



# Spark

## ASSESSMENT & REMEDIATION



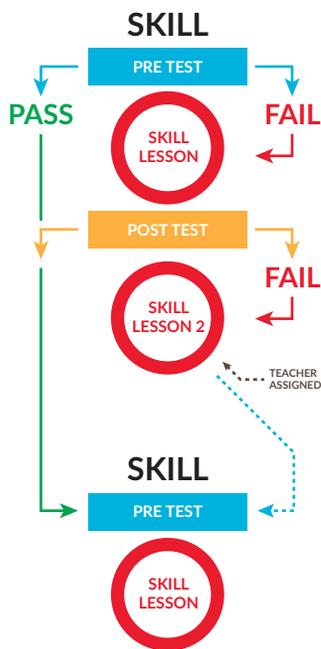
### Assessment and Remediation Tool for English Language Arts (ELA) & Math K-8 Students

SPARK is a flexible and media-rich set of content-based assessment tools and instructional materials designed specifically to support the state standards for grades K-8. SPARK creates individualized and prescriptive learning paths based on each student's specific level of skills mastery, providing them with extremely efficient and targeted skills practice and remediation.

#### BENEFITS AND FEATURES

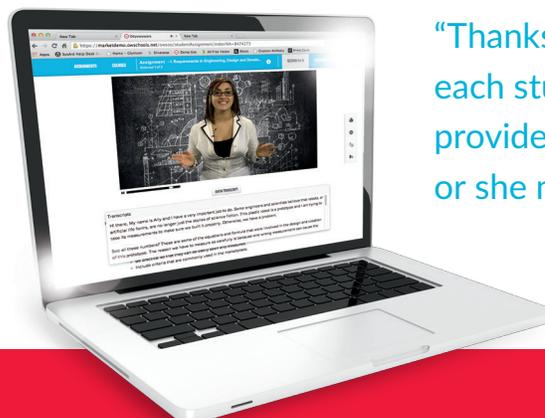
- ✓ Promotes mastery of K-8 English Language Arts (ELA) and math skills
- ✓ 17-25 units (individual skill lesson and assessment) in both ELA and math per grade level
- ✓ Lessons utilize grade-appropriate texts

- ✓ More than 1,600 skill assessment questions
- ✓ Prescriptive learning paths
- ✓ Lessons are embedded with rich animations and multimedia, direct-instruction videos, and dynamic learning activities
- ✓ Can be utilized as a standalone or as part of a course of study



#### HOW IT WORKS

Each **SPARK** unit focuses on a single skill. SPARK utilizes Odysseyware's **CRx (Credit Recovery) mode**, assigning a pretest for each unit. Based on the results of the assessment, if a student passes, they are assigned the next pretest. If a student fails the pretest, they are assigned a remedial skill lesson, followed by a post-test.



“Thanks to SPARK, we know the ‘holes’ in each student’s math knowledge and can provide targeted instruction to ensure he or she masters required concepts.”

— Kyle McCartney, Principal  
Oxford Middle School, Oxford, Alabama

Most SPARK lessons consist of four sections, employing a number of instructional tools to teach each specific skill.

SPARK Mathematics - Grade 8 Unit 4  
 REPRESENTING SOLUTIONS TO EQUATIONS OF A PARTICULAR FORM (8.EE.2)

**Section 1: Anticipatory Set, Objective & Vocabulary**

Section 1 introduces the concept, then lists lesson objectives and associated vocabulary words. This section focuses on thoroughly covering the vocabulary associated with this standard.

OBJECTIVES

- Identify the root symbols.
- Use these symbols to represent solutions to equations of the form  $x^2 = p$  and  $x^3 = p$ , (where p is positive and rational).
- Evaluate square roots of small perfect squares and cube roots of small perfect cubes.
- Recognize that the square root of 2 is irrational.

VOCABULARY

<b>exponent</b>	number that tells how many times the base is a factor
<b>factor</b>	number in a multiplication statement
<b>irrational number</b>	real number that is not rational; it cannot be expressed as either a terminating decimal or a repeating decimal
<b>power</b>	power in mathematics means the product of multiplying any number by itself
<b>root</b>	an equal factor of a number
<b>x cubed</b>	another way to say $x^3$
<b>x squared</b>	another way to say $x^2$
<b><math>x^2</math></b>	equivalent to x times x or x to the second power
<b><math>x^3</math></b>	equivalent to x times x times x or x to the third power

VOCABULARY AT WORK

An **irrational number** is a real number that is not rational. It cannot be expressed as either a terminating decimal or a repeating decimal.

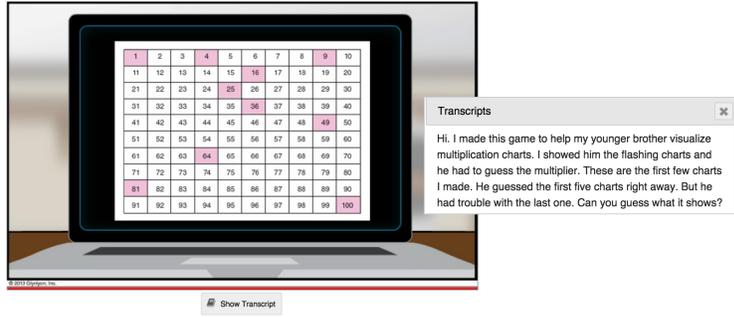
For example, the value of  $\pi$  is

3.141592...

This number continues forever without repeating. It is an irrational number.

**Section 2: Direct Instruction**

Putting learned vocabulary into action, Section 2 uses extensive audio and media to provide ample opportunity for students to hear and see the lesson within a real-world application.



A table of values is a helpful way to arrange information you need to remember. Here is a table of perfect squares and their square roots.

$x$	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	25	32	$\sqrt{2}$
$x^2$	1	4	9	16	25	36	49	64	81	100	121	144	169	196	225	625	1024	$x$

$x$	$(x)^2$	$^2!x$
1	1	1
2	4	1.414
3	9	1.732
4	16	2
5	25	2.236
6	36	2.249
7	49	2.645
8	64	2.828
9	81	3
10	100	3.162

If you know  $x$  but need the value of  $x^2$ , find  $x$  in the top row and read  $x^2$  in the bottom row in the table above.

If you are given  $x$  and need the square root of  $x$ , find  $x$  in the bottom row and read the  $\sqrt{x}$  in the top row.

You can use a similar table to help you remember the square root of numbers, like the one to the right.

**Section 3: It's Your Turn**

Students work through learning activities, complete guided practice, and may go through a synopsis or review. Section 3 also includes significant media and dynamic learning activities, providing students time to practice what they have learned.

Key point!

The square root of a number is used in many applications. It is so common that if you encounter the symbol without a specified power, you can assume that the desired root is  $\sqrt{\quad}$ .

$$\sqrt{\quad} = \sqrt[2]{\quad}$$

Once you have the perfect squares and square roots memorized, you will be able to solve many kinds of problems.

Morgan planted a square vegetable garden with an area of 625 square feet. What is the length of one side of the garden?

Area = 625 ft<sup>2</sup>

$S = ?$

Write an equation to describe the problem.

Use what you know about square roots to find a solution.

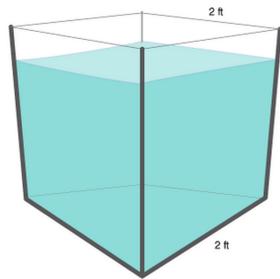
**Section 4: Show What You Know**

Now it's time for students to demonstrate what they have learned. In Section 4, students are assessed with a quiz, using the problem sets associated with this lesson.

Below is a table of cubes and cube roots. Remembering these values is an important step in your study of math.

$x$	1	2	3	4	5	6	7	8	9	10	20	$^3!x$
$x^3$	1	8	27	64	125	216	343	512	729	1000	8000	$x$

Be prepared to use your knowledge of the cube root to solve many kinds of problems.



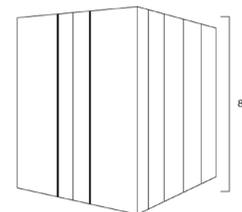
$$s^3 = 8$$

$$s = \sqrt[3]{8}$$

$$s = 2$$

Each side is 2 feet long.

One side of a shipping container measures 8 feet. The container is a cube. What is the container's volume in cubic feet?



Select the correct answer:

- $\sqrt{8}$  cubic feet
- $\sqrt[3]{8}$  cubic feet
- 64 cubic feet
- 512 cubic feet