Two from the Fabulous Fibonacci

In the late twelfth century a fellow named Leonardo Fibonacci travelled all around the Mediterranean Sea with his father trading goods. In the Near East, the son picked up some mathematical methods that were more advanced than those used in Europe at the time. We know this because Fibonacci issued a textbook, the *Liber Abaci*, in 1202. [Photo source]

In the book Fibonacci introduced numerals using digits very similar to our decimals zero through nine and methods of arithmetic calculation far more efficient than Europe's struggles with Roman numerals. He also supplied word problems which provided opportunities to practice the new arithmetic. He put these in the back of the book in order not to scare people off, we surmise. Here are Uncle Bob's versions of two famous ones. Solutions on page 3.

Bedouin Breakfast

This venerable problem was collected by Fibonacci (c. 1200) from the Near East, but it may be hundreds of years older than that.

Two bedouins were traveling across the desert to a distant village. They had begun walking long before daybreak to avoid the midday heat. An hour after sunup, they sat down to eat the loaves of bread that they had brought with them. One of them had three loaves and the other had two. [Photo source]

Just as they were ready to eat, a stranger came along and asked if he might share their meal. He said he had plenty of money, which he showed to them, but no food. The two agreed to divide their loaves equally among the three of them.

After the meal was finished, the stranger laid down five coins of equal value for what he had eaten, and he went away. The first traveler took three of the coins since he had contributed 3 loaves. This left two coins for the second traveler. Was this division fair? Explain why or why not.

The Lost Art Colony of Cyprus
or More Fair Ladies

Most people have heard the legend of Pygmalion, the hermit sculptor, who made a statue of a woman so beautiful that he fell in love with it. In furtherance of the Cause of Love, Aphrodite made the statue come to life in the arms of the artist. Many have not heard the rest of the story.

Galatea, the woman, became enamored as much with sculpting as with Pygmalion. She made a request of the goddess: that after studying sculpture for a year, she would make statues of one man and one woman, and Aphrodite would bring them to life (and Love). Aphrodite approved the deal, and added that each new living creature, after studying for a year, would be allowed to create new, albeit somewhat ceramic, life; the females could sculpt one of each sex, and the males could create one female statue (after which they would lose interest anyway). [Photo source]

The goddess laid down some other stipulations. No person could create another statue after that, but crocks and ashtrays were OK. This benefit was only fair since none could procreate in the normal fashion, each having a very undifferentiated system of internal organs. Aphrodite further declared that, if her rules were adhered to, all the artists would be immortal.

If you're keeping score of creations each year, that's one for Pygmalion, two for Galatea in the second year, three by her creations (male, female, female) in the third year, and so on. How many lives were created in the 25th year, what was the cumulative total of immortals, and what do you think happened to this colony?

Solutions

Bedouin Breakfast

Each person ate 5/3, or one loaf and two-thirds. The bedouin that brought two loaves to the meal ate all but 1/3 loaf of his own bread. The bedouin that brought 3 loaves shared 4/3 loaves with the stranger. The coins should be divided 4 to 1.

The Lost Art Colony of Cyprus

The yearly sculpture totals follow the Fibonacci sequence beginning: 1, 2, 3, 5, 8, 13, 21, 34, 55, ... The partial sums of this sequence track the running totals of creations, and they are 1, 3, 6, 11, 19, 32, 53, and so on. Notice that the running total for a given year is two less than the number of new sculptures produced two years later. Can you prove that this is so? Does it check for your year 25 and year 27 figures?