

# Mathematics 8 Standards Parent Resource

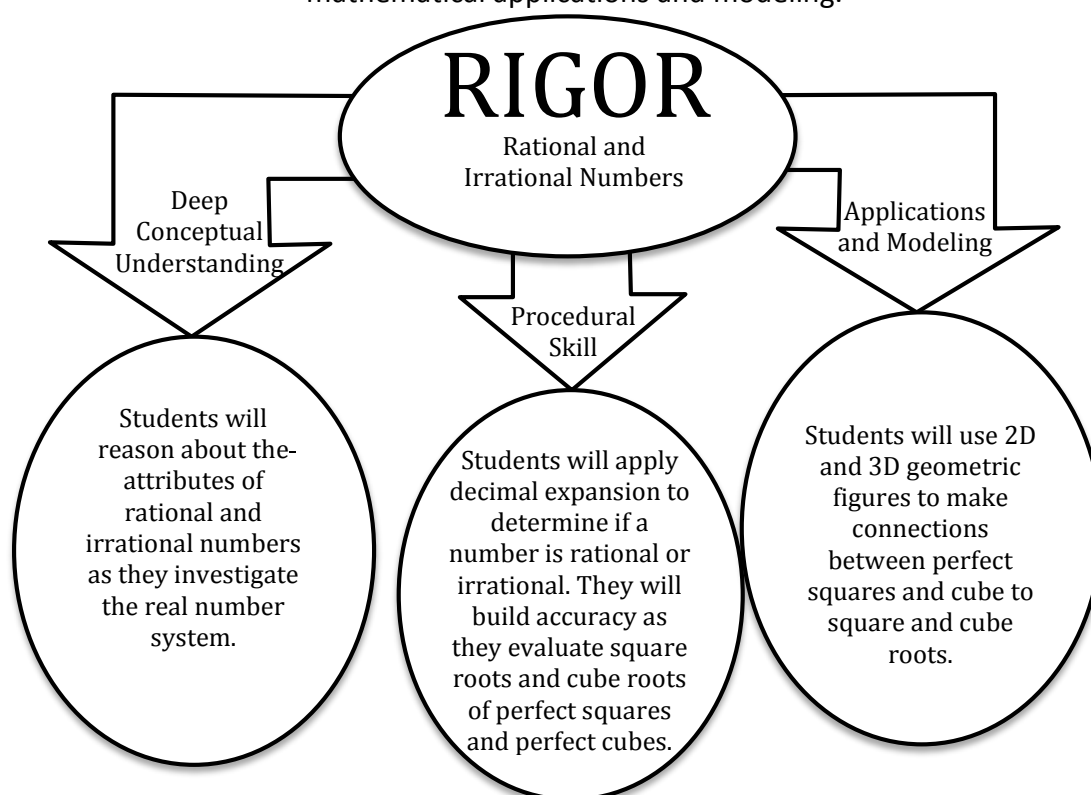
## **Unit 1: The Real Number System**

Unit 1 includes 3 topics of study, listed below. This resource is for Topic 2.

|                                   |  |                         |
|-----------------------------------|--|-------------------------|
| Topic 1                           | <b>Topic 2</b>                         | Topic 3                 |
| Magnitude and Scientific Notation | <b>Rational and Irrational Numbers</b> | The Pythagorean Theorem |

| Topic                                  | <b>Learning Goals by <a href="#">Common Core State Standard</a></b><br><i>Students will be able to...</i>  |
|--|--|
| <b>Rational and Irrational Numbers</b> | <ul style="list-style-type: none"> <li>• Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.</li> <li>• Use square root and cube root symbols to represent solutions to equations of the form <math>x^2 = p</math> and <math>x^3 = p</math>, where <math>p</math> is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that <math>\sqrt{2}</math> is irrational.</li> <li>• Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions.</li> </ul> <p style="text-align: center;"><i>Instructional videos in the hyperlinks above are meant to support C2.0 content, but may use vocabulary or strategies not emphasized by MCPS.</i></p> |

The Common Core State Standards require a balance of three fundamental components that result in rigorous mathematics acquisition: deep conceptual understanding, procedural skill, and mathematical applications and modeling.

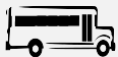


# Grade 8 Standards Parent Resource

Unit 1: The Real Number System

Topic 2: Rational and Irrational Numbers

## Learning Experiences by Common Core State Standard



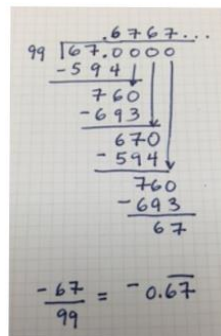
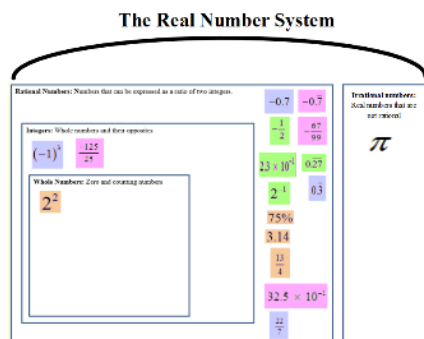
In school, your child will...



At home, your child can...

Topic 2: Rational and Irrational Numbers

- Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.



- Use square root and cube root symbols to represent solutions to equations of the form  $x^2 = p$  and  $x^3 = p$ , where  $p$  is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that  $\sqrt{2}$  is irrational.

Solve

$$x^2 = 81$$

$$\sqrt{x^2} = \sqrt{81}$$

$$x = \pm 9$$

Check

$$x = 9$$

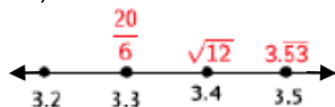
$$x^2 = 81$$

$$(9)^2 = 81$$

$$81 = 81$$

LEARN ZILLION

- Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions.



- Use a [standard clock](#), to change the numbers on the face to the perfect squares. To reinforce square roots of perfect squares.
- Use graph paper, to approximate and [draw perfect squares](#) to determine if a number is rational or irrational. Have your child find the area, using length times width and find the perfect square or approximate non-perfect squares.

### Additional Resources

- [What's a Rational Number?](#) (video tutorial)
- [Introduction to Rational and Irrational Numbers](#) (video tutorial)
- [How do you turn a repeating decimal into a fraction?](#) (video tutorial)
- [LearnZillion: Solve equations with squares and square roots](#) (video tutorial)
- [Approximating Irrational Number on Number Line](#) (video tutorial)
- [NRICH: Mini Cross-number](#) (online game)
- [NRICH: One Wasn't a Square](#) (online game)
- [NRICH: Cycling Squares](#) (online game)
- [Rational or Irrational?](#) (online check)
- [Estimate Positive and Negative Square Roots](#) (online check)
- [Estimate Cube Roots](#) (online check)
- [Mathematics 8 Standards Unit 1 Topic 2 Rational and Irrational Numbers](#) (flexbook)

*Additional Practice links support C2.0 content, but may use vocabulary or strategies not emphasized by MCPS.*