Sequences Patterns, finding unknown terms, arithmetic sequences, and triangular numbers. Ratios & Rates Ratios, proportions, speed, rates, and unit conversions. Decimals Powers of 10, multiplication, division, and converting between fractions and decimals. Percents Converting among fractions, decimals, and percents; estimation; precortions; and percent change. Square Roots Squares, square roots, cube roots, estimation, comparison, and the Pythagorean theorem. Exponents Multiplying and dividing powers, negative exponents, scientific notation, raising a power to a power, and solving equations. / Lesson Planner / LearningCorner.co

sequences and patterns, understand ratios and rates, perform operations with decimals and percents, comprehend square roots and exponents, and apply these concepts to solve problems effectively.

# **Materials and Prep**

- Pencil and paper for calculations
- Calculator (optional for checking answers)
- Graph paper for visualizing sequences and patterns
- Timer for speed and rate exercises
- Ruler for measuring and drawing triangles to explore square roots

Before starting the lesson, ensure the student is familiar with basic arithmetic operations, fractions, and how to convert between fractions and decimals.

# Activities

## • Pattern Discovery:

Have the student create a list of numbers based on a rule (e.g., adding 3 each time) and then identify the nth term of the sequence. Encourage them to create their own sequences and challenge you to find the pattern!

### • Ratio Relay:

Set up a series of real-life scenarios where the student must calculate ratios and proportions, such as comparing distances traveled in different times or quantities of ingredients in a recipe. This can be turned into a timed challenge.

#### • Decimal Dash:

Provide a set of numbers and have the student convert them between fractions and decimals. Include operations like multiplication and division to reinforce their understanding of how decimals work.

#### • Percent Puzzles:

Create simple word problems that involve calculating percentages, such as discounts during a sale. Challenge the student to estimate the answers before calculating them to enhance their mental math skills.

#### • Square Root Hunt:

Using a ruler, have the student draw different triangles and calculate the lengths of their sides using the Pythagorean theorem. Then, find the square roots of the areas of these triangles.

#### • Exponential Exploration:

Guide the student through the rules of exponents with hands-on examples, such as calculating the volume of cubes and comparing large numbers using scientific notation. Have them create an "Exponents Dictionary" with examples.

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this series?"

- "Ratios compare quantities. For example, if you have 2 apples and 3 oranges, the ratio of apples to oranges is 2:3. How can we use this in real life?"
- "Decimals are just another way to represent fractions. Can you convert 1/4 into a decimal?"
- "Percentages are simply fractions out of 100. If something costs \$50 and is on sale for 20% off, how much do you save?"
- "The square root of a number is the value that, when multiplied by itself, gives that number. What is the square root of 16?"
- "Exponents tell us how many times to use a number in multiplication. For example, 2^3 means 2 multiplied by itself 3 times. Can you calculate 3^2?"