Modultown!
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NATURAL MATH

**Chapter Three and Zero and One**

They raced back towards the carousel to find Diana wide awake and anxiously looking around.

“Ooh, ice cream!” Diana exclaimed. “Is that for me?”

“As a matter of fact, it is!” Emmy said, as Diana snatched it out of her hand.

“Thank you!” Diana said, her mouth full of ice cream. “What did I miss?”

“There was a musical clue,” Penny explained, “so Tristan and Henry joined our team.”

“We helped solve the clue,” Henry said proudly. “Then Tristan fell asleep.”

“So what’s the answer?” Diana asked.

“Eight!” Leo shouted.

“The House of Mirrors!” Diana shouted back.

“Why are we shouting?” Emmy shouted, disapprovingly.

“Sorry,” Leo and Diana said in unison. “We’re just excited.”

“Let’s get going,” Decaro said, and he began leading the way.

As they approached the House of Mirrors, they found a very serious looking moduli sitting on its steps, mumbling to herself.

“On the one hand … that’s too simplistic. On the second hand, … that is true. On the third hand…”

“Whatcha doing?” Diana asked, plopping down next to her.

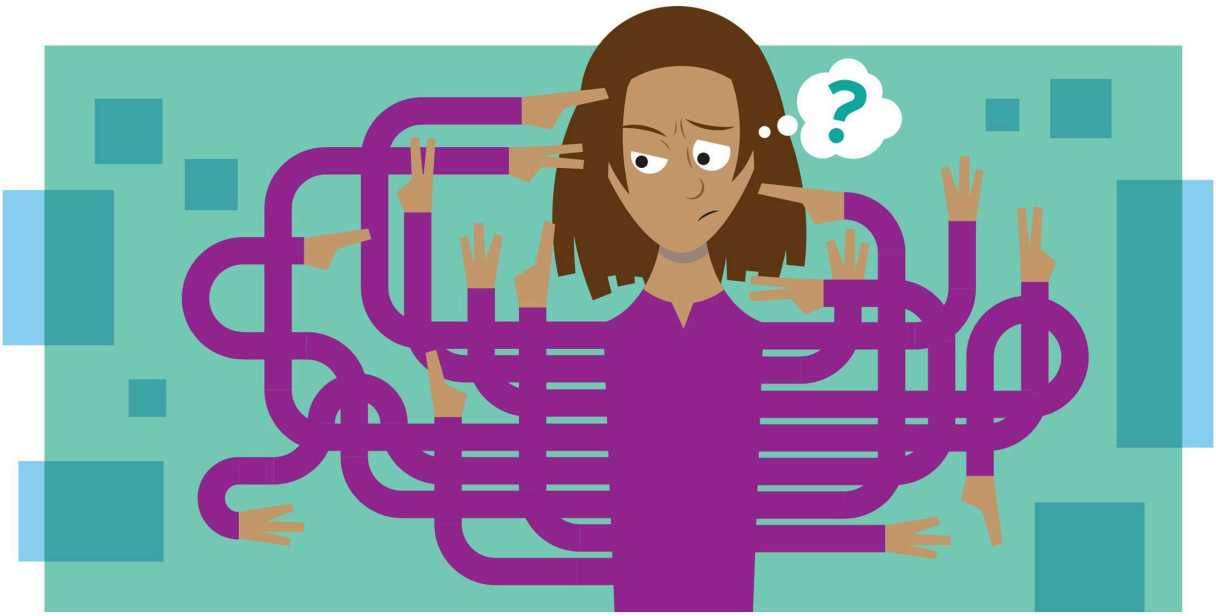
She slowly turned her head to face Diana.

“I was thinking through all of my options,” she said, pausing between each word.

“Options for what?” Leo interrupted.

The moduli sighed. “For playing the puzzle game,” she said.

“Now I have to start over. On the one hand…”



“Come on team,” said Diana, “Quintessa here has fifteen hands so this could take a while.”

Diana leapt up and ran into the building. Penny, Henry, Decaro, and Leo trotted inside after her. Emmy hung behind for a moment to snap a picture of the remarkable fifteen-handed moduli. She then followed the others into the hall.

The room that she found herself in was full of identical, rectangular mirrors. While everyone was standing uncertainly at the entrance, Leo and Diana each ran up to a mirror.

“Whoa!” Leo exclaimed, entranced by his altered reflection. “I have so many hands!”

“Me too!” Diana chimed in. “I count 13 in all. How many do you have?”

Leo carefully counted all of the hands in the mirror, pointing to each one so as not to miss any.

“I count 13 as well,” he replied.

By this point, Emmy had walked up to a mirror next to Leo’s and was carefully examining her own reflection.

“I am getting 13 also,” she said. “It seems too easy, but maybe that’s the answer?”

But Penny, Henry, and Decaro were all shaking their heads.

“I see only ten,” Penny countered.

“Nine for me,” Henry added.

“And only five here,” Decaro said.

Emmy pondered this for a moment. “It appears that people with the same number of hands see the same thing.”

“What are people?” Diana inquired.

“We are people,” Leo explained.

“People are like moduli but from our world,” Emmy added.

“Okay,” Diana shrugged. “So what’s the answer?”

“I would tell you … if I was on your team,” they heard a voice from the entrance.

Everyone turned in that direction and saw the fifteen-handed Quintessa standing at the entrance.

“Why don’t you tell us and join our team?” Diana suggested.

“On the one hand, I could do that, but on the second hand…”

“Oh just join us,” Diana interrupted her.

“Fine...I’ll show you,” Quintessa agreed.

She slowly walked up to one of the mirrors. “Look,” she said, waiving all fifteen of her hands, “no hands.”

Everyone turned their heads from looking at Quintessa to the mirror. They indeed saw a handless version of Quintessa.

“I get it,” said Leo. “People with more hands get less in the mirror.”

“You mean fewer,” Emmy corrected.

Leo stuck out his tongue at her. “You know what I mean and your silly grammar isn’t important right now.”

“What’s grammar?” Diana inquired.

“Don’t get her started,” Leo replied.

Diana shrugged. “So what’s the answer?”

“Well the little one is somewhat right and somewhat not,” Quintessa began, patting Leo on the head. “It is true that up to fifteen, more hands means fewer reflected.”

“Yeah, but what would be less than zero?” Penny wondered.

“Well there are negative numbers,” Emmy mused. “But what would it look like to have a negative number of hands?”

“Maybe you have a hand-shaped hole?” Leo suggested.

Quintessa shook her head. “That would be unseemly,” she replied. “One less than zero is fourteen, of course.”

“Well that’s true for you,” Decaro spoke up. “For me, one less than zero is nine.”

“True,” Quintessa replied. “But the mirrors act like me.”

“I get it,” Emmy exclaimed excitedly. “The sum of the actual number of hands and the reflected ones is always fifteen!”

“That makes sense,” Henry chimed in. “But what if someone had seventeen hands?”

“Well obviously, they’d see thirteen,” Quintessa declared.

“It’s not obvious to me,” Emmy said.

“Wait, so is fifteen the answer?” Diana asked impatiently.

“Of course it is,” Quintessa replied.

“But I still don’t fully get it.” Emmy objected.

“Look, seventeen is the same as two for me,” Quintessa was pointing at the clock on her wrist. “So to figure out how many hands the mirror will show for someone, you find the rezz on my clock and then see what you need to add to get back to zero, which is fifteen for me.”

“I think I’m starting to get it,” Emmy said tentatively. “Let me try one more number. So if someone had 67 hands…”

“They would spend half of their life washing hands and cutting nails!” Leo interrupted.

“Hold on, Leo, I’m trying to concentrate here,” Emmy scolded him. “So let’s see, what would 67 be for Quintessa. Since fifteen is zero, four times fifteen, which is sixty, must also be zero. That means that 67 must be seven.”

“So then they’d see 8 hands in the mirror!” Henry chimed in excitedly.

“Yep, you got it,” Quintessa applauded them, using all of her fifteen hands.

“Okay, I’m satisfied that fifteen is the answer,” Emmy declared. “What does that mean in terms of where we need to go?”

“It’s the theater!” Diana answered excitedly. “I love pl..!”

And then, all of a sudden, Diana slumped to the ground and started snoring very loudly.

“I guess we should put off going to the theater,” Penny suggested. “Diana would be very sad to miss it. I, on the other hand, hate theater, and since I’m next to fall asleep, you can just go then.”

“But won’t we fall behind the other teams if we take a break?” Emmy asked.

“Not really. Every team is required to take 3 rezzes of breaks before they can win,” Penny explained.

“We used to play with no breaks,” Quintessa began. “On the one hand, it was faster. On the second hand, people didn’t like not having any time to go on rides, or go to the bathroom. On the third hand…”

“Long story short,” Henry interrupted. “We decided three breaks was a good number. And each team can decide for themselves when to take them, and at the end they have to report which rezzes they were.”

“I can help remember the breaks,” Leo offered. “This first one will be rezz 4.”

Henry nodded. “Now let’s get out of this house of mirrors.” He started moving towards the exit.

“Wait, but what about Diana,” Emmy exclaimed. “This may be the only place that I’ve seen without a bed.”

Quintessa gently picked up Diana and cradled her in her fifteen hands. “Better get her out of here or she’ll get scared when she wakes up and sees herself with the thirteen hands.”