

The Number System

- Know that there are numbers that are not rational, and approximate them by rational numbers.

Expressions and Equations

- Work with radicals and integer exponents.
- Understand the connections between proportional relationships, lines, and linear equations.
- A number $\sqrt{2}$

The Number System

8.NS

Know that there are numbers that are not rational, and approximate them by rational numbers.

- Know that there are numbers that are not rational, and approximate them by rational numbers. Use a number line to find the two rational numbers between $\sqrt{2}$ and $\sqrt{3}$.
- Use a number line to find the two rational numbers between $\sqrt{2}$ and $\sqrt{3}$. (e.g., π^2). For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.

Expressions and Equations

8.EE

Work with radicals and integer exponents.

- Know that $a^m a^n = a^{m+n}$ for positive integers m and n . For example, $3^2 \cdot 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.
- Use $x^2 = p$ and $x^3 = p$, to estimate square roots or cube roots of a number. For example, $x^2 = 2$ or $x^3 = 2$.
- Use $\sqrt[n]{a}$ to represent $a^{1/n}$. For example, $\sqrt[3]{27} = 27^{1/3} = 3$.



3. Describe the effect of dilations, translations, reflections, and rotations on two-dimensional figures. Describe the effect of dilations, translations, reflections, and rotations on three-dimensional objects.
4. Understand two-dimensional figures in the plane. Understand congruence and similarity using transformations. Understand similarity transformations as compositions of dilations, translations, reflections, and rotations. Understand the criteria for triangle similarity. Understand the criteria for triangle congruence. Understand the criteria for quadrilateral classification.
5. Understand angles and their relationships. Understand the properties of parallel lines and transversals. Understand the properties of circles and their relationships to other geometric figures. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.*

Understand and apply the Pythagorean Theorem.

6. Explain the Pythagorean Theorem and its converse.
7. Apply the Pythagorean Theorem to find unknown sides or angles in a right triangle. Apply the Pythagorean Theorem to solve real-world and mathematical problems involving right triangles.
8. Apply the Pythagorean Theorem to find unknown sides or angles in a right triangle. Apply the Pythagorean Theorem to solve real-world and mathematical problems involving right triangles.

Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.

9. Calculate the volume of cylinders, cones, and spheres.

