

## MATHEMATICS

## Numbers to Remember By

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Yoko Ogawa's novel *The Housekeeper and the Professor* tells the story of an unexpected kinship between a Japanese mathematician, his hired housekeeper, and her son. The Professor, who studied mathematics at Cambridge, held a prominent university position until a car accident in 1975, when he was 47 years old. The crash left him with a short-term memory resembling a videotape that erases and records over itself every 80 minutes. Isolated from the present day by this memory impairment but able to recall everything he knew prior to the accident 17 years ago, the Professor finds his only peace in the world of numbers. The Housekeeper of the title, a single mother, narrates the story. Every day, and numerous times within each day, the Housekeeper and her son appear as strangers to the Professor. In order to help ease their frequent introduction, he wears a note clipped to his suit containing a crude drawing of her face and the simple words: "The new housekeeper . . . and her son, ten years old,  $\sqrt{\quad}$ ."

The Professor nicknames the Housekeeper's son Root because the flat shape of his

**The Housekeeper and the Professor**

by Yoko Ogawa

Translated from the Japanese (1) by Stephen Snyder. Picador, New York, 2009. 190 pp. Paper, \$14, \$C18. ISBN 9780312427801.

head resembles the square root sign,  $\sqrt{\quad}$ . The Professor's love for mathematics is equaled only by his love for Root and children in general. In his words, "primes were the base on which all other natural numbers relied; and children were the foundation of everything worthwhile in the adult world." Accordingly, Root's character serves as a fundamental link between the Professor and the Housekeeper because he resolves their differences. To draw an analogy in mathematics, as the Professor is fond of doing, Root acts as the 1 in Euler's formula: he resolves the relationship between  $e$  and  $\pi$  into one harmonious equation,  $e^{\pi i} + 1 = 0$ .

The principal events in this quiet novel (a trip to a baseball game and a party celebrating Root's 11th birthday) are not its important moments. Instead, the narrative blossoms in the passages describing the Housekeeper's journey into mathematics. The Housekeeper is not inclined toward math—in fact the subject made her feel ill in school—but she is inspired by the Professor's passion for it. She brings numbers alive for herself and the reader by giving them human traits and emotions. For instance, when learning about "twin primes" (pairs of prime numbers that differ by 2, such as 3 and 5 or 11 and 13), the Housekeeper imagines that "the twins had matching outfits and stood holding hands as they waited in the number line." In another example, the "abundant number" 18 (its divisors sum to a number greater than 18) "secretly carried a heavy burden," whereas the "deficient number" 14 (its divisors sum to a number less than 14) "fell mute in the face of its terrible lack."

One climactic moment occurs when the Housekeeper finds a formula for adding all

consecutive integers from 1 to 10. It is not an original proof, but any student of mathematics who has struggled with a problem will recognize the Housekeeper's accomplishment in solving it on her own. Her moment of discovery is momentous, "the clarity and purity of the solution was even more extraordinary in light of the confusion it had emerged from, as if I'd unearthed a shard of crystal from the floor of a dark cave." The Professor deserves some credit for the Housekeeper's discovery. He excels where many math teachers fall short, encouraging her to ask questions and instructing her on the process of problem-solving. "It's important to use your intuition. You swoop down on the numbers, like a kingfisher catching the glint of sunlight on the fish's fin."

The novel ends swiftly and predictably. Readers will quickly forget its conclusion and recall instead the miraculous connections between numbers revealed by the Professor and the Housekeeper. One such numerical bond that lingers in the imagination links the Housekeeper's birthday, February 20 (or 220), to the number 284 engraved on the back of the Professor's watch. This pair of "amicable numbers" (the sum of the factors of 220 excluding itself equals 284, and the sum of the factors of 284 excluding itself equals 220) is extremely rare. Pythagoras knew of amicable numbers and associated mystical properties to these friendly pairs. One is led to hope that although the Professor's memory prevents him from remembering the Housekeeper and Root, perhaps numbers do reveal to him the true nature of their friendship.

## References

1. Y. Ogawa, *Hakase no Aishita Sushiki* (Shinchosha, Tokyo, 2003).

10.1126/science.1175075

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## BROWSINGS

**Wave.** Suzy Lee. Chronicle Books, San Francisco, 2008. 40 pp. \$15.99. ISBN 9780811859240.

In this wordless story, a carefree little girl and a flock of gulls play with the encroaching tide. She grows progressively bolder and ends up drenched—but delighted with the shells left on the sand. Lee's simple, lively, and evocative charcoal and acrylic illustrations will charm adults and children of any age. The book kindles desires for one's own bright day at the beach.

