The Mystery of the Midnight Arc-Drive

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

Detective: _____ **Date:** _____

Someone broke into the Funplex Arcade after hours and snagged the master Arc-Drive core! Donnie, Fronnie, and the team are inspecting the clues to figure out which rogue character pulled off the heist.

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 Arcade Mischief-Maker is _____

Possible suspects

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

NAME	MAIN ABILITY	SPECIAL GEAR	DOMINANT HAND	FUR OR METAL	SECRET WEAKNESS
Pixel Penny	Sonic Screech	Hologram Cloak	Left Handed	Neon Blue Fur	Magnets
Nacho Norm	Magnet Grip	Radar Pulse	Left Handed	Purple Metal Mesh	Magnets
Holo Holly	Laser Stare	Turbo Boost	Left Handed	Purple Metal Mesh	Bright Flashlight
Shadow Sam	Glitch Dash	Hologram Cloak	Right Handed	Golden Wires	Loud Music
Bonnie Bear	Magnet Grip	Smoke Screen	Right Handed	Neon Blue Fur	Magnets
Evil Jerry	Laser Stare	Smoke Screen	Left Handed	Golden Wires	Magnets
Flash Frankie	Laser Stare	Smoke Screen	Right Handed	Golden Wires	Bright Flashlight
Bouncer Bob	Glitch Dash	Radar Pulse	Left Handed	Purple Metal Mesh	Magnets
Big Lenny	Magnet Grip	Turbo Boost	Left Handed	Purple Metal Mesh	Loud Music
Vortex Vance	Laser Stare	Smoke Screen	Left Handed	Purple Metal Mesh	Magnets
Matrix Mia	Magnet Grip	Hologram Cloak	Left Handed	Neon Blue Fur	Loud Music
Rusty Rick	Sonic Screech	Radar Pulse	Right Handed	Golden Wires	Bright Flashlight
Circuit Clara	Sonic Screech	Hologram Cloak	Left Handed	Purple Metal Mesh	Magnets
Gizmo Gail	Sonic Screech	Smoke Screen	Left Handed	Golden Wires	Loud Music
Static Stan	Magnet Grip	Night Vision	Right Handed	Purple Metal Mesh	Loud Music
Sparky Sue	Static Shock	Night Vision	Left Handed	Golden Wires	Loud Music
Turbo Tyler	Magnet Grip	Turbo Boost	Left Handed	Neon Blue Fur	Magnets
Laser Luke	Magnet Grip	Hologram Cloak	Right Handed	Purple Metal Mesh	Loud Music
Donnie Fronnie	Laser Stare	Turbo Boost	Right Handed	Purple Metal Mesh	Magnets
Radar Rita	Glitch Dash	Hologram Cloak	Left Handed	Purple Metal Mesh	Magnets
Ziggy Zap	Sonic Screech	Radar Pulse	Left Handed	Neon Blue Fur	Magnets

CLUE 1 Multiplication facts (1-12)

> Donnie found several boxes of arcade tokens stacked in equal rows and multiplied them to tally the inventory.

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

T														
72	66	11	100	21	11	50	6	55	80	27	45	45	50	27	21
21	11	80	11	108	4	100	11	100	100	7	63	6	11	100	24	108	11	11	21

8 × 9 = ☐ → T

11 × 5 = ☐ → Y

7 × 3 = ☐ → N

7 × 9 = ☐ → O

6 × 11 = ☐ → H

11 × 1 = ☐ → E

2 × 2 = ☐ → U

3 × 8 = ☐ → C

8 × 10 = ☐ → V

9 × 12 = ☐ → R

3 × 2 = ☐ → K

3 × 9 = ☐ → I

7 × 1 = ☐ → M

9 × 5 = ☐ → L

5 × 10 = ☐ → A

10 × 10 = ☐ → S

Scratch space:

CLUE 2 Bar model word problems

Fronnie drew a bar model comparing the power usage of the prize booth to the main arcade floor.

Draw a bar model to solve each word problem, then write its letter in the boxes to fill in the missing word.

A witness saw the villain was

L							D		D
109	15	16	13	37	95	47		15	

.

Arcade Technician shares 218 circuit boards equally among 2 teams. How many circuit boards does each team get?

draw a bar model

Answer: ☐ → L

Arcade Technician shares 32 prize coupons equally among 2 teams. How many prize coupons does each team get?

draw a bar model

Answer: ☐ → F

The red team has 123 prize coupons and the blue team has 28 prize coupons. How many more prize coupons does the red team have?

draw a bar model

Answer: ☐ → A

There were 22 arcade tokens in all. 7 arcade tokens were used. How many arcade tokens are left?

draw a bar model

Answer: ☐ → E

One group collected 1 prize coupons and another group collected 12 prize coupons. How many prize coupons in all?

draw a bar model

Answer: ☐ → T

Arcade Technician shares 94 arcade tokens equally among 2 teams. How many arcade tokens does each team get?

draw a bar model

Answer: ☐ → N

One group collected 13 power cells and another group collected 24 power cells. How many power cells in all?

draw a bar model

Answer: ☐ → H

CLUE 3 Multi-step word problems

Evil Jerry gathered ticket stubs from three different games and subtracted the torn ones to solve the riddle.

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

Someone scared the villain off with | M | | | | | | | .

80 34 54 32 79 58 85

There were 196 arcade tokens in all. 1 Night Patrol used 36 arcade tokens each. The other 2 Night Patrol shared the rest equally. How many arcade tokens did each of the other Night Patrol get?

Answer: ☐ → M

There were 617 circuit boards in all. 37 circuit boards were set aside. The rest were shared equally among 10 Night Patrol. How many circuit boards did each get?

Answer: ☐ → T

Arcade Technician filled 9 boxes with 2 power cells each, then found 14 more power cells. How many power cells are there in all?

Answer: ☐ → N

Arcade Technician collected 211 game tickets in the morning and 26 game tickets in the afternoon, then split them equally among 3 Night Patrol. How many game tickets did each get?

Answer: ☐ → E

There were 286 power cells in all. 31 power cells were set aside. The rest were shared equally among 3 Night Patrol. How many power cells did each get?

Answer: ☐ → S

There were 126 arcade tokens in all. 24 arcade tokens were set aside. The rest were shared equally among 3 Night Patrol. How many arcade tokens did each get?

Answer: ☐ → A

There were 240 power cells in all. 4 Night Patrol used 6 power cells each. The other 4 Night Patrol shared the rest equally. How many power cells did each of the other Night Patrol get?

Answer: ☐ → G

Scratch space:

CLUE 4 Fractions of a number

Bonnie checked the backup battery bank and calculated what fraction of the power cells were fully charged.

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

W																							
7	33	3	36	19	25	29	31	32	4	35	25	29	31	36	3								

10	19	4	10	22	33	2	33	32	35	22	2	33	31	28	36	25							

3	22	36	36	4

7/10 of 10 = ☐ → W

5/6 of 42 = ☐ → A

7/10 of 40 = ☐ → H

1/2 of 20 = ☐ → P

4/6 of 6 = ☐ → R

1/2 of 4 = ☐ → M

5/10 of 62 = ☐ → S

3/6 of 38 = ☐ → U

2/8 of 116 = ☐ → D

6/8 of 44 = ☐ → E

1/8 of 200 = ☐ → N

3/5 of 5 = ☐ → F

2/5 of 80 = ☐ → T

4/10 of 55 = ☐ → L

6/8 of 48 = ☐ → O

Scratch space:

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

> The team gathered the leftover repair cables and divided them equally among the test benches.

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:

80 ÷ 8 = ☐ | 48 ÷ 12 = ☐ | 30 ÷ 6 = ☐ | 18 ÷ 2 = ☐ | 72 ÷ 6 = ☐

77 ÷ 7 = ☐ | 64 ÷ 8 = ☐ | 48 ÷ 8 = ☐ | 8 ÷ 8 = ☐ | 84 ÷ 12 = ☐

9 ÷ 3 = ☐

Step 2 - cross out the sentence with each answer:

1. The villain screeched into the intercom, then scouted ahead using night vision.
2. The villain screeched into the intercom, then fooled the guards using hologram cloak.
3. The villain shook the whole control desk, then zoomed past security with turbo boost.
4. The villain glitched through the security gate, then fooled the guards using hologram cloak.
5. The villain grabbed the master keycard, then tracked the guards using radar pulse.
6. The villain zapped the main circuit breaker, then tracked the guards using radar pulse.
7. The villain glitched through the security gate, then scouted ahead using night vision.
8. The villain screeched into the intercom, then vanished behind a thick smoke screen.
9. The villain shook the whole control desk, then scouted ahead using night vision.
10. The villain glitched through the security gate, then tracked the guards using radar pulse.
11. The villain zapped the main circuit breaker, then scouted ahead using night vision.
12. The villain shook the whole control desk, then fooled the guards using hologram cloak.

TEACHER / PARENT

Answer Key

The Mystery of the Midnight Arc-Drive

Culprit: Circuit Clara

Sonic Screech · Hologram Cloak · Left Handed · Purple Metal Mesh · Magnets

Trail: Start 21 → Clue 1 16 → Clue 2 11 → Clue 3 7 → Clue 4 4 → Clue 5 1

Clue 1 (Multiplication facts (1-12)): "THE SNEAKY VILLAIN NEVER USES SMOKE SCREEN"

8 × 9 = 72 (T) · 11 × 5 = 55 (Y) · 7 × 3 = 21 (N) · 7 × 9 = 63 (O) · 6 × 11 = 66 (H) · 11 × 1 = 11 (E) · 2 × 2 = 4 (U) · 3 × 8 = 24 (C) · 8 × 10 = 80 (V) · 9 × 12 = 108 (R) · 3 × 2 = 6 (K) · 3 × 9 = 27 (I) · 7 × 1 = 7 (M) · 9 × 5 = 45 (L) · 5 × 10 = 50 (A) · 10 × 10 = 100 (S)

Clue 2 (Bar model word problems): "LEFT HANDED"

Arcade Technician shares 218 circuit boards equally among 2 teams. How many circuit boards does each team get? = 109 (L) · Arcade Technician shares 32 prize coupons equally among 2 teams. How many prize coupons does each team get? = 16 (F) · The red team has 123 prize coupons and the blue team has 28 prize coupons. How many more prize coupons does the red team have? = 95 (A) · There were 22 arcade tokens in all. 7 arcade tokens were used. How many arcade tokens are left? = 15 (E) · One group collected 1 prize coupons and another group collected 12 prize coupons. How many prize coupons in all? = 13 (T) · Arcade Technician shares 94 arcade tokens equally among 2 teams. How many arcade tokens does each team get? = 47 (N) · One group collected 13 power cells and another group collected 24 power cells. How many power cells in all? = 37 (H)

Clue 3 (Multi-step word problems): "MAGNETS"

There were 196 arcade tokens in all. 1 Night Patrol used 36 arcade tokens each. The other 2 Night Patrol shared the rest equally. How many arcade tokens did each of the other Night Patrol get? = 80 (M) · There were 617 circuit boards in all. 37 circuit boards were set aside. The rest were shared equally among 10 Night Patrol. How many circuit boards did each get? = 58 (T) · Arcade Technician filled 9 boxes with 2 power cells each, then found 14 more power cells. How many power cells are there in all? = 32 (N) · Arcade Technician collected 211 game tickets in the morning and 26 game tickets in the afternoon, then split them equally among 3 Night Patrol. How many game tickets did each get? = 79 (E) · There were 286 power cells in all. 31 power cells were set aside. The rest were shared equally among 3 Night Patrol. How many power cells did each get? = 85 (S) · There were 126 arcade tokens in all. 24 arcade tokens were set aside. The rest were shared equally among 3 Night Patrol. How many arcade tokens did each get? = 34 (A) · There were 240 power cells in all. 4 Night Patrol used 6 power cells each. The other 4 Night Patrol shared the rest equally. How many power cells did each of the other Night Patrol get? = 54 (G)

Clue 4 (Fractions of a number): "WE FOUND STRANDS OF PURPLE METAL MESH ON FLOOR"

7/10 of 10 = 7 (W) · 5/6 of 42 = 35 (A) · 7/10 of 40 = 28 (H) · 1/2 of 20 = 10 (P) · 4/6 of 6 = 4 (R) · 1/2 of 4 = 2 (M) · 5/10 of 62 = 31 (S) · 3/6 of 38 = 19 (U) · 2/8 of 116 = 29 (D) · 6/8 of 44 = 33 (E) · 1/8 of 200 = 25 (N) · 3/5 of 5 = 3 (F) · 2/5 of 80 = 32 (T) · 4/10 of 55 = 22 (L) · 6/8 of 48 = 36 (O)

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

80 ÷ 8 = 10 · 48 ÷ 12 = 4 · 30 ÷ 6 = 5 · 18 ÷ 2 = 9 · 72 ÷ 6 = 12 · 77 ÷ 7 = 11 · 64 ÷ 8 = 8 · 48 ÷ 8 = 6 · 8 ÷ 8 = 1 · 84 ÷ 12 = 7 · 9 ÷ 3 = 3