



## Problem Solving Grades 2 & 3

The **Problem Solving Grades 2 & 3** 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 2 & 3** 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 2 & 3** 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 2 & 3** 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 2 & 3

## 1. Data Management & Probability

ACTIVITY NAME	CONTENT	REQUIRED SKILLS
<b>Organize the Jackets</b>	You have to sort the jackets into 8 groups. Click on the jacket, then click on a group to move that jacket into the group. You will have 8 groups of jackets when you are finished.	Use three attributes to sort objects.
<b>Getting to School</b>	Various questions which require students to read and compare pieces of data from a bar graph that describes the ways all the students got to school that day.	Read bar graphs with one-to-one correspondence.
<b>Spinner</b>	Various questions about certainty and uncertainty when spinning a pictured spinner.	Count and group given pictorial data as a basis for probability experiments.
<b>Hidden Candy</b>	Various questions about certainty, uncertainty and chance which students determine from a given pie chart.	Predict the probability that an event will occur.
<b>Rolling the Dice</b>	Various questions about certainty, uncertainty and calculating probability when rolling dice.	Count and group given pictorial data as a basis for probability experiments.
<b>Bag of Coins</b>	Various questions about calculating probability of picking, or not picking certain coins from a pictured collection.	Calculate the probability that an event will occur.
<b>Pick a Book</b>	Various questions about calculating probability of picking, or not picking certain colored books from a pictured set.	
<b>Venn Diagram</b>	Various questions about where individual entries lie and about total numbers for a Venn diagram that shows who in the class play hockey and/or baseball.	Read Venn Diagrams and determine where given pieces of data belong.
<b>Numbers Into Venn Diagram</b>	Students are required to move various numbers into an empty Venn diagram that shows even numbers & multiples of 5.	

# Problem Solving Grades 2 & 3

## 2. Geometry

ACTIVITY NAME	CONTENT	REQUIRED SKILLS
<b>Geometry Puzzles</b>	Various questions involving counting the number of smaller 2D and 3D geometric shapes within given 2D and 3D shapes.	Understand that 2D shapes and 3D figures can be divided into smaller shapes and figures.
<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.
<b>Click on the Transformation</b>	Students hear the name of a transformation (reflection, slide, turn) and then have to click on the picture that matches that transformation, based on an original picture.	Determine whether a given transformation is a flip, a turn or a slide.
<b>Shape Riddles</b>	Various riddles based on the properties of 2D geometric shapes.	Understand basic properties of 2D shapes.
<b>Geometry Riddles</b>	Various riddles based on the properties of 2D and 3D geometric shapes and figures.	Understand basic properties of 2D shapes. Understand basic properties of 3D figures.
<b>Read the Map</b>	Various questions which require students to pinpoint co-ordinates and identify locations on a given map.	Read co-ordinates from a grid and determine distance between given co-ordinates.
<b>Read the Map 2</b>		
<b>Shapes to Figures</b>	Show a net of a figure and students have to choose which figure can be built from the given net.	Understand that 3D figures are made up of 2D shapes and determine what shapes are needed to build a given figure.
<b>Translation Riddles</b>	Various real-world word problems that describe reflections, slides and turns.	Determine whether a given transformation is a flip, a turn or a slide. Determine the degree of a given turn - quarter, half, three quarters.

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## 3. Measurement

ACTIVITY NAME	CONTENT	REQUIRED SKILLS
<b>Calendar Problems</b>	Various questions about identifying dates that are a certain number of days of weeks before and after a given reference point on a calendar.	Use a calendar to read the date and to find other dates before and after.
<b>Distance of the Race</b>	Various questions which involve reading and comparing distances some runners have gone, which are depicted in a graph of the track.	Measure and compare distances using a ruler and standard units of measure.
<b>Homework</b>	If it takes you $n$ minutes do do your homework, type what time it would be if you started at $y:zx$ am?	Add an amount of time to a given amount of time to the nearest five minutes.
<b>Measure the Rainfall</b>	Various questions which involve reading and comparing amounts of rainfall in various rain gauges over several hours.	Measure and compare volumes using standard units.
<b>Money Problems</b>	Students have to solve various real-world questions based on the addition and subtraction of money.	Count values of money and make change for up to ten dollars.
<b>Playground Measurements</b>	Students have to determine the area and perimeter of the different parts of the playground based on a given map.	Calculate area and perimeter in non-standard units.
<b>Perimeter Problems</b>	Students have to solve various real-world perimeter problems.	Calculate perimeter in standard units.
<b>Area Pairs</b>	Students have to identify sets of shape pairs that have the same area from a given group of varied sized shapes.	Calculate area in non-standard units.
<b>Area Problems</b>	Students have to solve various real-world area problems.	Calculate area in standard units.
<b>Tara's Tuesday Schedule</b>	Given a schedule of Tara's day, students have to answer various questions about the amount of time she does various things.	Add an amount of time to a given amount of time to the nearest five minutes.
<b>Ted's Snack Bar</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 \$10.00.
<b>Temperature Change</b>	Students see a picture of a thermometer and have to identify the new temperature if it went up or down $x$ degrees?	Read a thermometer and add or subtract a given number of degrees.
<b>Name the Unit of Measurement</b>	Students pick the appropriate unit of measure for various real-world situations.	Understand the appropriate unit of measure for a real-world situation.

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## 4. Numeration

ACTIVITY NAME	CONTENT	REQUIRED SKILLS
<b>What's Not Needed?</b>	From a given real-world scenario, students have to determine which piece of information is not needed to solve the problem.	Find irrelevant information from a given word problem.
<b>2 Digit Add &amp; Subtract Problems</b>	Various real-world 2 digit addition and subtraction problems.	2 digit addition and subtraction.
<b>2 Digit Add &amp; Subtract Problems with Regrouping</b>	Various real-world 2 digit addition and subtraction problems with regrouping	2 digit addition and subtraction with regrouping.
<b>3 Digit Add &amp; Subtract Problems</b>	Various real-world 3 digit addition and subtraction problems.	3 digit addition and subtraction.
<b>Multiplication Problems</b>	Various real-world multiplication problems.	Multiplication facts to 49.
<b>Division Problems</b>	Various real-world division problems.	Division facts to 49.
<b>Fraction Problems</b>	Various real-world fraction problems.	Understand basic addition of fractions with like denominators.
<b>Games Day</b>	Various questions about the number of 5 point and 1 point tickets that students have earned at the annual school games day.	2 digit addition and subtraction.
<b>Mixed Problems</b>	Various real-world problems which involve more than two steps of addition, subtraction, multiplication and division.	Use combinations of addition, subtraction, multiplication and division to solve problems.
<b>Number Riddles</b>	Students have to solve various riddles based on identifying numbers through process of elimination and using addition, subtraction, multiplication and division.	
<b>Number-Word Match</b>	Students have to match written numbers with their numerical equivalent.	Read and print number words 1 to 1000.
<b>Sudoku</b>	Students have to solve simple examples of this popular number game.	Solve simple number puzzles.

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## 5. Patterning & Algebra

ACTIVITY NAME	CONTENT	REQUIRED SKILLS
<b>Family Vacations</b>	Look at the graphs showing the distance travelled by different families and fill in the missing numbers from the patterns.	Fill in a missing entry in a numerical pattern.
<b>Finish the Quilt</b>	Look at the picture of an unfinished quilt and determine which color individual sections will be when the quilt is finished, if the pattern is maintained.	Fill in a missing entry in a geometric pattern.
<b>Height of the Family</b>	Look at the graph of how each member of the family is growing. If they keep growing at the same rates, fill in the missing values.	Fill in a missing entry in a numerical pattern.
<b>Pattern Match</b>	Match the pattern description with its numerical representation.	Match a numerical pattern with a given description.
<b>Missing Numbers</b>	Students are introduced to basic algebra through real-world problems that feature a missing number that students have to calculate through addition, subtraction, multiplication or division.	Solve real-world problems of simple algebra.
<b>Number Charts</b>	Students are given a number on a number chart and have to use this number as a reference to move a given number of squares to a new number.	Follow directions on a given number chart.
<b>Tomato Plants</b>	Students are given a chart and the growth rate of a tomato plant is described. They have to fill in the missing values on the chart based on this data.	Fill in a missing entry in a numerical pattern.
<b>Pattern Problems</b>	Various real-world patterning problems.	Understand real world patterning problems and determine the proper responses.
<b>Pattern Problems 2</b>		