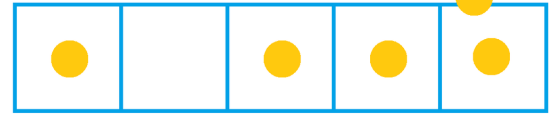


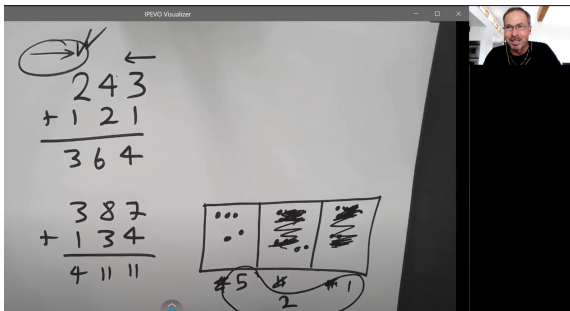
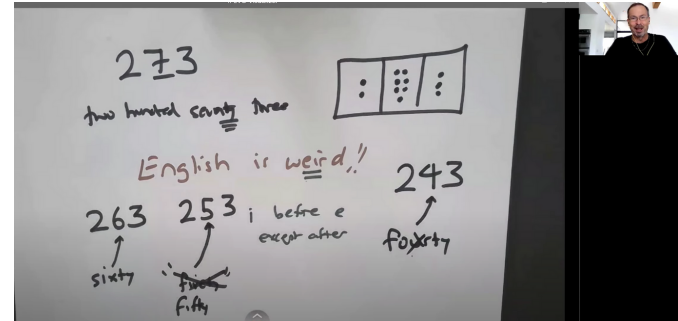
ADVENTURES IN EXPLODING DOTS

LIVE ONLINE LESSONS



The invention of place value is one of humankind's greatest intellectual achievements. It is surprisingly nuanced, and it permeates the entire K-12 curriculum (and beyond!). So many state mathematics standards rely on a deep understanding of it.

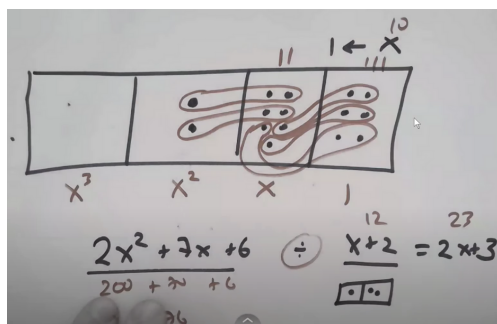
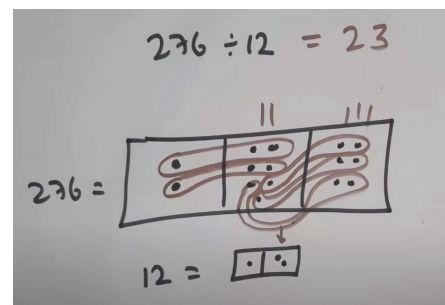
Lessons 1 and 2 set the scene for developing a truly solid understanding of place value. We give the **human story** of mathematics: we discuss our quirky naming of numbers, for instance, why we focus on the number 10 in arithmetic, and why some cultures chose base 12, base 20, or base 60!



Lessons 3 and 4 probe all the standard school arithmetic algorithms we think we already know so well. These lessons provide an "intellectual jolt" and **develop the meta-cognition and mindset for profound mathematical thinking** for upper elementary, middle school, and high school students alike.

High-school student in chat: *THIS I understand!*

Lessons 5 and 6 explore division, decimals, and the art of writing fractions as decimals. More, it subtly introduces the sophisticated ideas needed for the advanced high-school curriculum in grade-appropriate ways.



Lessons 7 and 8 are aimed specifically at the high school audience. We present polynomial algebra within the story of place value and deep, student-owned insights follow. Students create infinite series and produce examples of numbers that they can personally prove to be irrational. **All is connected and all is seen as natural and straightforward.**

Bonus Lesson: We offer a bonus ninth lesson in which we show how the story of place-value connects with current research mathematics. We explore base one-and-a-half! (And can do more!)

"Exploding Dots has changed my mind, and thus my life! Thank you!"