



The Moonbase Mystery

Grade 6 math · Percentages, Exponents, Order of operations, Multiplication, Division · Reading level grades 3-4

Detective: _____ Date: _____

Oh no! A mysterious figure has sneaked into the science lab and swiped the glowing cosmic crystals. The alarm is sounding and the space dome is locked down! We need to scan the logs, solve the clues, and find the culprit.

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	JETPACK POWER	GLOVE LASER	ACTIVE WRISTBAND	HELMET STRIPE	WEAKNESS
Grace Hopper	Gravity Lock	Sonic Boom	Left Wristband	Red Stripe	Moon Dust
Peggy Whitson	Laser Blast	Ice Beam	Left Wristband	Red Stripe	Moon Dust
Dorothy Vaughan	Invisibility	Sonic Boom	Left Wristband	Blue Stripe	Magnet Waves
Halley Comet	Force Field	Magnetic Pull	Right Wristband	Red Stripe	Moon Dust
Galileo Galilei	Laser Blast	Ice Beam	Left Wristband	Blue Stripe	Solar Flares
Carl Sagan	Gravity Lock	Fire Trail	Right Wristband	Red Stripe	Moon Dust
Valerie Thomas	Laser Blast	Sonic Boom	Right Wristband	Blue Stripe	Moon Dust
Kepler Planet	Gravity Lock	Ice Beam	Left Wristband	Gold Stripe	Moon Dust
Katherine Johnson	Gravity Lock	Fire Trail	Left Wristband	Red Stripe	Moon Dust
Marie Curie	Gravity Lock	Ice Beam	Left Wristband	Red Stripe	Moon Dust
Buzz Aldrin	Laser Blast	Ice Beam	Left Wristband	Gold Stripe	Magnet Waves
Sally Ride	Gravity Lock	Ice Beam	Right Wristband	Gold Stripe	Solar Flares
Mae Jemison	Force Field	Acid Splash	Right Wristband	Red Stripe	Moon Dust
Mary Jackson	Force Field	Fire Trail	Right Wristband	Red Stripe	Solar Flares
Cassini Probe	Rocket Jump	Sonic Boom	Left Wristband	Blue Stripe	Moon Dust
Albert Einstein	Invisibility	Fire Trail	Left Wristband	Red Stripe	Moon Dust
Chris Hadfield	Force Field	Magnetic Pull	Left Wristband	Blue Stripe	Magnet Waves
Stephen Hawking	Rocket Jump	Magnetic Pull	Right Wristband	Gold Stripe	Moon Dust
Neil Armstrong	Gravity Lock	Acid Splash	Left Wristband	Blue Stripe	Magnet Waves
John Glenn	Invisibility	Ice Beam	Left Wristband	Gold Stripe	Moon Dust
Hubble Scope	Rocket Jump	Acid Splash	Left Wristband	Red Stripe	Magnet Waves

CLUE 1 Percentages

The main dome scanner needs seventy percent power to run a crystal scan. Help the cadet calculate the power grid level.

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

T			T											T			
19	38	14	19	38	18	14	13	20	36	14	33	23	36	19	26	33	14
T																	
19	38	14	33	36	23	18	43	5	36	36	29						

$50\% \text{ of } 38 = \square \rightarrow \text{ T }$

$20\% \text{ of } 145 = \square \rightarrow \text{ M }$

$20\% \text{ of } 70 = \square \rightarrow \text{ E }$

$50\% \text{ of } 46 = \square \rightarrow \text{ N }$

$40\% \text{ of } 90 = \square \rightarrow \text{ O }$

$50\% \text{ of } 10 = \square \rightarrow \text{ B }$

$25\% \text{ of } 80 = \square \rightarrow \text{ D }$

$40\% \text{ of } 65 = \square \rightarrow \text{ U }$

$20\% \text{ of } 215 = \square \rightarrow \text{ C }$

$75\% \text{ of } 44 = \square \rightarrow \text{ S }$

$40\% \text{ of } 45 = \square \rightarrow \text{ I }$

$20\% \text{ of } 190 = \square \rightarrow \text{ H }$

$25\% \text{ of } 52 = \square \rightarrow \text{ F }$

Scratch space:

CLUE 2

A space computer virus is doubling every minute on the screen. We need to find the total number of infected files.

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

Diagram showing two rows of boxes representing a sequence of numbers. The top row has 18 boxes with values: 225, 100, 125, 81, 216, 81, 27, 125, 169, 225, 100, 32, 81, 32, 36, 125, 144, 225. The bottom row has 9 boxes with values: 256, 361, 64, 81, 225, 128, 32, 25, 121. The boxes with 'T' are highlighted in orange.

$$15^2 = \boxed{} \rightarrow \boxed{\text{T}}$$

$$12^2 = \boxed{} \rightarrow \boxed{\text{F}}$$

$$10^2 = \boxed{} \rightarrow \boxed{\text{H}}$$

$$3^4 = \boxed{} \rightarrow \boxed{\text{S}}$$

$$6^2 = \boxed{} \rightarrow \boxed{\text{L}}$$

$$13^2 = \boxed{} \rightarrow \boxed{\text{C}}$$

$$11^2 = \boxed{} \rightarrow \boxed{\text{D}}$$

$$6^3 = \boxed{} \rightarrow \boxed{\text{U}}$$

$$8^2 = \boxed{} \rightarrow \boxed{I}$$

$$5^3 = \boxed{} \rightarrow \boxed{\text{E}}$$

$$2^5 = \boxed{} \rightarrow \boxed{\mathbf{A}}$$

$$3^3 = \boxed{} \rightarrow \boxed{\text{P}}$$

$$4^4 = \boxed{} \rightarrow \boxed{\mathbf{W}}$$

$$5^2 = \boxed{} \rightarrow \boxed{\text{N}}$$

$$19^2 = \boxed{} \rightarrow \boxed{\text{R}}$$

$2^7 = \boxed{} \rightarrow \boxed{\text{B}}$

Scratch space:

CLUE 3
Order of operations

To mix the rocket fuel, we must follow a strict order of steps. Solve the order of operations to start the engines.

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

T												T					
53	51	46	67	58	16	46	80	46	58	15	53	29	68	29	29	76	

			T
48	65	78	53

$29 + 6 \times 4 = \boxed{} \rightarrow \boxed{\text{T}}$

$55 + 5 \times 2 = \boxed{} \rightarrow \boxed{\text{U}}$

$4 + 6 \times 2 = \boxed{} \rightarrow \boxed{\text{R}}$

$8 \times 10 - 13 = \boxed{} \rightarrow \boxed{\text{Y}}$

$31 + 4 \times 5 = \boxed{} \rightarrow \boxed{\text{H}}$

$4 \times 11 - 15 = \boxed{} \rightarrow \boxed{\text{O}}$

$12 \times 7 - 16 = \boxed{} \rightarrow \boxed{\text{M}}$

$11 \times 8 - 12 = \boxed{} \rightarrow \boxed{\text{N}}$

$11 + 5 \times 7 = \boxed{} \rightarrow \boxed{\text{E}}$

$48 + 8 \times 4 = \boxed{} \rightarrow \boxed{\text{W}}$

$33 + 5 \times 5 = \boxed{} \rightarrow \boxed{\text{A}}$

$12 \times 5 - 12 = \boxed{} \rightarrow \boxed{\text{D}}$

$7 \times 4 - 13 = \boxed{} \rightarrow \boxed{\text{K}}$

$8 \times 10 - 2 = \boxed{} \rightarrow \boxed{\text{S}}$

Scratch space:

CLUE 4
Multiplication facts (1-12)

We need to count the emergency solar panels outside. There are several rows of panels with equal numbers in each row.

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

A												A	
1	8	18	72	28	90	8	132	108	18	35	1	28	
28	108	121	90	90	18	72							

$1 \times 1 = \square \rightarrow$ A	$7 \times 4 = \square \rightarrow$ S	$3 \times 6 = \square \rightarrow$ E	$4 \times 2 = \square \rightarrow$ R
$11 \times 11 = \square \rightarrow$ O	$5 \times 7 = \square \rightarrow$ W	$12 \times 11 = \square \rightarrow$ I	
$9 \times 10 = \square \rightarrow$ T	$12 \times 6 = \square \rightarrow$ D	$12 \times 9 = \square \rightarrow$ P	

Scratch space:

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

The junior team wants to share the remaining energy bars equally. Let us divide the total to see what everyone gets.

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:

$60 \div 5 = \boxed{}$

$32 \div 8 = \boxed{}$

$30 \div 10 = \boxed{}$

$55 \div 5 = \boxed{}$

$72 \div 12 = \boxed{}$

$96 \div 12 = \boxed{}$

$90 \div 10 = \boxed{}$

$50 \div 5 = \boxed{}$

$42 \div 6 = \boxed{}$

$30 \div 6 = \boxed{}$

$10 \div 10 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain fires a bright laser, then uses magnetic pull to grab the keys.
2. The villain activates the gravity lock, then blasts an ice beam to freeze the door.
3. The villain activates the gravity lock, then leaves a fiery trail down the hall.
4. The villain fires a bright laser, then blasts an ice beam to freeze the door.
5. The villain fires a bright laser, then creates a sonic boom to stun the guards.
6. The villain deploys a force shield, then creates a sonic boom to stun the guards.
7. The villain activates the gravity lock, then splashes acid on the lock.
8. The villain fires a bright laser, then splashes acid on the lock.
9. The villain performs a rocket jump, then uses magnetic pull to grab the keys.
10. The villain turns completely invisible, then splashes acid on the lock.
11. The villain performs a rocket jump, then blasts an ice beam to freeze the door.
12. The villain turns completely invisible, then leaves a fiery trail down the hall.

Answer Key

The Moonbase Mystery

Culprit: Marie Curie

Gravity Lock · Ice Beam · Left Wristband · Red Stripe · Moon Dust

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

Clue 1 (Percentages): "THE THIEF DOES NOT USE THE SONIC BOOM"

50% of 38 = 19 (T) · 20% of 145 = 29 (M) · 20% of 70 = 14 (E) · 50% of 46 = 23 (N) · 40% of 90 = 36 (O) · 50% of 10 = 5 (B) · 25% of 80 = 20 (D) · 40% of 65 = 26 (U) · 20% of 215 = 43 (C) · 75% of 44 = 33 (S) · 40% of 45 = 18 (I) · 20% of 190 = 38 (H) · 25% of 52 = 13 (F)

Clue 2 (Exponents): "THE SUSPECT HAS A LEFT WRISTBAND"

$15^2 = 225$ (T) · $12^2 = 144$ (F) · $10^2 = 100$ (H) · $3^4 = 81$ (S) · $6^2 = 36$ (L) · $13^2 = 169$ (C) · $11^2 = 121$ (D) · $6^3 = 216$ (U) · $8^2 = 64$ (I) · $5^3 = 125$ (E) · $2^5 = 32$ (A) · $3^3 = 27$ (P) · $4^4 = 256$ (W) · $5^2 = 25$ (N) · $19^2 = 361$ (R) · $2^7 = 128$ (B)

Clue 3 (Order of operations): "THEY ARE WEAK TO MOON DUST"

$29 + 6 \times 4 = 53$ (T) · $55 + 5 \times 2 = 65$ (U) · $4 + 6 \times 2 = 16$ (R) · $8 \times 10 - 13 = 67$ (Y) · $31 + 4 \times 5 = 51$ (H) · $4 \times 11 - 15 = 29$ (O) · $12 \times 7 - 16 = 68$ (M) · $11 \times 8 - 12 = 76$ (N) · $11 + 5 \times 7 = 46$ (E) · $48 + 8 \times 4 = 80$ (W) · $33 + 5 \times 5 = 58$ (A) · $12 \times 5 - 12 = 48$ (D) · $7 \times 4 - 13 = 15$ (K) · $8 \times 10 - 2 = 78$ (S)

Clue 4 (Multiplication facts (1-12)): "A RED STRIPE WAS SPOTTED"

$1 \times 1 = 1$ (A) · $7 \times 4 = 28$ (S) · $3 \times 6 = 18$ (E) · $4 \times 2 = 8$ (R) · $11 \times 11 = 121$ (O) · $5 \times 7 = 35$ (W) · $12 \times 11 = 132$ (I) · $9 \times 10 = 90$ (T) · $12 \times 6 = 72$ (D) · $12 \times 9 = 108$ (P)

Clue 5 (Division facts (1-12)): surviving statement is box 2 → Marie Curie

$60 \div 5 = 12$ · $32 \div 8 = 4$ · $30 \div 10 = 3$ · $55 \div 5 = 11$ · $72 \div 12 = 6$ · $96 \div 12 = 8$ · $90 \div 10 = 9$ · $50 \div 5 = 10$ · $42 \div 6 = 7$ · $30 \div 6 = 5$ · $10 \div 10 = 1$