



Scholastic *Fraction Nation*

Fraction Nation uses research-validated methods to help struggling students in grades 4-8 build proficiency and fluency with fractions and decimals. Powerful visual models deepen conceptual understanding and provide a meaning-based foundation for computational skills. This technology-based program develops students' skills in rational number comparison, estimation, equivalence, addition, and subtraction.

Instructional Content

Fraction Nation focuses on the key areas of fraction and decimal quantity, equivalence, and addition and subtraction to deliver a firm foundation in fractions and decimals. *Fraction Nation* is organized in 9 topics and 64 lessons, which systematically build students' fraction fluency. In manageable chunks, each self-paced lesson focuses on one skill or concept to gradually build students' fluency.

Topics A through D establish student understanding of fraction quantity, and build skills in estimating and comparing fraction quantities. Topics E through G teach students about equivalence. Finally, building on quantity and equivalence, Topics H and I teach students about the computation procedures for addition and subtraction. Each topic is introduced with visual representations to provide a concrete anchoring for symbolic work.

Instructional Design

Fraction Nation provides focused, individualized instruction to meet each student's needs. The adaptive structure of each lesson allows students to work at his or her own pace and gradually releases student to the next topic. The program organizes the curriculum into 64 lessons. Each lesson includes instruction, practice, and assessment for a single learning objective. *Fraction Nation* follows the following 3-step process for instruction:

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| LEARN | Targeted, explicit instruction introduces students visually to a specific content or skill. Through the use of multiple examples, dynamic visual representations, and consistent mathematical language, students connect concepts and procedures and are prepared to practice and apply their learning. |
| PRACTICE | Guided interactive activities progressively build students' understanding through step-by-step practice and immediate corrective feedback. The program adapts based on students' performance. Students who succeed are accelerated, while students who need more support will receive it. Students who need more support receive scaffolded support through personalized encouragement and coaching. |
| PERFORM | Frequent performance assessments track students' level of mastery in each lesson. All assessment data is immediately tracked in the reports. Educators can quickly and accurately monitor student progress and performance. |

Each of the program's 64 lessons begins with a multimedia tutorial that introduces or extends fractions and decimal concepts through animated visual models. Lessons also include guided practice activities, which allow students to explore visual models in a hands-on manipulative environment through interactive fraction strips and number lines. Lessons are 15 minutes and focus narrowly on individual skills or strategies, ensuring that students can practice each new skill immediately after it is modeled.

Fraction Nation uses the number line model to build an integrated understanding of the number system. Instruction begins concretely—with fraction strips, anchored in real-world measurement examples—and carefully builds connections to the more abstract number line. This model is used across many different lessons, helping students see connections between different types of numbers—whole numbers, fractions and decimals, proper and improper fractions, and fractions with different denominators.

Assessments

Fraction Nation provides placement and ongoing assessments to track student performance and help teachers target those students who are in need of additional support.

- **Pre- & Post-Assessments**—In the initial placement assessment, *Fraction Nation* measures a student’s baseline of fraction fluency, and then systematically places students into the program to provide each student with an instructional path. In both the initial and final assessments, student are assessed in three key areas—quantity, equivalence, and addition & subtraction.
- **Continuous Assessment**—*Fraction Nation* regularly checks for mastery in the *Perform* section of each lesson. As students move through each topic, the program tracks student performance on each lesson. At the end of a topic, the program either promotes a student to the next topic, or guides the student through additional instruction and practice. The student will receive new practice sets, with new problems, and different assessments. Based on these assessments, performance reports will be generated for the teacher to monitor growth.

Motivation and Engagement

Fraction Nation provides an engaging, individualized experience where learning about fractions and decimals is fun and rewarding. The *student roadmap* indicates a student’s progress in *Fraction Nation*. The path is comprised of nine topic checkpoints and informs the student of what topic and lesson he or she will be working during the daily session. Throughout the program, unique surveys engage students’ interest while also demonstrating a real world use of fractions. Students immediately receive their performance assessment scores at the end of each lesson. As a reward for personal success, students select animated citizens to appear in their customized *roadmap*. In the performance assessment, *Fraction Nation* citizens cheer students as they demonstrate progress.

Differentiated Instructional Strategies

Fraction Nation provides an environment that takes into consideration the cognitive processing demands of fractions and decimals. The program avoids cognitive overload with a careful sequence of small steps. Each lesson introduces a constrained amount of new information and skills. The instruction uses a limited number of representations and definitions for fractions and is consistent and coherent. Pacing is self-directed by each student, who can take as much or little time on a task as needed. The supports and real-time feedback create a supported environment to reduce math anxiety, and therefore create a positive cycle for students building competence and confidence.

Strategies for English-Language Learners

Fraction Nation includes many support strategies for English-Language Learners. Throughout the program, students can utilize the Closed Captioning option which can be turned on or off. Students can also utilize a control called “Play-by-Play” which slows the pace of instruction and allows students to see and hear instruction sentence-by-sentence. Student scan listen repeatedly to any *Learn*, or targeted instruction, that they need to review. Students area also able to use the English-Spanish Glossary of Terms that will assist English-Language Learners with the understanding of the consistent mathematical language used throughout the program.

Strategies for Special Education Students

Through the use of technology, *Fraction Nation* is adaptive in numerous ways to the individual cognitive needs of students in Special Education. The targeted instruction includes Universal Design Features, such as:

- Caption text that can be shown or hidden
- Playback controls to pause, play, and rewind
- Progress indicators at the program level and at the lesson level to help students with self-monitoring their path to mastery
- Universal Design Features, such as Play-by-Play mode, which displays the instructional animations in a sentence-by-sentence way for students who need a slower pace, language supports, or attention supports
- Scaffolded feedback to guide students to the correct answer during practice.

Fraction Nation recognizes low performance in practice and assessment. If mastery is not indicated, a student can repeat a lesson up to three times, with new practice sets, problems, and assessments. The practice activities provide individual, differentiated experiences that are responsive to the various cognitive needs of different students. Students perform each task with visual, auditory, and text feedback. Student who make errors receive immediate corrective feedback and support.

The *Fraction Nation* Teacher's Guide provides a comprehensive overview of each the 64 lessons and offers teachers ways to conduct further intervention with struggling students. Within each overview, teachers can enhance and extend students' understanding of lesson concepts through the *Correct & Redirect*, *Extend*, or *Additional Lesson Extensions* sections of the TE. These extensions include ways for students to talk about the math, write about the math, and think about the math in a different way. Teachers can use the lesson extensions to assist students one-on-one or in small-group instruction.

Home-School Connection

A Parent Letter, available in English and Spanish, explains the goal of the *Fraction Nation* program and outlines where the student is on the roadmap to fraction fluency. Student reports that display students' progress and usage in the program can be shared with parents during conferences or sent home as progress indicators. Teachers are able to print Award Certificates as student master different topics in *Fraction Nation*. The certificates can be shared with parents, as well as used as examples of student achievement and progress.

Professional Development

Scholastic will provide a half-day, in-person implementation training for teachers. This training examines how *Fraction Nation* provides scaffolded instruction and adaptive practice in the key areas of fractions and decimals, and provides teachers with all the tools to successfully get started with the program. Participants learn how to effectively use *Fraction Nation*, including:

- Examining the explicit, targeted instruction through 9 topics and 64 carefully sequenced lessons
- Creating an implementation plan to support the classroom curriculum
- Exploring the software and management system
- Individualizing instruction and monitoring progress with reports

 For additional information about *Fraction Nation*, visit <http://www.tomsnyder.com/FractionNation>.