

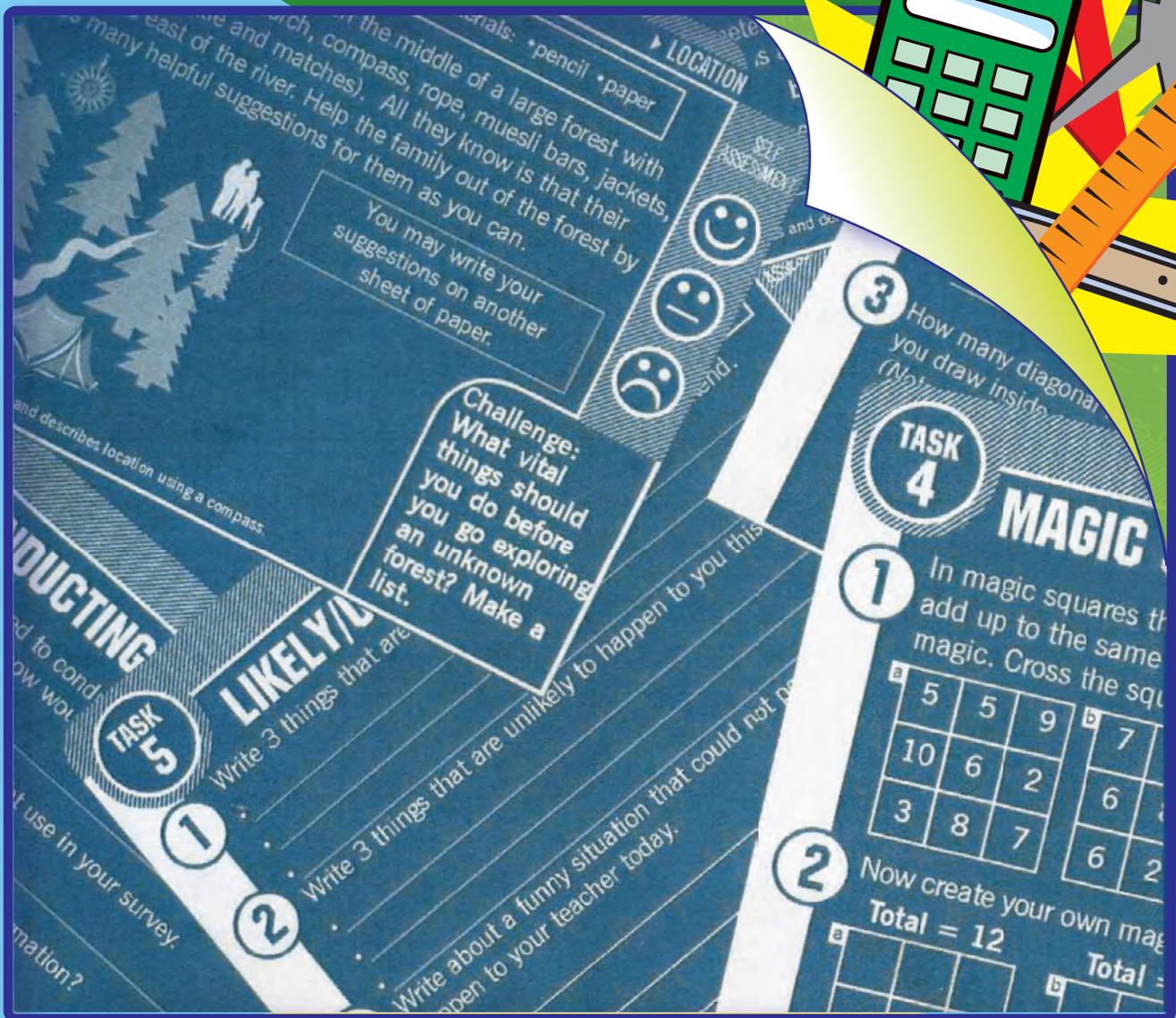
Mathematics

Activity Book 2

Primary Math Problems

Teacher Edition

GRADES 3-4



NEWPATH
LEARNING

Introduction

The **Primary Math Problems** series is a comprehensive teacher resource containing a variety of reproducible mathematical problem task cards – some with one solution, some with a number of solutions and some open ended. The problems are related to practical everyday mathematical situations, with each activity designed to challenge students to use their knowledge and problem solving skills.

Problem solving can develop many valuable skills in our students such as logical reasoning, creative thinking and communication skills. Students require perseverance, flexibility in ideas and methods, reflective thinking and confidence if they are going to be successful in this area. The problems will ask students to draw on a number of mathematical strategies in order to solve them. These strategies need to be introduced and taught to students if they are going to gain the skills necessary to solve a variety of problems. For students to solve a problem they first need to read the facts carefully and understand what the problem is asking them to do. They then need to work out a plan for solving the problem, carry out the processes involved and hopefully look back over their answer and assess the results successfully.

Problems can be solved using a number of different strategies. These strategies may include:

- Think, estimate and check
- Draw a diagram or picture
- Look for patterns
- Make a model
- Act out the problem
- Construct a table or a graph
- Write a statement
- Make a list
- Calculate
- Reflect and assess results

Prior to presenting the problems from this book to your students, put a list of these strategies on display. Go through each one and present students with an example to work with. Keep the strategies on display, then as your students work through the various problem cards from this book, ask them which strategies they need to solve each problem. In some cases they may need to use more than one strategy to solve a problem. A checklist included in this book allows teachers and students to keep a record of the strategies used to solve each problem. The above strategies are explained more thoroughly and with examples further on in the teaching notes, which ideally should be worked through with the students.

The problem cards in this book have been divided into the four main areas of the math curriculum:

- SPACE
- NUMBER
- MEASUREMENT
- CHANCE and DATA

The principles of WORKING MATHEMATICALLY and REASONING and STRATEGIES have been incorporated into each of the four main areas.

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Teaching Points and Examples	... page 8
Assessment Checklist	... page 12

PROBLEM CARDS: Space and Location

TITLE	STRATEGY	OUTCOME	PAGE #
Task 1: Bridges	Make a model	Identifies and represents useful shapes in construction.	.....page 13
Task 2: Lines	Draw a diagram	Identifies lines within shapes.	.....page 13
Task 3: Straight Lines	Make a model	Recognizes and represents straight lines in construction.	.....page 14
Task 4: Curved Lines	Make a model	Recognizes and represents curved lines in construction.	.....page 14
Task 5: Cylinders	Make a model	Uses 2D shapes to construct a 3D model.	.....page 15
Task 6: Rabbit Hutch	Make a model	Constructs a 3D model for a purpose.	.....page 15
Task 7: Farmyards	Make a model	Visualizes and constructs shapes using lines.	.....page 16
Task 8: Houses	Make a model	Makes simple models of 3D shapes. Recognizes useful shapes in construction.	.....page 16
Task 9: Towers	Make a model	Identifies and uses useful shapes for construction.	.....page 17
Task 10: Symmetry	Draw a diagram	Identifies and uses symmetry for design purposes.	.....page 17
Task 11: Tessellating Tiles	Look for patterns Draw a diagram	Recognizes and uses tessellating shapes for design purposes.	.....page 18
Task 12: The Aquarium	Draw a diagram	Uses and understands the language of location.	.....page 18
Task 13: Step It Out	Act it out Write a statement	Uses and understands the language of location.	.....page 19
Task 14: Local Map	Write a statement	Visualizes, finds and compares paths on simple maps.	.....page 19
Task 15: Lost!	Make a list	Interprets and describes location using a compass.	.....page 20
Task 16: Stranded	Calculate	Uses knowledge of space and number to solve a problem.	.....page 20
Task 17: Playground	Draw a diagram	Visualizes, designs and records features when making a simple map.	.....page 21
Task 18: Lost Treasure	Draw a diagram	Uses compass points to interpret and describe direction.	.....page 21
Task 19: Zoo Map	Look for patterns	Uses grid references to organize and locate items on a map.	.....page 22/23
Task 20: School Map	Draw a diagram	Plans and draws simple maps of a familiar environment.	.....page 22
Task 21: Assessment Cubes	Make a model	Uses 2D shapes to construct a 3D model.	.....page 24
Task 22: Assessment Class Position	Draw a diagram	Understands and demonstrates position in a familiar environment.	.....page 24

PROBLEM CARDS: Number

TITLE	STRATEGY	OUTCOME	PAGE #
Task 1: The Cinema	Draw a diagram Calculate	Selects appropriate operations and computation methods to solve problems involving numbers.	page 25
Task 2: Number Combinations	Look for patterns Make a list	Uses knowledge of number to represent multiple numbers.	.....page 25
Task 3: Emus and Wombats	Draw a picture Estimate and check	Solves a problem using knowledge of number and number groups.	.....page 26
Task 4: Magic Squares	Calculate	Uses addition to solve number patterns.	.....page 26
Task 5: Football Scores	Estimate and check	Uses addition and multiplication facts to solve a problem.	.....page 27
Task 6: Equations	Make a list Calculate	Generates equations using set numbers and operations.	.....page 27
Task 7: 5 mile Run	Calculate Look for patterns	Uses knowledge of multiplication and addition to solve a problem.	.....page 28
Task 8: Trip to the Museum	Calculate	Uses knowledge of division to solve a problem.	.....page 28
Task 9: Street Numbers	Look for patterns	Uses knowledge of number facts and patterns to solve a problem.	.....page 29
Task 10: High 5	Draw a diagram Look for patterns	Uses knowledge of number facts and patterns to solve a problem.	.....page 29

TASK 1

▶ **SHAPE AND SPACE (MEASUREMENT)**

BRIDGES

SELF-ASSESSMENT

Materials: •pencil •straws •tape •scissors •2 chairs • 'matchbox' car

1 List what you believe are the best shapes to use when constructing a bridge.

- _____
- _____

2 Use straws and sticky tape to construct a bridge sturdy enough to hold a 'matchbox' car. Place the bridge between two chairs with a distance of 8 inches. Think about the best shapes to use to build the base and the sides of your bridge.

Challenge:
If your bridge needed to be 20 inches long, would you need to alter it? Make notes on the back of this sheet.

Indicator: Identifies and represents useful shapes in construction.



TASK 2

▶ **SHAPE AND SPACE**

LINES

SELF-ASSESSMENT

Materials: •pencil •paper

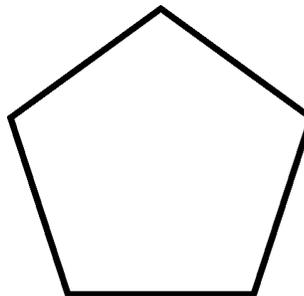
1 Name three places you can see a **horizontal** line.

- _____
- _____
- _____

2 Name three places you can see a **diagonal** line.

- _____
- _____
- _____

3 How many diagonal lines can you draw inside a pentagon?
(Note: from corner to corner.)



Challenge: How many diagonal lines can you draw inside a hexagon?

Indicator: Identifies lines within shapes.

