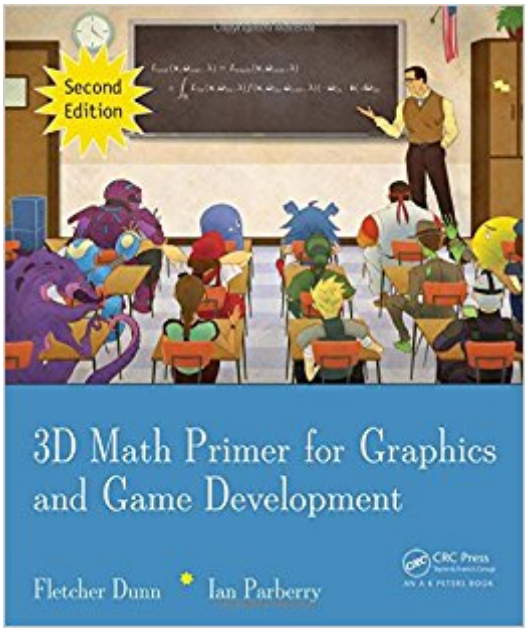
# 3D Math Primer For Graphics And Game Development, 2nd Edition



## Synopsis

This engaging book presents the essential mathematics needed to describe, simulate, and render a 3D world. Reflecting both academic and in-the-trenches practical experience, the authors teach you how to describe objects and their positions, orientations, and trajectories in 3D using mathematics. The text provides an introduction to mathematics for game designers, including the fundamentals of coordinate spaces, vectors, and matrices. It also covers orientation in three dimensions, calculus and dynamics, graphics, and parametric curves.

## Book Information

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## Customer Reviews

"With solid theory and references, along with practical advice borne from decades of experience, all presented in an informal and demystifying style, Dunn & Parberry provide an accessible and useful approach to the key mathematical operations needed in 3D computer graphics."â •Eric Haines, author of Real-Time Rendering"The book describes the mathematics involved in game development in a very clear and easy to understand way, layered on the practical background of years of game engine programming experience."â •Wolfgang Engel, editor of GPU Pro

Fletcher Dunn has been programming video games professionally since 1996. He served as principle programmer at Terminal Reality in Dallas, where he was one of the architects of the Infernal engine and lead programmer on BloodRayne. He was a technical director for the Walt Disney Company at Wideload Games in Chicago, where he was the lead programmer for Disney

Guilty Party, which won IGN's Family Game of the Year at E3 2010. He is currently a developer at Valve Software in Bellevue, Washington. Ian Parberry is a professor in the Department of Computer Science and Engineering at the University of North Texas. Dr. Parberry has more than a quarter century of experience in research and teaching and is nationally known as one of the pioneers of game programming in higher education.

I can't add more praise or insight than the other reviewers that rated this books highly. This is a great book to learn the mathematics required for 3D game programming. The concepts are developed in a logical and clear manner with many examples to assist you in building the required cognitive models to move from the math in 2D to 3D. This feature alone would have me recommend the book but for a book to have so many delightful comments (many in the footnotes) that had me laughing out loud was an added plus. Yes. The math was actually enjoyable. This books makes learning a difficult subject very enjoyable. Check out the writing by previewing the beginning of the book. The authors deserve some type of award for the effort they made in creating text, examples, and illustrations that actually served to teach these concepts in such a clear and enjoyable manner!

I'm about 2/3 through this book now, and I've found it very helpful. The explanations are good, and what I particularly like is how he illustrates most of the topics with pictures and graphs, explaining the relevance to rendering graphics in games. Unlike most math books and courses I've taken, I'm not left wondering "what the heck relevance does THIS have?" every time I turn a page. He also does provide C++ code game graphics rendering at the end of most topics. The code is very useful, and well explained. I can definitely see myself using some of it in future projects.I don't want to kid anyone though, this material is complicated, and if you struggle with math, or don't have a math background (some advanced high school classes or college math) then you may find this book a bit much.

The first time I tried to read this book, I took frequent breaks and only made it to about chapter 10, not really understanding a few of the proofs and algorithms. However, after going through the entire book all at once in about a week, I was able to understand everything. It was definately worth it.The book assumes no prior knowledge of linear algebra, and teaches you from the ground up the critical concepts behind 3d engines. At the end of the book, I was able to write my own software engine implementing many of the concepts talked about in the text, having absolutely no prior knowledge of any of the concepts before.Knowledge of the concepts presented in this book are absolutely critical

to you being able to understand and use graphics apis such as direct x. This book will demystify what goes on inside a 3d engine, and will clearly detail to you the steps required to render a scene. Of course, it can’t teach you everything, but by the time you have read it you will have a good working knowledge of what it takes to write a decent 3d engine. Definately worth it - you’ve got to know this material eventually, and this book is a good choice.

pros: explains the math needed for game programming in an intuitive straightforward manner. first vectors, Matrices, Euler angles, and even quaternions. They also show the pros and cons of using which mathematical techniccon: sometimes they don’t explain things well enough while other times they over explains things that seem obvious. the first three chapters of the book talks to you as if you have never taken math before. then when they come to explaining projections on to one vector on to another in chapter 5 they explains it as if I knew math very well. But, that was not a big deal, I just review my old algebra text books and went to YouTube for a better explanation.I still gave it a 5 stars despite the cons because I have never seen another book for programming with math that was better than this one.

When I was younger I could not image how I would ever use trig and so I did not focus on it much. As a game developer it is something I use every single day and with the constant use my weakness in this area has been a hurdle. This book has helped a great deal in shoring up this weakness and having a greater understanding of the math needed to be an effective game developer.The concepts are clearly explained and the writer has a nice conversational style that does not become too chatty. He quickly moves to the meat of the subject and each concept builds on the previous for greater understanding. The book was not nearly as tedious as I feared it would be and I actually found my self becoming absorbed in the material.This book is exactly what it claims to be; a primer in 3D math. It is not a all encompassing reference but does a good job explaining and building on the basics. Exactly what I needed.

This book connects the mathematics you already know with the mathematics you need to know in order to be an effective 3D programmer or designer: coordinate systems, matrix and vector manipulation, applied geometry -- foundational techniques used by every 3D application and game in the world. It doesn’t address specific 3D technologies like OpenGL or DirectX. Instead, it teaches the mathematical toolset needed to use *any* 3D technology, including OpenGL and DirectX. If you struggle with finding the collision point between a line and a plane, if your eyes go a little glossy over

matrix transformations and dot products, if a quaternion sounds more like an exotic fruit than a useful mathematical trick to you, this is the book for you. Highly recommended for aspiring and professional game programmers alike.

What to say? the Bible, the springboard, the reference point for anyone who wants to become games maker.As soon as you start reading, given the challenging nature of the subject, the book seems difficult to fully understand.Overcome the obstacle of Chapter 5 the puzzle takes shape and everything becomes more clear. Mathematics exposition Clear and Fine, Elegant and Clean the code that accompanies the book.It is one of the most beautiful books ever written for the computer science, every programmer should read it ,at least once.

Bought as a gift for my husband and he seems to really enjoy this book. Would definitely recommend for a programmer interested in game development.

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