THE BARTON SERIES
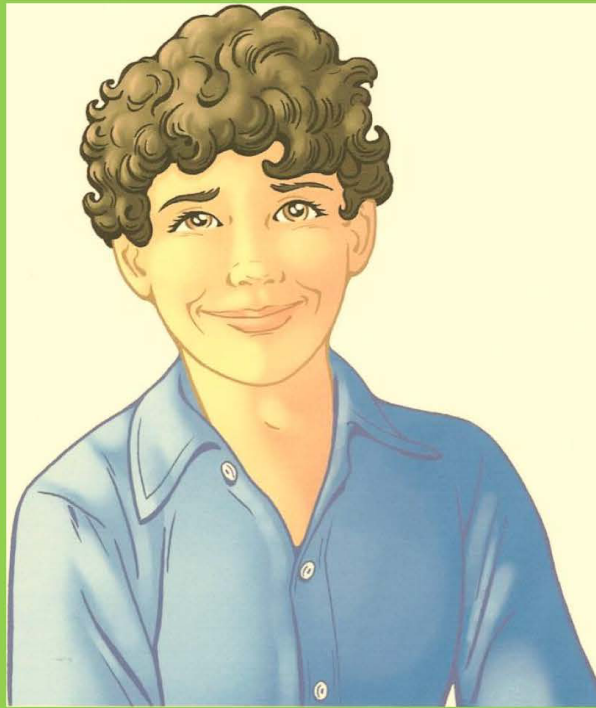
BARTON'S DISCOVERIES

BY

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(Ages 8 and over)

# BARTON'S DISCOVERIES

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THE NOT SO LONELY MORNING

Saturday morning dawned brightly as the mighty sun cast its magical rays upon the Earth beneath. Barton was already up and had just finished breakfast with Mom and Dad. His junior siblings were still engaged in slumber, as they usually slept later on weekends.

Young Barton walked outside and admired the lush flower garden that adorned the front of the Sandiford home. The distinct fragrance of the roses still adorned with tiny, crystal dew drops, filled his nostrils. Barton breathed deep to capture their aromatic offerings.
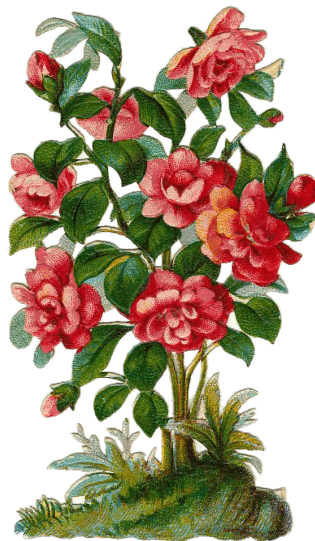
Close by, the periwinkle shrubs boasted their varying colours and abundance of flowers. The snowy white, yellow, and purple-hued dahlias too, were delightful to the gaze. And, each flower offered hidden bounties to grateful guests. The collectors of pollen and those that sipped on nectar buzzed and fluttered by on their solitary quest. Barton A. Sandiford stood, momentarily transfixed, as he admired some of the amazing wonders of the natural world.

I wonder what my friends are doing this morning, wondered Barton. There was no definite plan among them for this Saturday morning. Often they would meet at Barton's tree house or go off to the nearby park. Sometimes the group even met at the stores in town as their parents shopped together. They would usually congregate at the toy's department where they enjoyed many happy hours.

This Saturday, however, was not likely to be a meeting time for Dane, Sian, Shanna, Malaika, Kwame, Alfredo, and Barton. As it turned out, each had simple plans of their own.

Sian and her family were out of town visiting cousins who resided a great distance away. Dane was entertaining some relatives who were visiting from abroad. Shanna was off early that morning on a shopping trip with her Mother. Alfredo had opted to help his father mow the lawn and to prune the trees and flowering plants around their home. These two, Alfredo and his father, did most of their home gardening. Malaika had her music lessons postponed from the usual Wednesday evening to that Saturday morning. Kwame had chosen this morning to be taught a cooking lesson by his Mother. Kwame was learning to cook and was emerging into quite a good one. He was anxious to add one more dish to his elite list of specialities.

Maybe I shall pick some lemons and distribute them to the neighbours, thought Barton.

But his plan was immediately postponed as Dad called out to the temporarily lonely boy.

"Barton," he called, "I'm off to town to purchase some items. Would you like to accompany me?" he asked.

Barton kept his pouch with some of his savings, securely in his pocket.

Perhaps I might see a beautiful model to construct, he thought. The boy was a good shopper, having learned many good strategies from both Mom and Dad. He often priced items and waited for sales to capitalize on the generous discounts.

"Thanks for taking me along, Dad. I might come across a good bargain," Barton said to his amused father, as the two enjoyed the short journey into the town.

And as Dad headed off to the tools section, Barton diverted to the toy department of the big store.

Barton walked around and admired the toys. He played with a few that were on display. However, the visit to the toys department was much more fun when his friends were around. Interestingly, there was a new section, close to the toy department, which sold children books. Barton had never seen this section before and he walked across. There were hundreds of books on display and suitable for a wide range of ages and the young boy began to browse through some of them.

He laughed as he read the synopsis of one book in which various geometrical shapes had come to life. They had convinced a boy to act as a judge in deciding on which one of them would be regarded as the best shape in the World.

"Rather interesting and quite entertaining," thought Barton to himself.

A short distance away Barton saw a beautiful, blue coloured book. On the cover was printed an ancient Greek mathematician holding the World in the palm of his hands. It was titled, **AMAZING MATHEMATICAL FACTS**.

Barton opened the book and began to read the first story. It was about why the measure of a circle is three hundred and sixty degrees.

"I always wanted to know why a circle's measure is such an odd value of 360°," said Barton softly," as he thought aloud. "This is most interesting."

Many centuries ago, the ancient Sumerians observed the movements of the Sun, Moon, and the Earth. Though they had rather primitive equipment, they realised that it took the Earth approximately 360 days to make one complete revolution or circuit about the Sun. This they called a year. They also regarded the path as spherical or circular.

These ancient people then decided to divide a circle into 360 equal parts, called degrees, each degree representing one day. They were inaccurate on both counts. Firstly, the path of the Earth is not circular, but elliptical, which is much like a slightly flattened circle. The book simplified the description by comparing the ellipse to the shape of an egg. Secondly, the Earth takes 365 ¼ days to complete its path around the Sun and not 360 days as the simple Sumerians thought.

This inaccuracy now led to some problems later on. What happened to the extra 5 ¼ days of the year?

READ MORE IN OUR SECOND STORY ...

Barton was enraptured. He carefully turned the page to begin the second story.

The Gregorian calendar is the one that is commonly used today...

Barton, meanwhile, did not notice an old gentleman standing close by and observing his keenness as he read. The man held a copy of the same book in his hand and slowly thumbed through the pages.

"Do you like mathematics?" asked the old man.

Barton turned around to see the old man looking at him.

"I surely do," he replied to the man. "I always get A's in mathematics," he added.

"Could you give me ten facts about pi or associated with pi?" asked the man.

Barton thought for a moment. He remembered that some time ago, he had read much about the constant 'pi' and which he often used to calculate the perimeter or circumference of a circle. He had learnt to use it also in the calculation of the area of a circle. Still, he read where pi was used in many other calculations.

"Maybe I might be able to do so," he replied to the pleasant stranger, who now had a big smile on his face.

But the old man's voice was maybe a bit louder than Barton had imagined. A few people who stood nearby overheard the simple conversation between the two. They heard the challenge and they heard the acceptance. They inched nearby with the emotion of curiosity rising high. Barton looked around and

felt slightly nervous. Then, he settled down and began to recollect all that he had read about the subject.

"I shall begin, Sir," said Barton, and there was a little applause from half a dozen onlookers. The old man did not look at any of them, but only directly at Barton.

Barton began to call and list all the properties that he knew about 'pi'.

(1) Pi is a Greek letter

(2) Pi is used as a mathematical constant

(3) Pi is an irrational number. This means its decimal value goes on forever, that is without repeating or ending.

(4) The number 22/7 is a common approximation to pi.

(5) The value of pi has been calculated to more than two trillion decimal places, but is taken as equivalent to 3.142 when written correct to three decimal places.

"Halfway through," shouted the small crowd of close to a dozen observers.

The old man seemed unmoved by both the crowd and their arithmetic ability. He just looked at Barton and listened, with a twinkle in his eyes as the young boy continued.

(6) If you write the value of pi, correct to 2 decimal places and which is 3.14, and then hold it in front of a mirror, it looks much like the word, PIE.

On this occasion, the old man clapped and the crowd shouted, "I'll accept that. Six down and four to go."

The applause from the growing crowd of about two dozen or more onlookers was loud. The old man's eyes bulged in surprise, but not close to the surprised look of Mr Robert Sandiford as he stood directly behind Barton.

(7) Since the first three numbers of pi, are 3, 1 and 4, the 14th day of the third month is celebrated as Pi day. Incidentally, the great scientist Einstein was born on 'Pi Day'.

"Seven down and three to go," shouted a fat woman standing in front of the crowd and pointing to Barton as she waved her hands.

(8) Pi starts with the letter 'P' and which is the 16th letter of the English alphabet and coincidentally π is also the 16th letter of the Greek alphabet.

(9) The Babylonians, in 2000 B.C. were the first known people to find a value for Pi.

(10) The way that a river twists and turns on its way to the sea is called its sinuosity. If we were to measure the winding path of the river and divide this length by the straight path from its source directly to the sea, the value obtained is defined as the sinuosity of the river and is approximately the value of pi.

"I think I am done," said Barton to the old man.

There was now great applause, started by Dad who now came to the forefront and stood close to the old man.

"You have taught me quite a few new facts about pi," said, the old man, much to the applause of the small group.

He still held a copy of the book in his hand and which he presented to an elated Barton. The old man showed Barton that the book was autographed.

"I autographed it for you," he said with a big smile. "I am the author of this book and you are well deserving of it."