The Mystery of the Golden Orchid

Grade 5 math · Addition, Subtraction, Multiplication, Fractions of a number, Division · Reading level grades 3-4

Detective: _____ **Date:** _____

A rare Golden Orchid has been snatched from the Great Greenhouse! A rogue plant-master is behind the heist. We must find them.

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 Leaf Thief is _____

Possible suspects

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

NAME	SPROUT ABILITY	GARDENING TOOL	WATERING HAND	BUD COLOR	ALLERGY
Charles Darwin	vine whip	bronze rake	left handed watered	green ivy hair	dry air
Rowan Wood	vine whip	bronze rake	right handed watered	yellow fern hair	dry air
John Muir	root trap	silver shears	left handed watered	yellow fern hair	heavy shade
Jeanne Baret	pollen puff	silver shears	left handed watered	yellow fern hair	dry air
Jane Colden	berry blast	gold trowel	left handed watered	yellow fern hair	heavy shade
Fern Frond	berry blast	gold trowel	right handed watered	yellow fern hair	salty soil
Alexander von Humboldt	pollen puff	copper shovel	left handed watered	yellow fern hair	dry air
Professor Moss	vine whip	brass pitcher	left handed watered	green ivy hair	salty soil
Clover Fields	vine whip	silver shears	right handed watered	green ivy hair	heavy shade
Gregor Mendel	leaf shield	silver shears	left handed watered	red rose hair	salty soil
Luther Burbank	berry blast	bronze rake	left handed watered	yellow fern hair	salty soil
Dr Sprout	root trap	bronze rake	right handed watered	yellow fern hair	dry air
Carl Linnaeus	root trap	bronze rake	left handed watered	yellow fern hair	heavy shade
Basil Herb	root trap	copper shovel	right handed watered	green ivy hair	heavy shade
David Douglas	vine whip	silver shears	right handed watered	yellow fern hair	dry air
Oakley Bark	root trap	gold trowel	left handed watered	red rose hair	salty soil
Willow Reed	root trap	silver shears	right handed watered	yellow fern hair	dry air
Mary Agnes Chase	root trap	copper shovel	right handed watered	yellow fern hair	dry air
Rachel Carson	vine whip	brass pitcher	right handed watered	yellow fern hair	salty soil
Daisy Petal	berry blast	brass pitcher	right handed watered	green ivy hair	dry air
Ivy Green	leaf shield	silver shears	right handed watered	yellow fern hair	heavy shade

CLUE 1 Addition

> Botanist Ben gathered all the dropped seed bags in the garden. By adding the bags from the path and the shed, we found a clue.

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

1386 + 764 = ☐ → T	5453 + 3941 = ☐ → P	3707 + 5416 = ☐ → U
4908 + 4840 = ☐ → O	2124 + 2372 = ☐ → V	4746 + 4028 = ☐ → N
1741 + 1963 = ☐ → D	2678 + 2717 = ☐ → F	2565 + 2967 = ☐ → H
2628 + 2237 = ☐ → E	5268 + 4383 = ☐ → C	1389 + 2976 = ☐ → I
4226 + 1984 = ☐ → S	3423 + 5481 = ☐ → R	2854 + 5422 = ☐ → L

Scratch space:

CLUE 2 Subtraction

> We checked the greenhouse inventory. We subtracted the stolen flower pots from the total to see how many were left.

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

6411 - 3984 = ☐ → **T**

8160 - 4343 = ☐ → **G**

8803 - 2653 = ☐ → **I**

3512 - 938 = ☐ → **N**

3515 - 1683 = ☐ → **F**

5277 - 3317 = ☐ → **E**

7211 - 4067 = ☐ → **D**

12845 - 4956 = ☐ → **A**

8159 - 3080 = ☐ → **H**

9969 - 4693 = ☐ → **R**

8762 - 1611 = ☐ → **C**

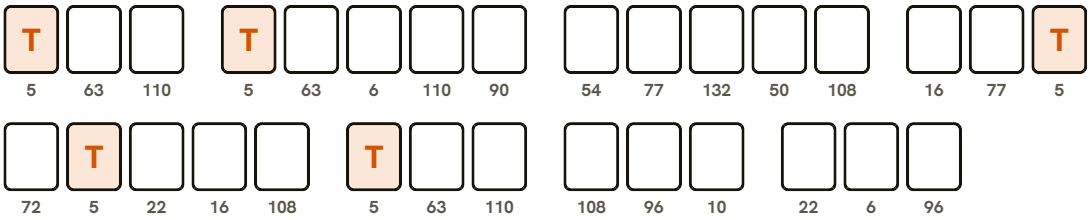
1289 - 62 = ☐ → **L**

Scratch space:

CLUE 3 Multiplication facts (1-12)

> The team counted the rows of rare tulips. By multiplying the rows by the number of flowers in each, we cracked a lock code.

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



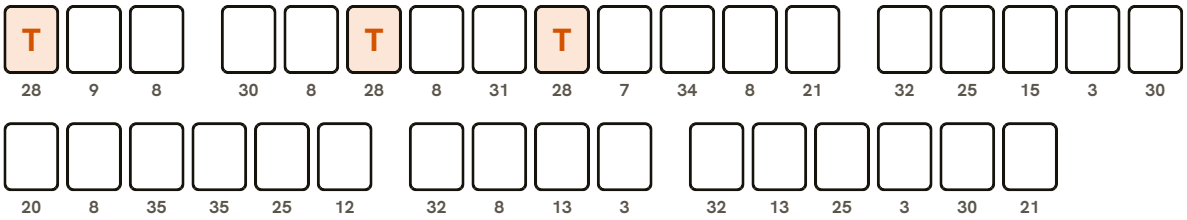
1 × 5 = ☐ → T	5 × 2 = ☐ → Y	5 × 10 = ☐ → L
2 × 11 = ☐ → A	9 × 12 = ☐ → D	9 × 10 = ☐ → F
6 × 1 = ☐ → I	11 × 12 = ☐ → U	7 × 11 = ☐ → O
4 × 4 = ☐ → N	6 × 9 = ☐ → C	6 × 12 = ☐ → S
11 × 10 = ☐ → E	12 × 8 = ☐ → R	7 × 9 = ☐ → H

Scratch space:

CLUE 4 Fractions of a number

> We found a map of the greenhouse. Only a small fraction of the total rooms had wet footprints, helping us narrow our search.

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



5/10 of 56 = ☐ → T

1/3 of 102 = ☐ → V

1/5 of 45 = ☐ → H

3/6 of 60 = ☐ → D

5/8 of 40 = ☐ → O

8/10 of 40 = ☐ → F

2/8 of 12 = ☐ → N

2/3 of 12 = ☐ → E

1/3 of 105 = ☐ → L

1/4 of 84 = ☐ → S

1/10 of 200 = ☐ → Y

1/2 of 62 = ☐ → C

3/4 of 20 = ☐ → U

4/8 of 24 = ☐ → W

2/10 of 35 = ☐ → I

2/4 of 26 = ☐ → R

Scratch space:

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

> We divided the heavy bags of soil equally among the garden carts. This shared weight gave us the final number to open the vault.

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:

40 ÷ 4 = ☐	44 ÷ 4 = ☐	90 ÷ 10 = ☐	8 ÷ 4 = ☐	49 ÷ 7 = ☐
24 ÷ 4 = ☐	40 ÷ 5 = ☐	15 ÷ 3 = ☐	32 ÷ 8 = ☐	15 ÷ 5 = ☐
24 ÷ 2 = ☐				

Step 2 - cross out the sentence with each answer:

1. The villain sprouted thick roots through the floor, then cleared a path through the brush with a bronze rake.
2. The villain sprouted thick roots through the floor, then scooped up the golden orchid with a copper shovel.
3. The villain fired a barrage of sticky red berries, then cleared a path through the brush with a bronze rake.
4. The villain shot a thick cloud of sleeping pollen, then dug up the prized soil with a gold trowel.
5. The villain sprouted thick roots through the floor, then dug up the prized soil with a gold trowel.
6. The villain blocked the guard with a giant leaf, then scooped up the golden orchid with a copper shovel.
7. The villain fired a barrage of sticky red berries, then dug up the prized soil with a gold trowel.
8. The villain blocked the guard with a giant leaf, then dug up the prized soil with a gold trowel.
9. The villain tangled the security cameras in vines, then clipped the greenhouse locks with silver shears.
10. The villain tangled the security cameras in vines, then cleared a path through the brush with a bronze rake.
11. The villain sprouted thick roots through the floor, then clipped the greenhouse locks with silver shears.
12. The villain shot a thick cloud of sleeping pollen, then scooped up the golden orchid with a copper shovel.

TEACHER / PARENT

Answer Key

The Mystery of the Golden Orchid

Culprit: Dr Sprout

root trap · bronze rake · right handed watered · yellow fern hair · dry air

Trail: Start 21 → Clue 1 18 → Clue 2 9 → Clue 3 5 → Clue 4 4 → Clue 5 1

Clue 1 (Addition): "THE THIEF DOES NOT USE THE COPPER SHOVEL"

1386 + 764 = 2150 (T) · 5453 + 3941 = 9394 (P) · 3707 + 5416 = 9123 (U) · 4908 + 4840 = 9748 (O) · 2124 + 2372 = 4496 (V) · 4746 + 4028 = 8774 (N) · 1741 + 1963 = 3704 (D) · 2678 + 2717 = 5395 (F) · 2565 + 2967 = 5532 (H) · 2628 + 2237 = 4865 (E) · 5268 + 4383 = 9651 (C) · 1389 + 2976 = 4365 (I) · 4226 + 1984 = 6210 (S) · 3423 + 5481 = 8904 (R) · 2854 + 5422 = 8276 (L)

Clue 2 (Subtraction): "THE THIEF HELD THE CAN IN THEIR RIGHT HAND"

6411 - 3984 = 2427 (T) · 8160 - 4343 = 3817 (G) · 8803 - 2653 = 6150 (I) · 3512 - 938 = 2574 (N) · 3515 - 1683 = 1832 (F) · 5277 - 3317 = 1960 (E) · 7211 - 4067 = 3144 (D) · 12845 - 4956 = 7889 (A) · 8159 - 3080 = 5079 (H) · 9969 - 4693 = 5276 (R) · 8762 - 1611 = 7151 (C) · 1289 - 62 = 1227 (L)

Clue 3 (Multiplication facts (1-12)): "THE THIEF COULD NOT STAND THE DRY AIR"

1 × 5 = 5 (T) · 5 × 2 = 10 (Y) · 5 × 10 = 50 (L) · 2 × 11 = 22 (A) · 9 × 12 = 108 (D) · 9 × 10 = 90 (F) · 6 × 1 = 6 (I) · 11 × 12 = 132 (U) · 7 × 11 = 77 (O) · 4 × 4 = 16 (N) · 6 × 9 = 54 (C) · 6 × 12 = 72 (S) · 11 × 10 = 110 (E) · 12 × 8 = 96 (R) · 7 × 9 = 63 (H)

Clue 4 (Fractions of a number): "THE DETECTIVES FOUND YELLOW FERN FRONDS"

5/10 of 56 = 28 (T) · 1/3 of 102 = 34 (V) · 1/5 of 45 = 9 (H) · 3/6 of 60 = 30 (D) · 5/8 of 40 = 25 (O) · 8/10 of 40 = 32 (F) · 2/8 of 12 = 3 (N) · 2/3 of 12 = 8 (E) · 1/3 of 105 = 35 (L) · 1/4 of 84 = 21 (S) · 1/10 of 200 = 20 (Y) · 1/2 of 62 = 31 (C) · 3/4 of 20 = 15 (U) · 4/8 of 24 = 12 (W) · 2/10 of 35 = 7 (I) · 2/4 of 26 = 13 (R)

Clue 5 (Division facts (1-12)): surviving statement is box 1 → Dr Sprout

40 ÷ 4 = 10 · 44 ÷ 4 = 11 · 90 ÷ 10 = 9 · 8 ÷ 4 = 2 · 49 ÷ 7 = 7 · 24 ÷ 4 = 6 · 40 ÷ 5 = 8 · 15 ÷ 3 = 5 · 32 ÷ 8 = 4 · 15 ÷ 5 = 3 · 24 ÷ 2 = 12