (L) · Navigator filled 2 boxes with 4 propeller blades each, then found 9 more propeller blades. How many propeller blades are there in all? = 17 (E) · Navigator filled 6 boxes with 6 sky-maps each, then found 36 more sky-maps. How many sky-maps are there in all? = 72 (I) · Navigator collected 127 spyglass lenses in the morning and 38 spyglass lenses in the afternoon, then split them equally among 5 Skyship Crew. How many spyglass lenses did each get? = 33 (M) · Navigator filled 6 boxes with 4 cloud crystals each, then found 47 more cloud crystals. How many cloud crystals are there in all? = 71 (N) · There were 709 cloud crystals in all. 37 cloud crystals were set aside. The rest were shared equally among 8 Skyship Crew. How many cloud crystals did each get? = 84 (R) · Navigator collected 99 cloud crystals in the morning and 138 cloud crystals in the afternoon, then split them equally among 3 Skyship Crew. How many cloud crystals did each get? = 79 (G)

Clue 5 (Division facts (1-12)): surviving statement is box 8 → Captain Amelia

44 ÷ 4 = 11 · 45 ÷ 5 = 9 · 2 ÷ 1 = 2 · 66 ÷ 11 = 6 · 45 ÷ 9 = 5 · 144 ÷ 12 = 12 · 7 ÷ 1 = 7 · 2 ÷ 2 = 1 · 40 ÷ 4 = 10 · 15 ÷ 5 = 3 · 36 ÷ 9 = 4