THE BARTON SERIES

SEEKING OUT BARTON

BY

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(Ages 8 and over)

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Rounding Off

It was an unusually hot lunchtime at school and Barton sat quietly on a bench in the shade of a tree. Most of his friends were walking about the school, playing and chatting and enjoying the lunchtime break. But Barton had instead decided to pass the rest of the break time just relaxing. He felt a bit tired after an unusually tiring morning in classes. The young boy had eaten his fill of lunch and was a bit drowsy. He had almost dozed off when suddenly he felt someone touch him.

Barton jumped up, feeling slightly dazed, only to see a small boy and a slightly taller girl standing directly in front of him. Barton did not know either of them but had seen them before around the school. They were both juniors at the school.

"Barton," asked the boy, in a very polite manner, "could you please show us how to round off figures?"

As Barton straightened up and recuperated from his slight daze, he stretched and looked at the boy and girl. He was just about to ask their names when the boy spoke again.

"My name is Neil and this is my twin sister, Nell."
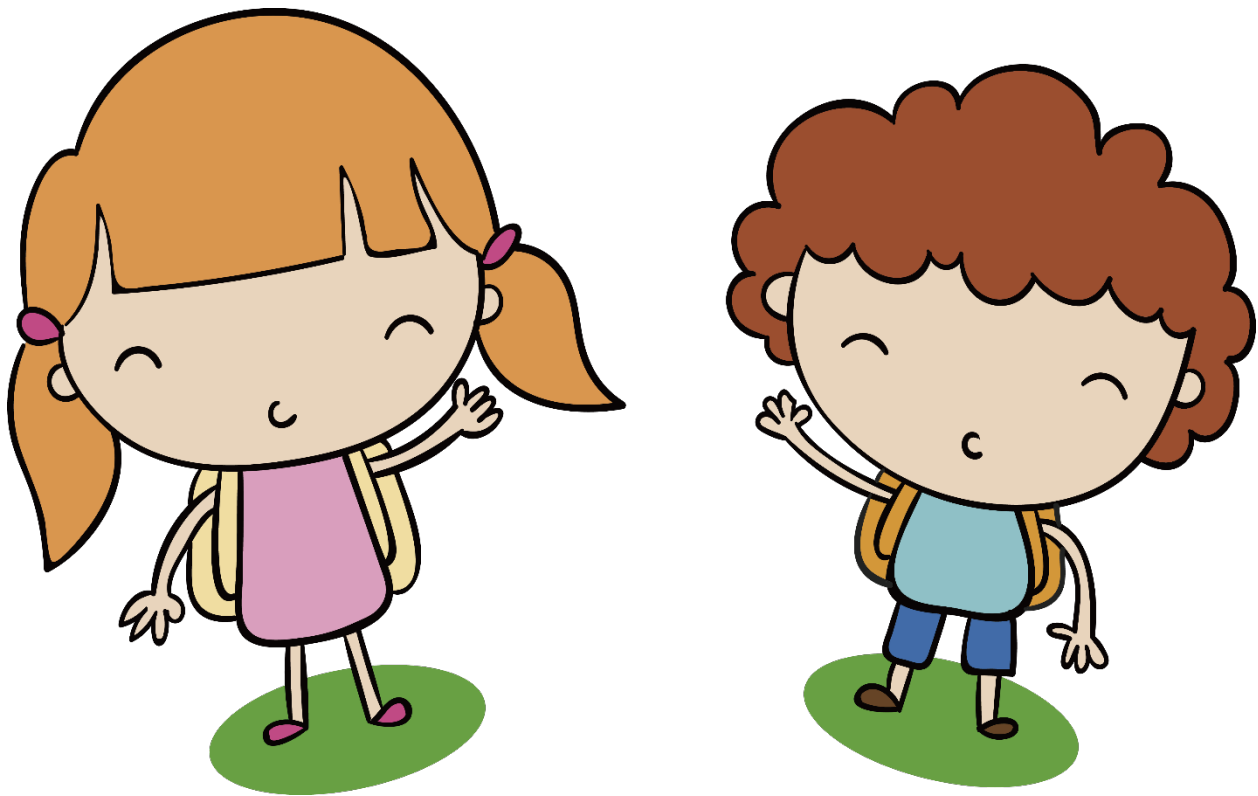
The little girl placed out her hand and shook Barton's hand.

Barton invited the two to sit down with him on the bench. Both Neil and Nell, anticipating Barton's help, had brought along writing paper and a pencil with them, which they handed to Barton. Barton, though, had his own stationery.

The twins sat on either side of the bigger Barton and awaited the start of their lesson which the kind Barton had consented to help them with.

"Do either of you two have any idea about rounding off a number?" asked Barton, looking at Neil and then at Nell.

The little girl spoke for the first time.

"I know that the digits in a number have an increasing place value when they are read from the right to the left," she said, in a soft tone.

"Could you explain this further to me?" said Barton, wanting to know if the little girl was truly aware of the place value of the digits of a number.

"Well," began the little girl as she wrote on the paper, "if you have only one number, say, 6, then there is only one digit and it represents 6 units. If you have a number consisting of two digits, say, 24, then the first digit counting from the right is 4, which represents 4 units and the second digit, which is 2, which represents 2 groups of tens and has the value of 2 x 10 =20. Together we now have 20 + 4 = 24. And that is how it is written and what the two-digit number means."
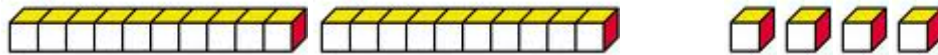
2 x 10 = 20   +   4 x 1 = 4   = 24

"Go on," said Barton, "your explanation is very good and quite correct so far,"

he said encouragingly.

Barton was impressed with the explanation.

The little girl smiled warmly, happy to be complemented by Barton. She continued to explain.

"If we have a three-digit number, say, the number 786 then the first digit, counting from the right is 6 and it represents 6 ones or units. Then, the second, counting from the right to the left, is 8 and this represents 8 groups of tens which is 8 x 10 = 80."

Barton nodded, encouraging her along.

"The third digit from the right is 7 and represents 7 groups of one hundred and which is 7 x 100 = 700. Together we shall have 700 + 80 + 6 and which is 786."

Barton marvelled at the little girl as she showed a good understanding of the place values of the digits of a number. He didn't stop her as she went on to demonstrate one more example. She continued proudly, encouraged by the senior, Barton.

"If we have a four-digit number, say, 4 923, the first digit from the right is 3, which is 3 ones or units, the second is 2 and so there are 2 groups of tens."

Barton smiled in approval.

"The third digit is 9 and so this is to be 9 sets of a hundred each, and finally the fourth digit is 4 and this is 4 sets of a thousand each. I shall place brackets so that you may see their place value and their value more easily," she suggested.

The little girl wrote as she spoke.

"This will be (4 x 1 000) + (9 x 100) + (2 x 10) + (3 x 1). Together we have 4 000 + 900+ 20 + 3 = 4 923," she said finally, slightly out of breath.

"You can stop here," smiled Barton. "I can see that you have an excellent knowledge of the place value of the digits of a number. You were quite correct in all the examples which you have demonstrated. I am proud of you."

Barton smiled with little Nell, as he continued.

"When numbers are read from the right to the left, their place value will first be units, then tens, followed by hundreds and next will be thousands, exactly as you said."

"The next place value will be tens of thousands, followed by hundreds of thousands and then millions," added the little boy, coming into the conversation for the first time.

"It most certainly is," said Barton. "You two seem to have a good and sound knowledge of numbers and the place value of the digits that make up these numbers. This makes my work quite simple. It shall be quite easy for me to explain the topic of 'rounding off numbers' to you."

The boy and girl slid a little bit closer to the bigger Barton and they looked attentively at him, waiting for him to continue. However, as Barton raised his

head and looked around, he was rather shocked. Barton had become so engrossed in listening to the little boy and girl, Neil and Nell, that he had not noticed about five or six boys and girls of similar ages standing just a little way off from them and seemingly enjoying the lesson. Amongst them there stood an older boy. He was much taller than Barton and was listening to all the goings-on.

"Would you like to join us?" asked Barton invitingly. "I am just about to show Neil and Nell how to round off numbers."

"I would," replied the boy with a small smile on his face.

"All are invited," smiled Barton.

The spectators readily accepted and walked a few steps closer to join the group. The big boy, though looking slightly embarrassed, sat next to them. Barton smiled with him to make the boy feel comfortable.

"First of all," said Barton, "I shall explain to you the purpose for rounding off figures. I shall give you a reason why we occasionally take an accurate figure and round it off."

Barton faced his little audience as he spoke.

"When we round off a number, it is because we wish to express it in a form that is easy to read since the rounded off number becomes less 'bulky'. In so doing,

we apply the technique of approximation, which is quite useful at times," Barton added.

Barton spoke to his captivated audience. They all sat quietly and lapped up every word he said. The big boy had hurried away and returned shortly after with his pencil and paper. Barton continued his lesson.

"Rounding off a number is a simple task. I can and shall show you the procedure, in just a few minutes."

All were very attentive as Barton began.

"In mathematics, however, it is very important to know just why we are doing what we are doing. When this is understood, we can see the practical applications of mathematics. We shall also be able to see the usage and the importance of mathematics in everyday life. Furthermore, we shall learn to love and appreciate mathematics much more than we ever did before."

The little class sat and they listened.