



## Problem Solving Grades 3 & 4

The **Problem Solving Grades 3 & 4** program effectively builds a student's ability to use mathematical knowledge to develop solutions to complex problems. The program features more than 500 problems that cover all of the principal strands of mathematics: numeration, measurement, patterning, geometry, data management and probability. **Problem Solving Grades 3 & 4** requires students to not simply repeat established facts. Instead, the program requires them to work through more complex questions and develop their own strategies to solve them. This helps to develop reasoning and critical thinking skills, as students must sort necessary and unnecessary pieces of data from many questions. Questions in **Problem Solving Grades 3 & 4** are based on either detailed word problems or on graphs and visual aids. Additionally, the program concentrates on real-world situations to show students how what they learn in the classroom will be useful in their own lives. To capture the student's interest, **Problem Solving Grades 3 & 4** uses hundreds of colorful graphics, animations, sound effects and music. These rewards will motivate the students to continue learning with the software.

## Targeted Skills

- Problems cover the principal strands of mathematics: numeration, measurement, patterning, geometry, data management and probability.
- Read real-world scenarios and understand their mathematical significance.
- Sorting relevant data from irrelevant data.
- Extracting mathematical meanings from visual aids and graphs.
- Develop problem solving strategies.

## Teacher Dashboard

The Teacher Dashboard tracks student progress throughout each program and records the percentage score for every activity completed. This feature provides an overview of how well a student is progressing and allows the teacher to identify strengths and weaknesses.

- Records students' results automatically as they work.
- Prints reports quickly and easily for sharing with parents and staff.
- Provides summary reports by subject or detailed reports by activity.
- Allows teachers to print reports for individual students or an entire class.
- Stores student marks in one central location for all programs.

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## Program Outline

The program is broken down into 5 main units, which can all be accessed from the main menu. On the following pages, each of these different units are broken down. The main menu units are:

1. Data Management & Probability
2. Geometry
3. Measurement
4. Numeration
5. Patterning & Algebra

# Problem Solving Grades 3 & 4

## 1. Data Management & Probability

ACTIVITY NAME	CONTENT	REQUIRED SKILLS
<b>Basketball Probability</b>	Various word problems about probability in a basketball game, based on player statistics.	Read word problems as a basis for probability experiments. Predict the probability that an event will occur.
<b>Follow the Directions</b>	Students have to follow directions on a given flow chart and pick from a series of destinations.	Read data from a flow chart.
<b>How We Spend Our Days</b>	Various questions about reading and comparing data from a bar graph with two series.	Read multiple series bar graphs with one-to-one correspondence.
<b>Read Stem and Leaf</b>	Various questions about reading data from a stem and leaf plot.	Read data from a stem and leaf plot.
<b>Make Stem and Leaf</b>	Students have to construct a stem and leaf plot from a given set of data.	Create a stem and leaf plot from a given set of data.
<b>Bag of Marbles</b>	Various problems about calculating the probability of pulling a marble out from a described bag of marbles, after a certain amount of marbles have been taken out.	Count and group given pictorial data as a basis for probability experiments.
<b>Mr Wilson's Wacky Wheel</b>	Students have to look at a diagram of a spinning wheel and determine the probability that it will land on a certain section or combination of sections.	Predict the probability that an event will occur.
<b>The Book Fair</b>	Students have to read a chart of information about a number of books and answer a series of questions.	Read data from a simple text based data chart.
<b>Weather Problems</b>	Various questions about the number of rainy or sunny days over two months.	Calculate a data set from a given word problem. Compare pieces of data from this calculated set.

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## 2. Geometry

ACTIVITY NAME	CONTENT	REQUIRED SKILLS
<b>Polygon Riddles</b>	Various riddles based on the properties of 2D geometric shapes.	Understand basic properties of 2D shapes.
<b>Animal Grid</b>	Look at a given grid and describe the contents of a given co-ordinate.	Understand grid geometry.
<b>Parts of a Geometric Figure</b>	From a given 3D figure, determine how many squares, circles, triangles and rectangles were used to build that shape.	Understand that 3D figures are made up of 2D shapes and determine what shapes are needed to build a given figure.
<b>Math on the Grid</b>	From a given grid, fill in numbers from co-ordinates to solve simple math problems based on those entries.	Understand grid geometry.
<b>Math on the Grid II</b>		One digit addition & subtraction. Multiplication & division facts to 81.
<b>Friend Map</b>	On a map with a grid and a compass, calculate how far a series of houses is apart, in specific directions.	Understand grid geometry. Understand the cardinal directions.
<b>Toothpicks and Marshmallows</b>	How many marshmallows and toothpicks would you need to construct a given 3D figure.	Understand the number of vertices and edges that various 3D figures have.
<b>Toothpicks and Marshmallows II</b>		
<b>How Big is That Angle?</b>	From a real world picture, a given angle is highlighted. Students have to determine whether the angle is greater than, less than or equal to 90 degrees.	Determine whether a given angle is greater than, less than or equal to 90 degrees.
<b>Transformation Descriptions</b>	Based on a written description of a transformation, students have to determine whether the transformation is a turn, a reflection or a slide.	Understand the difference between turns, reflections and slides.
<b>Tangrams</b>	Click on the shapes to fit them into each tangram pattern.	Build a complex large shape from a series of given shapes.

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## 3. Measurement

ACTIVITY NAME	CONTENT	REQUIRED SKILLS
<b>Money Problems I</b>	Various word problems involving addition and subtraction of money.	Add and subtract money up to \$50.00
<b>Temperature Change</b>	Read a thermometer and calculate what the temperature will be if it changes by a given number of degrees.	Read a thermometer to the nearest degree. Calculate a temperature change.
<b>Area &amp; Perimeter Problems</b>	Various word problems involving area and perimeter.	Calculate perimeter in standard units. Calculate area in standard units.
<b>Lunch House Money Problems</b>	Given a menu, students have to answer various questions about the total cost for various combinations of items.	Count values of money and make change for up to \$25.00
<b>Measure the Yard</b>	Students have to determine the perimeter of the different parts of the yard based on a given map.	Calculate perimeter in standard units. Determine the length of various items from a map based on other items and given measurements.
<b>Money Problems II</b>	Various word problems involving addition and subtraction of money.	Add and subtract money up to \$50.00
<b>Time Problems</b>	Various word problems involving starting time and several time intervals, where students have to calculate the end time.	Add several amounts of time to a given time to calculate the ending time.
<b>Time Riddles</b>	Various riddles about equivalencies of units of time.	Understand the units of measurement for time.
<b>Mixed-up Measurements</b>	Various word problems involving comparing measurements with different units.	Understand the units of measurement for time. Compare given measurement combinations.

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## 4. Numeration

ACTIVITY NAME	CONTENT	REQUIRED SKILLS
<b>Big Numbers</b>	Match entries in a column of written numbers to entries in a column of numbers.	Understand how to write numbers 1-10000.
<b>Numeration Tool Kit</b>	Various word problems about names of operations and other mathematical terms.	Understand basic mathematical terms.
<b>Rounding Riddles</b>	Various riddles which involve rounding numbers.	Round numbers to the nearest 10, 100 and 1000.
<b>Add &amp; Subtract Problems</b>	Various real-world problems which involve addition and subtraction.	3 digit addition and subtraction.
<b>Multiply &amp; Divide Problems</b>	Various real-world problems which involve multiplication and division.	Multiplication and division facts to 81.
<b>Name Fractions</b>	Calculate a fraction which describes the proportion of vowels in a given student's name.	Understand the components of fractions. Create a fraction from given data.
<b>Fraction Problems</b>	Various real-world problems which involve fractions.	Addition and subtraction of fractions.
<b>Decimal Problems</b>	Various real-world problems which involve decimals.	Addition and subtraction of decimals to the tenths and hundredths.
<b>Equivalent Fractions &amp; Decimals</b>	Click on the fraction equivalent to a given decimal.	Calculate an equivalency between a fraction and a decimal.
<b>Guess the Number (3 activities)</b>	In 11 guesses, the student must pick a mystery number. They are told if their guesses are too big or too small.	Use addition and subtraction logic to find a mystery number.
<b>Number Mysteries</b>	Various word problems which involve determining a mystery number from given clues.	
<b>Number Riddles</b>		
<b>Tim's Science Project</b>	Help Tim in his science project by putting a series of decimals in order.	Understand the value of decimals to the tenth, hundredth and thousandth.
<b>The Data You Need</b>	Read given word problems and determine which piece of data you do not need to solve the problem.	Determine which data is irrelevant in a given problem.

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## 5. Patterning & Algebra

ACTIVITY NAME	CONTENT	REQUIRED SKILLS
<b>Algebra Word Problems</b>	Various real-world problems which involve missing terms from simple algebraic problems.	Solve real-world problems of simple algebra.
<b>Amazing Predictions</b>	Students use a sequence of multiplication problems to determine the answer of large multiplication problems.	Use a pattern to solve large multiplication problems.
<b>Finish the Quilt (3 activities)</b>	From a given colorful geometric pattern on a quilt, determine what color subsequent squares will be.	Fill in a missing entry in a geometric pattern.
<b>Pattern Description Match</b>	Match entries in a column of numerical patterns with entries in a column of written pattern descriptions.	Understand written form of numerical patterns.
<b>Patterning Problems</b>	Various real-world problems which involve determining the first and subsequent entries in a given pattern.	Understand real world patterning problems and determine the proper responses.
<b>Patterning Problems 2</b>		
<b>Patterns of Area</b>	Fill in the area column on a given chart with a column of side length of a square pig pen.	Complete the pattern in a given numerical chart.
<b>Shape Patterns</b>	Click on the shape that will appear next in a geometric pattern.	Fill in a missing entry in a geometric pattern.
<b>Ticket Matching</b>	Pick a ticket from a given group which has a multiplication problem on it which is equivalent to a given addition problem.	Determine equivalencies in pairs of multiplication and addition/subtraction equations.