Great Books of Number Theory

There are many wonderful books from which one can learn about number theory. Here I suggest a few that I have enjoyed.

I learned the subject from G.H. Hardy and E.M. Wright's classic, *An introduction to the theory of numbers*, (now updated and in its sixth edition). It is a mine of useful ideas and information, with a particular bias towards the analytic. Some of the choice of subject matter reflects the excitement of the time in which it was written, but it is worth learning those techniques.

John J. Watkins' *Number Theory, A historical approach*, is the book I wish I had written. Motivating the subject through many historical insights, Watkins gives a fresh and charming account of the standard subjects through different-than-usual perspectives.

Number theory is often taught to future secondary school teachers as a final "content course". Some of those students are challenged by the material, and it is good to have a course book that does a good job of really teaching the number theory while at the same time being accessible enough for those who are never going to find the material easy. To this end I have often taught from Charles Vanden Eynden's *Elementary Number Theory* and thought that it hits the mark spectacularly well.

William J. LeVeque's *Fundamentals of Number Theory* is a classic that provides beautiful insight into some of the more difficult results in a sophisticated introductory course.

Alan Baker's *A concise introduction to the theory of numbers*, wastes no words, yet gives a complete account of the proofs and motivation of all the basic results of the subject.

Ivan Niven and H.S. Zuckerman's *An introduction to the theory of numbers* (now updated by H.L. Montgomery and in its fifth edition) is the text that traditionally determines whether one is ready to go on to deeper parts of number theory. All the basics are covered, and covered well, and there are many wonderful problems on which a talented student can cut their teeth.

For someone who is more attracted to the algebraic side of number theory, Kenneth Ireland and Michael Rosen's *A classical introduction to modern number theory*, is a great taking off point, motivating the development of the subject through some rather down-to-earth questions.

To learn about the distribution of prime numbers and the Riemann zeta-function, I am partial to Harold M. Edwards' *Riemann's zeta function* who studies original papers to gave an excellent historical, though mathematically complete, account.

William Stein's *Elementary Number Theory: Primes, Congruences, and Secrets: A Computational Approach*, helps the reader discover number theory through calculations, for many people, the right way to learn.

Finally, if you want to read one book on the more recreational side of serious number theory, Paulo Ribenboim's *Little Book of Big primes* is a delight, and as his student, I learned more from proofreading the book for him than from many of my graduate classes!