THE BARTON SERIES

BARTON AND THE LITTLE PRESENTERS

BY

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(Ages 8 and over)

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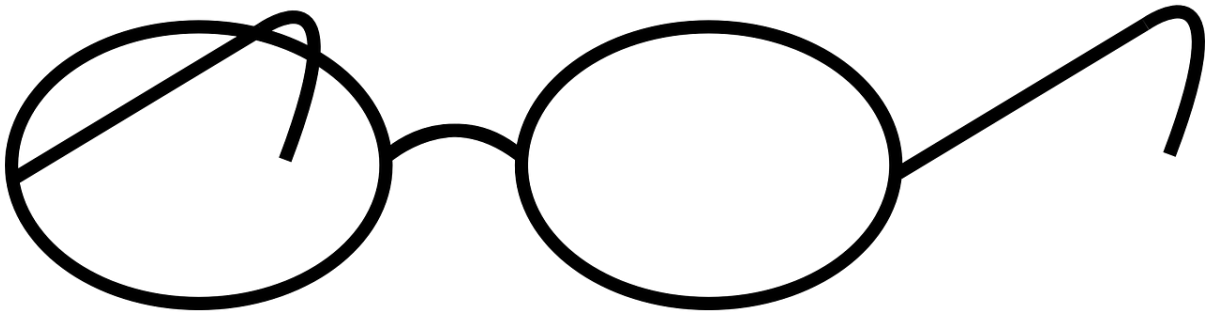
LITTLE RONALDO

Zara was the spokesperson for a small group of friends who earlier had sought Barton's stamp of approval on their mathematics project. Zara and her friends had all volunteered to each do a small presentation to their class. Dane and Kwame were Barton's voluntary assistants and they readied themselves to listen to the first presenter.

"This is Ronaldo," said Zara, as she introduced a short, smiling boy with dark curly hair. "He is the cousin of one of your friends named Alfredo," added Zara, as she sat down with the rest.

Ronaldo pulled out a crumpled piece of paper from his pocket. Along with the paper were two pieces of unwrapped candy, a ball of string discoloured by the melting candy, a bag of blue plasticine which discoloured both the candy and the string, three marbles stuck onto the plasticine, a small empty bottle of no apparent use since similar ones were available in abundance, a red feather frayed with age, a pair of glasses frames without any lenses, a comb with several missing teeth and a brightly coloured top wrapped in tissue. All the items, minus the crumpled sheet, were quickly replaced in Ronaldo's pocket. How they all fitted in Ronaldo's pocket and which showed no bulge, was one of the world's greatest wonders.



After the repacking, Ronaldo carefully smoothed out the sheet of paper and began his presentation.

"Ladies and gentlemen," began Ronaldo, "I am here to present to you some simple and interesting facts in mathematics."

There was a little applause from the small group of onlookers.

"Can anyone here tell me the number of surfaces of a sphere," began Ronaldo?

“One,” shouted Kwame, as Dane nodded alongside him.

“Well,” answered Ronaldo, “the shape which we call a hollow sphere, such as a ball, is considered as having two surfaces. One surface is on the inside and the other surface is the outside. For example, a bug, invisible to us, may well be trapped on the inner side and so walks along the inside surface of the sphere. Then an ant can be visible to us and be seen walking along the outside surface.”

There was a little applause for Ronaldo from the audience. It caused him to smile proudly and he continued.

“Does anyone know why a manhole is shaped round or circular?” he asked.

"That is because it is the shape of a man," was an explanation, again offered by Kwame.

"Not all people are round in shape," grumbled Dane. "And, would you take your eyes off my candy bar?"

"A manhole is made round or circular and not of any other shape," said Ronaldo, to the onlookers. "This is because the round or circular cover of the manhole could never fall through the hole. However, if the hole and its cover were to be of any other shape then the cover can be twisted around and made to fall through the manhole."

"Very interesting," muttered Kwame.

"If we took a piece of string and joined the ends to form an enclosed, plane shape, then the perimeter of each of the shapes will be the same," said Ronaldo.

"That sounds fair," replied Kwame, as Dane agreed.

"The length of the string will be the perimeter of each shape," explained the plump boy.

"Which shape will have the largest area?" questioned Ronaldo.

I believe that they might all have the same area since their perimeters are the same, thought Kwame. He toyed with this idea for a moment and created a problem in his head to test his hypothesis.

If I took a piece of string and formed a square of side 8 cm, then its perimeter will be 8 cm x 4 = 32 cm and its area will be 8 cm x 8 cm = 64 cm^2. This same piece of string, which is of length 32 cm, can be reshaped to form a rectangle of, say, length 12 cm and width 4 cm. The area of this rectangle will be 12 cm x 4 cm = 48 cm^2.

Surely these areas are not the same, realised Kwame. The boy was most surprised by this realisation. It is good that I didn't suggest that all shapes with the same perimeter will have the same area, thought Kwame. This simple illustration is enough to show me that shapes can have the same perimeter but entirely different areas.

No one could think of the correct shape.

Ronaldo then answered, without keeping them with their vacant thoughts for too long.

"Regardless of the shapes created with the same perimeter, the one with the largest area shall be the circle," he said, and to their utmost astonishment.

"Thank you very much, ladies and gentlemen," said the little showman, as he bowed in front of his appreciative audience.

Everyone applauded, young Ronaldo and Zara ushered him to a nearby seat. She turned to the three seniors, awaiting their opinion.

"Fabulous," said Barton.

"Great," said Kwame.

"Outstanding," said Dane.

"Now, without further ado, we shall have the next presenter," said Zara. "Let us now have your undivided attention."