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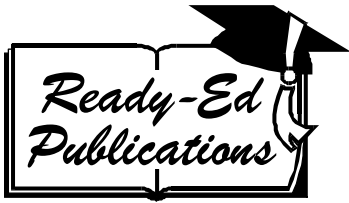
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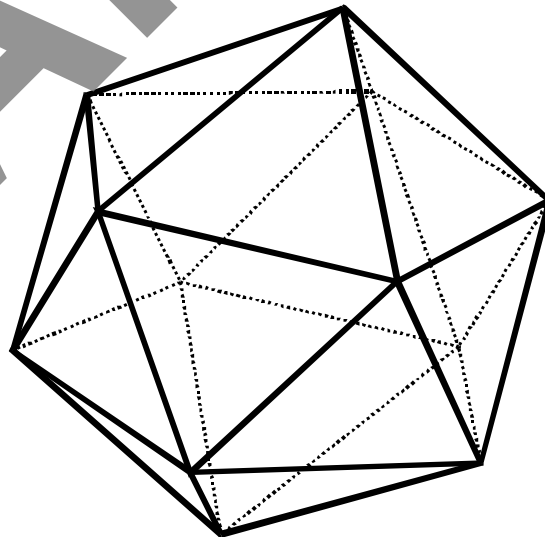
The Shapes & Spaces Series

Book 3 - For 10 Years+

SHAPES AND SPACES

CHALLENGING LEVEL

STUDENTS



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SAMPLE

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TEACHERS' NOTES

This book is designed to complement the spatial math component of the curriculum. It provides a basic introduction to new concepts as well as activities that will consolidate the skills and ideas associated with 2D and 3D shapes.

The book contains a set of networks for constructing models of prisms, pyramids and various polyhedra. Ideally, these nets should be copied onto card to allow students to make a solid shape that will last for the duration of this unit of math.

Specific activities include identifying traversable networks, studying the properties and features of 2D and 3D shapes, exploring reflectional and rotational symmetry, looking at cross sections of 3D shapes and creating tessellations with a number of regular and irregular 2D shapes.

It is intended that the activities be completed sequentially as certain learning concepts need to be mastered in order to complete some of the later activities. Also, it is assumed that the ideas in this book will be explored in class prior to completing the activities as they are not designed as a complete math program.

Using this book

When starting on the section concerning 3D models, use the nets to construct the shapes prior to using the worksheets. Students can then refer to these shapes when they are needed.

Additional Materials

It is a good idea to have the following materials on hand for all Shape and Space lessons.

Stiff card - photocopy the 3D nets onto card. This will allow the students to fit the models together more easily. Once arranged either Scotch tape or glue can be used. Provide students with a plastic bag in which they can store all their models as the models will be used in many activities.

Tracing paper - useful for tracing shapes and then copying them to card, particularly for the sheets concerned with tessellations.

Grid paper - for 2D Drawings.

Isometric paper - very handy for drawing 3D models. Students can draw models and then paste them onto the worksheet.

Geoboards are great for allowing students to experiment with networks and 2D shapes.

Straws and Plasticine can be used to construct 3D models. This kind of activity makes it easy for students to see how shapes fit together and how edges and vertices are formed.

Math-o-Mat - these commercial products are particularly useful for making tessellations as well as measuring angles.

Mira - these commercial products (or use a small mirror) are useful for checking symmetry of 2D shapes.

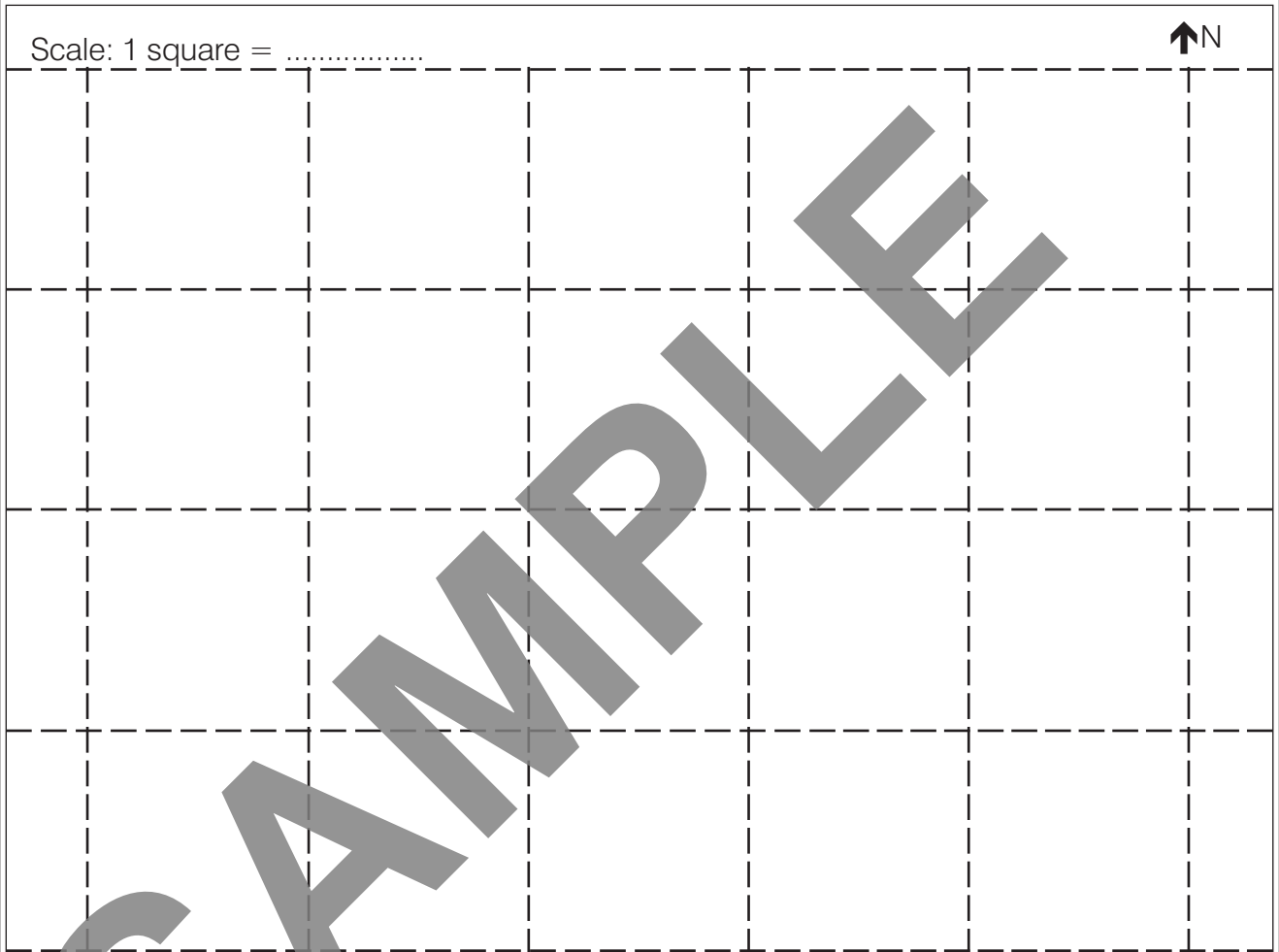
Attribute Blocks - useful for making tessellations.

NEIGHBORHOOD NETWORK

- Using the grid below, draw a detailed map of where you live in relation to your school. Include roads and other buildings such as friends' houses, shops and parks. Draw your diagram to scale. For example one square could equal 100 yards (meters), or if you live further away, one square could equal one mile (kilometer).

Scale: 1 square =

↑ N



Highlight the route you take to get to school each morning, either by vehicle, bike or walking.

- Describe in words the path you would take to get to your friend's house from your school.

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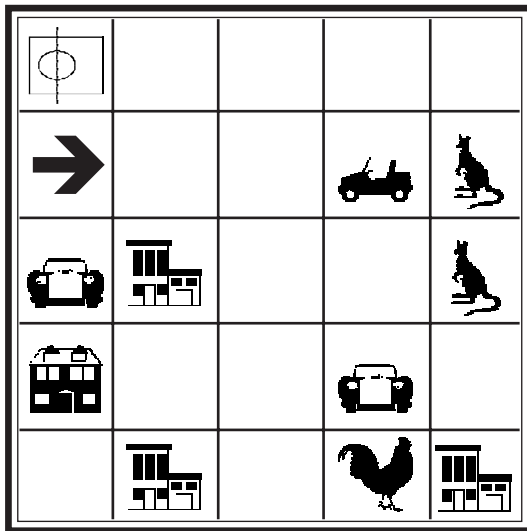
Challenge:

Find the location of your house in a street directory and ask your teacher if you can photocopy the page. Highlight the different routes you could take to get to your school.

WHERE AM I?

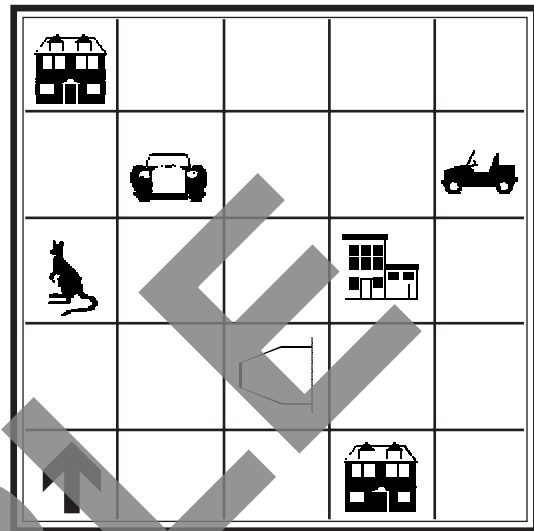
In each grid below I am visiting a certain house. Start at the arrow and follow the directions given underneath. Circle the mystery house I visit in each grid.

1.



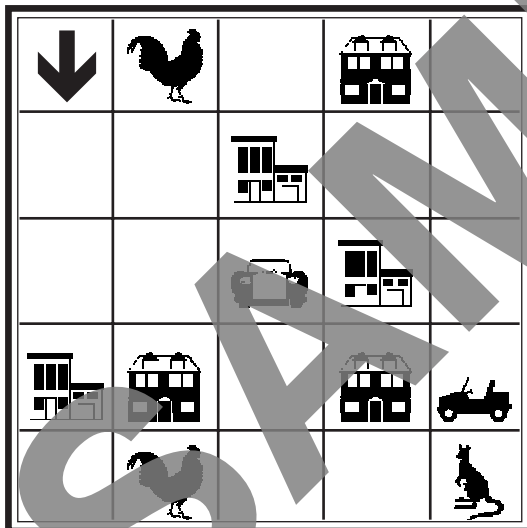
E, E, E, S, E, S, W, N, W, S, W, W.

2.



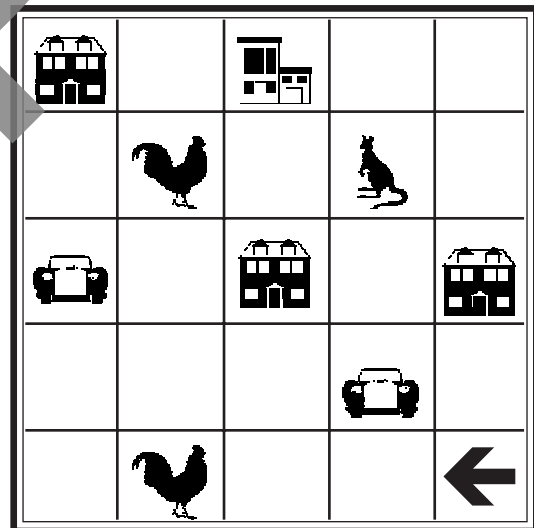
N, N, N, E, S, E, E, N, N, W, S, S, S, S, E.

3.



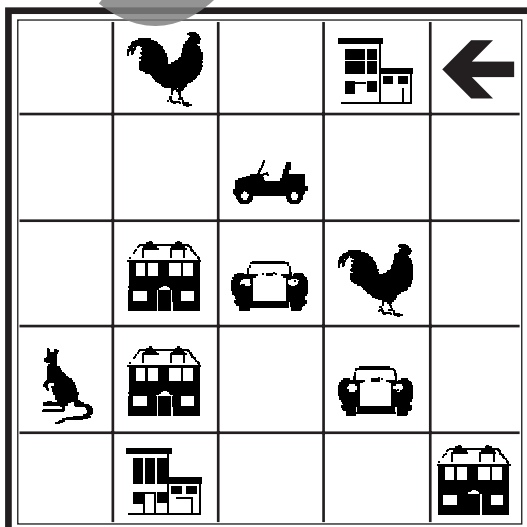
S, S, E, E, E, N, W, S, S, E, S, N

4.



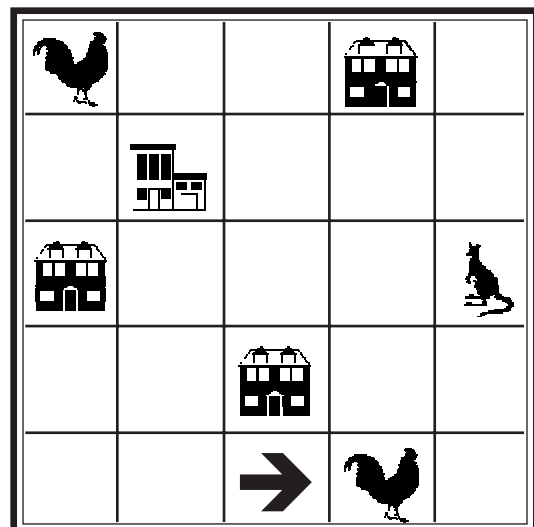
W, W, N, E, N, N, W, S, W, W, N, E, N, W

5.



W, W, W, S, W, S, S, E, E, S, W, N, N

6.



E, E, N, N, W, W, N, W, N, E, S, S, S