

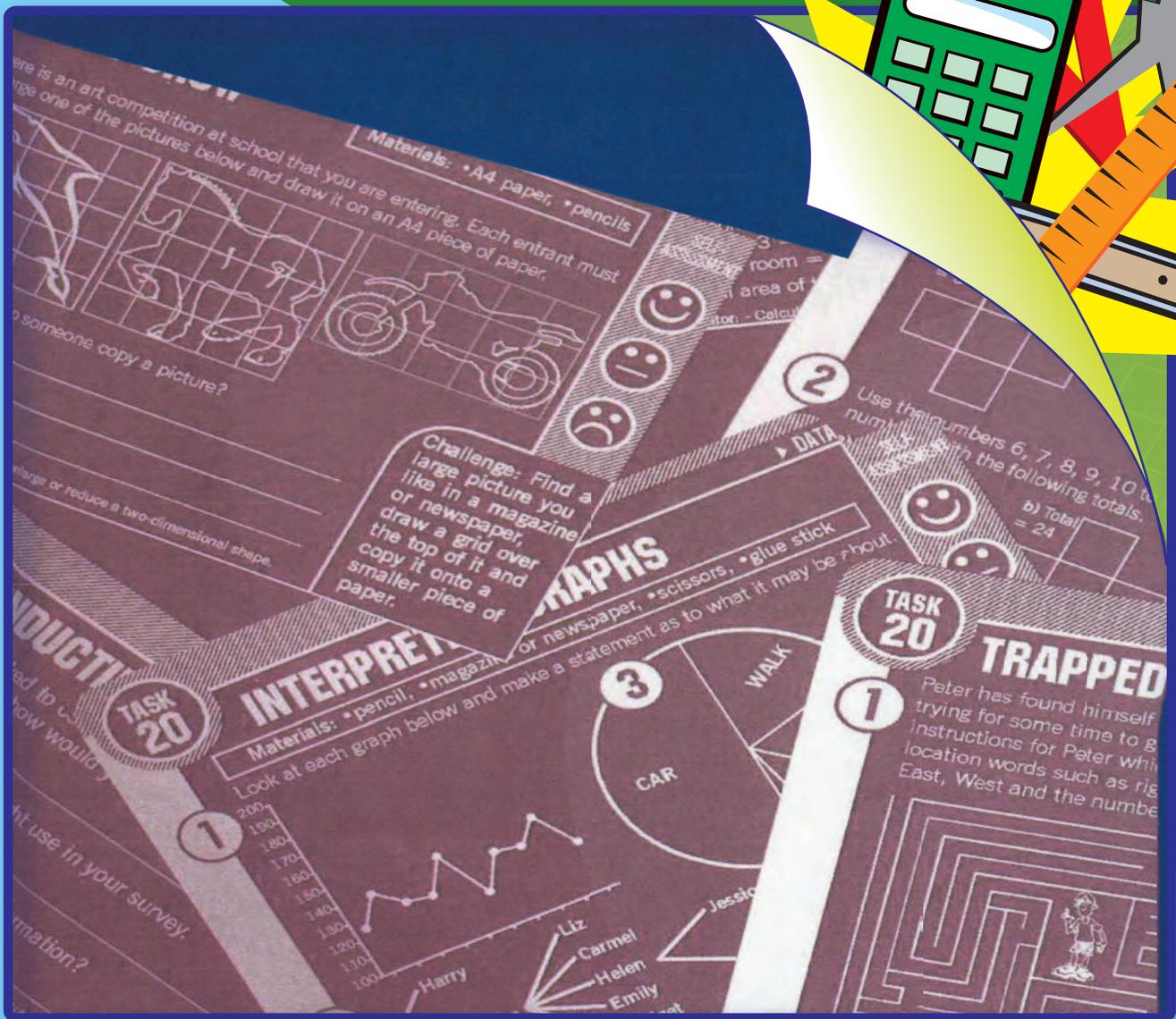
Mathematics

Activity Book 3

Primary Math Problems

Teacher Edition

GRADES 5-6



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
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PROBLEM CARDS: Space and Location

TITLE	STRATEGY	OUTCOME	PAGE
Task 1: Parallel Tower	Make a model	Identifies lines in our environment and uses them in construction.	page 13
Task 2: Perpendicular Lines	Make a model	Recognizes, describes and represents perpendicular lines.	page 13
Task 3: Angles	Look for patterns	Recognizes, names and classifies various angles.	page 14
Task 4: House Design	Make a model	Recognizes, names and uses angles for design purposes.	page 14
Task 5: Cubes	Make a model	Makes and constructs shapes using cubes.	page 15
Task 6: Pentominoes	Make a model	Makes and constructs pentominoes using cubes.	page 15
Task 7: Triangles	Make a model	Identifies and uses triangles to create various shapes and patterns.	page 16
Task 8: Brick Wall	Look for patterns	Visualizes and explains the parts of a 3D shape that are not seen.	page 16
Task 9: Tessellating Path	Look for patterns Draw a diagram	Uses shapes to design a tessellating pattern.	page 17
Task 10: Tricky Tangrams	Look for patterns	Manipulates tangram pieces to create shapes and patterns.	page 17
Task 11: Symmetrical Letters	Look for patterns	Identifies line of symmetry in various shapes.	page 18
Task 12: Using Grids	Draw picture	Uses a grid square to enlarge or reduce a 2D shape.	page 18
Task 13: Class Position	Draw a diagram	Demonstrates knowledge of grids and the language of location.	page 19
Task 14: Flight 125	Draw a diagram	Uses and understands the language of location.	page 19
Task 15: Carousel	Draw a diagram	Demonstrates knowledge of fractions when dealing with location.	page 20
Task 16: Local Map	Draw a diagram	Identifies and draws simple scale plans of familiar location.	page 20
Task 17: Pizza Delivery	Est. and check Make a list	Interprets and uses a local map to plan a journey.	page 21
Task 18: Fair Plan	Draw a diagram	Uses given information and compass points to draw a simple plan.	page 21
Task 19: Lost Cattle	Make a list	Uses compass points to specify location.	page 22
Task 20: Trapped in a Maze	Make a list	Uses language of location to create a path through a maze.	page 22
Task 21: Assessment: Office Building	Make a model	Visualizes and explains the parts of a 3D shape that are not seen.	page 23
Task 22: Assessment: School Map	Draw a diagram Make a list	Visualizes and plans journeys on simple maps.	page 23

PROBLEM CARDS: Number

TITLE	STRATEGY	OUTCOME	PAGE
Task 1: Creature Collection	Est. and check Draw a picture	Uses knowledge of number and number processes to solve a problem.	page 24
Task 2: Cross Numbers	Est. and check	Manipulates numbers to arrive at a set total.	page 24
Task 3: Concert Hall	Est. and check Calculate	Uses knowledge of number facts and multiplication to solve a problem.	page 25
Task 4: Four 4s	Est. and check, Calculate	Constructs and completes number sentences involving the four operations.	page 25
Task 5: Ages	Est. and check	Selects relevant information to solve a problem using number facts.	page 26
Task 6: How Many Days?	Calculate	Uses a calculator to solve a problem involving multiplication and addition.	page 26
Task 7: Making Numbers	Make a list Look for patterns	Uses knowledge of number and place value to create numbers.	page 27
Task 8: 200 Yard Sprint	Make a list Look for patterns	Uses knowledge of number and ordinal number to solve a problem.	page 27
Task 9: Swimming Carnival	Calculate Draw a diagram	Uses knowledge of number and ordinal number to solve a problem.	page 28
Task 10: Football Game	Est. and check Calculate	Uses knowledge of number operations to solve a problem.	page 28
Task 11: Golf Game	Est. and check	Uses knowledge of addition and subtraction to solve a problem.	page 29

TASK 1

▶ SHAPE AND SPACE (MEASUREMENT)

PARALLEL TOWER

Materials: •pencil •blocks
•tape measure or 1 yardstick.

SELF-ASSESSMENT

1

Draw an example of each of these line types that can be seen in objects or structures you can see in your classroom. An example would be the vertical line of a window.

VERTICAL LINE	HORIZONTAL LINE	PARALLEL LINES



2

Construct the highest possible tower of parallel lines using blocks. Measure how high it was before it crashed down. Write the height below.

Challenge:
How could you make a tower of parallel lines more secure so that it didn't fall?

Indicator: Identifies lines in our environment and uses them in construction.

TASK 2

▶ SHAPE AND SPACE

PERPENDICULAR LINES

Materials: •pencil •matchsticks •modeling clay

SELF-ASSESSMENT

1

Identify and draw two different sets of perpendicular lines in the classroom.



2

Using matchsticks and modeling clay make two different shapes that only contain perpendicular lines. Name the shapes below.

Challenge:
What shapes do not have any perpendicular lines?

Indicator: Recognizes, describes and represents perpendicular lines.