

Resources for a VELS Maths Curriculum SPACE

STANDARD 1

a Language of shape and position

- ***Toolbox: concepts and skills***

standards.nctm.org/document/eexamples/index.htm *Free software from the internet*

4.2 Investigating the Concept of Triangle and Properties of Polygons

4.3 Learning Geometry and Measurement Concepts by Creating Paths and Navigating Mazes

4.4 Developing Geometry Understandings and Spatial Skills through Puzzle-like Problems with Tangrams

The Learning Federation www.thelearningfederation.edu.au/ttf2/ *Free software from the internet*

Shape overlays

- ***Mathematical problem-solving***

- ***Real problem-solving***

b Draw

- ***Toolbox: concepts and skills***

National Library of Virtual Manipulatives: <http://nlvm.usu.edu/en/nav/vlibrary.html> *Free software from the internet*

The Learning Federation www.thelearningfederation.edu.au/ttf2/ *Free software from the internet*

Shape overlays

- ***Mathematical problem-solving***

- ***Real problem-solving***

STANDARD 2

a Language of location, shape and subsets

- ***Toolbox: concepts and skills***

Guidelines in Measurement (MAV) *Hands-on teaching ideas*

Visual perception: p233-243, Shape: p257-268, Maps: 282-286

The Learning Federation www.thelearningfederation.edu.au/ttf2/ *Free software from the internet*

Face Painter

- ***Mathematical problem-solving***

Maths300 (CC) *Lesson plans*

47 Farmacyard Friends,

National Library of Virtual Manipulatives: <http://nlvm.usu.edu/en/nav/vlibrary.html> *Free software from the internet*

- ***Real problem-solving***

Working Mathematically investigations (CC)

Unit 3: The Great Pyramid

b Symmetry and simple transformations

• Toolbox: concepts and skills

People Count: book and/or CD (MAV) Text for teachers, with spreadsheets for students.

49 Mirror symmetry & reflection, 50 Turn symmetry & rotation

• Mathematical problem-solving

National Library of Virtual Manipulatives: <http://nlvm.usu.edu/en/nav/vlibrary.html> Free software from the internet

• Real problem-solving

c Use drawing tools and software

• Toolbox: concepts and skills

National Library of Virtual Manipulatives: <http://nlvm.usu.edu/en/nav/vlibrary.html> Free software from the internet

The Learning Federation <www.thelearningfederation.edu.au/tlf2/> Free software from the internet

Shape overlays, Face painter

• Mathematical problem-solving

• Real problem-solving

STANDARD 3

a Language of lines, angles, polygons

• Toolbox: concepts and skills

People Count: book and/or CD (MAV) Text for teachers, with spreadsheets for students.

48 Angles, 51 Polygons,

<http://illuminations.nctm.org/Activities.aspx> Free software from the internet

Turtle pond

National Library of Virtual Manipulatives: <http://nlvm.usu.edu/en/nav/vlibrary.html> Free software from the internet

The Learning Federation <www.thelearningfederation.edu.au/tlf2/> Free software from the internet

Face painter, Shape maker, Building site,

• Mathematical problem-solving

Problem Solving Task Centre (CC) Rich tasks for students

107 Mc Mahon's Triangles 2, 110 Who Lives Where? 119 Police Line-up, 125 Farmyard Race Day, 129 Farmyard Friends, 148 Mc Mahon's Triangles 1, 166 Sphinx, 196 Cross & Square

• Real problem-solving

b Make and draw solids, using nets and projections

• Toolbox: concepts and skills

People Count: book and/or CD (MAV) Text for teachers, with spreadsheets for students.

57 Solid shapes,

The Learning Federation www.thelearningfederation.edu.au/tlf2/ Free software from the internet

Building site

• Mathematical problem-solving

Maths300 (CC) Lesson plans

48 String Shapes, 53 Spirolaterals, 82 Knight's Tour, 107 Newspaper Shapes

Problem Solving Task Centre (CC) Rich tasks for students

60 Back To Back Building, 67 Making Solids, 73 In The Bag, 105 Soma Cube 1, 121 Farmyard Views, 143 Hearts And Loops,

National Library of Virtual Manipulatives: <http://nlvm.usu.edu/en/nav/vlibrary.html> Free software from the internet

- **Real problem-solving**

c Make tessellations

- **Toolbox: concepts and skills**

People Count: book and/or CD (MAV) Text for teachers, with spreadsheets for students.

52 Tessellations,

<http://illuminations.nctm.org/Activities.aspx> Free software from the internet

Mirror tool, Patch tool,

- **Mathematical problem-solving**

Problem Solving Task Centre (CC) Rich tasks for students

23 Two Colour Game, 70 Symmetric Shapes, 79 Tangram Teasers, 83 Racetrack, 93 Leading The Blind, 100 Mirror Patterns 1,

National Library of Virtual Manipulatives: <http://nlvm.usu.edu/en/nav/vlibrary.html> Free software from the internet

- **Real problem-solving**

d Read maps and plans, using compasses and grids

- **Toolbox: concepts and skills**

People Count: book and/or CD (MAV) Text for teachers, with spreadsheets for students.

44 Scale: effect on lengths, 48 Angles,

The Learning Federation <www.thelearningfederation.edu.au/tlf2/> Free software from the internet

Contours, Building site, Photo hunt

- **Mathematical problem-solving**

- **Real problem-solving**

STANDARD 4

a Classify shapes and solids

- **Toolbox: concepts and skills**

People Count: book and/or CD (MAV) Text for teachers, with spreadsheets for students.

53 Triangles, congruence & similarity, 54 Quadrilaterals, 51 Polygons, 57 Solid shapes,

Interactive learning for concepts & skills (MAV) Demo on whiteboard or student use

Estimating angles, Compass walks,

Geometry Everywhere (MAV) Teaching ideas and worksheets

Page 1, 2, worksheets 1, 2, 3, 4

The Learning Federation www.thelearningfederation.edu.au/tlf2/ Free software from the internet

Shape maker

<standards.nctm.org/document/eexamples/index.htm> Free software from the internet

5.3 Exploring Properties of Rectangles and Parallelograms

<http://nlvm.usu.edu/en/nav/vlibrary.html> National Library of Virtual Manipulatives Free software from the internet

The Learning Federation <www.thelearningfederation.edu.au/tlf2/> Free software from the internet

Face painter, Building site

Guidelines in Measurement (MAV) Hands-on teaching ideas

Visual perception: p 248-254, Shape: p278-281

- **Mathematical problem-solving**

RIME: Measurement, Space, C&D (MAV) Lesson plans

19 Three-piece puzzles, 20 Four-triangle puzzles, 21 Tangrams, 22 Introduction to degrees, 23 Protractors

Problem Solving Task Centre (CC) *Rich tasks for students*

36 Making Triangles, 40 Diamonds & Rectangles, 66 Pentominoes, 171 Number Discs, 228 Koala Carts

• **Real problem-solving**

b Make complex solids using nets, draw solids

• **Toolbox: concepts and skills**

People Count: book and/or CD (MAV) *Text for teachers, with spreadsheets for students.*

58 Nets and skeletons of solids, 59 Polyhedra and Euler's rule,

Geometry Everywhere (MAV) *Hands-on teaching ideas and worksheets*

Worksheets 5, 6

<http://illuminations.nctm.org/Activities.aspx> *Free software from the internet*

Cubes, Cube nets,

National Library of Virtual Manipulatives: <http://nlvm.usu.edu/en/nav/vlibrary.html> *Free software from the internet*

The Learning Federation <www.thelearningfederation.edu.au/tlf2/> *Free software from the internet*

Shape maker, Building site, Photo hunt

• **Mathematical problem-solving**

Maths300 (CC) *Lesson plans*

116 Cube Nets, 118 Four Cube Houses,

Problem Solving Task Centre (CC) *Rich tasks for students*

16 Octaflex, 31 Cube Nets, 77 Tricube Constructions A, 78 Which View? 103 Four Cube Houses, 161 Soma Cube 2, 209 Pattern Cube,

• **Real problem-solving**

Working Mathematically: Investigations (CC) *Lesson plans*

Unit 13: Gift-boxed

c Use transformations and tessellations

• **Toolbox: concepts and skills**

People Count: book and/or CD (MAV) *Text for teachers, with spreadsheets for students.*

49 Mirror symmetry & reflection, 50 Turn symmetry & rotation, 52 Tessellations,

Interactive learning for concepts & skills (MAV) *Demo on whiteboard or student use*

Spirograph, Spirolateral, Reflection symmetry, Turn symmetry, Size change,

Geometry Everywhere (MAV) *Teaching ideas and worksheets*

Page 5, worksheet 10; page 8, 9, 11, worksheets 12 to 17; page 9 (angle)

The Learning Federation www.thelearningfederation.edu.au/tlf2/ *Free software from the internet*

Shapemaker

National Library of Virtual Manipulatives: <http://nlvm.usu.edu/en/nav/vlibrary.html> *Free software from the internet*

• **Mathematical problem-solving**

Problem Solving Task Centre (CC) *Rich tasks for students*

95 Reflections, 106 Crossing The River 2, 134 Eight Queens, 167 Sliding Tiles,

• **Real problem-solving**

d Use scale and direction for drawings, maps and plans

• *Toolbox: concepts and skills*

People Count: book and/or CD (MAV) *Text for teachers, with spreadsheets for students.*

44 Scale: effect on lengths, 62 Networks,

Interactive learning for concepts & skills (MAV) *Demo on whiteboard or student use*

Size change,

The Learning Federation www.thelearningfederation.edu.au/tf2/ *Free software from the internet*

Direct a robot, Journey planner

Geometry Everywhere (MAV) *Teaching ideas and worksheets*

Page 10, 12, worksheets 18 – 21;

Guidelines in Measurement (MAV) *Hands-on teaching ideas*

Maps: 290-295

• *Mathematical problem-solving*

Maths300 (CC) *Lesson plans*

8 Where Do We Sit?

• *Real problem-solving*

STANDARD 5

a Draw and construct 2D and 3D shapes, transformations and tessellations

• *Toolbox: concepts and skills*

People Count: book and/or CD (MAV) *Text for teachers, with spreadsheets for students.*

53 Triangles, congruence & similarity, 57 Solid shapes, 58 Nets and skeletons of solids, 59 Polyhedra and Euler's rule, 60 Prisms and cylinders, 61 Pyramids and cones,

Interactive learning for concepts & skills (MAV) *Demo on whiteboard or student use*

Parabola envelope, Perspective, Triangle tessellation, Quadrilateral tessellation, Reflecting, Rotating, Spirograph, Spirolateral, Reflection symmetry, Turn symmetry, Size change, Strip patterns, Regular polygons, Star polygons, Triangle, Congruent triangles, Quadrilateral diagonals, Plans and elevations, Isometric boxes, Open box nets, Cube nets, Vertices/faces/edges,

Geometry Everywhere (MAV)

Tessellations: pages 14, 17, 18, 31, 35, 36, worksheets 22 to 28, 51 to 55; *Polygons:* page 15, worksheet 35; *Solids:* pages 16, 32, worksheets 6, 11, 29 to 35; *Transformations:* pages 26, 27, 31, worksheets 41 to 45;

<http://illuminations.nctm.org/Activities.aspx> *Free software from the internet*

Cutting corners, Diagonals to quadrilaterals, Exploring angle sums,

<http://nlvm.usu.edu/en/nav/vlibrary.html> *National Library of Virtual Manipulatives Free software from the internet*

<http://illuminations.nctm.org/Activities.aspx> *Free software from the internet*

Geometric solids, Shape cutter, Shape tool,

The Learning Federation <www.thelearningfederation.edu.au/tf2/> *Free software from the internet*

Viewfinder

Sketchpad from scratch (MAV)

• *Mathematical problem-solving*

Active Learning: Space (MAV) *Worksheets*

Shapes and tessellations: S1 Acetate 'protractor' circles, S2 Protractor golf, S3 Finding angles, S4 Quilt patterns from squares, S5 Pentominoes, S6 Putting shapes together, S7 Curves inside circles, S8 Two-shape tessellations, S9 Billiard ball paths, S19 Tessellation grids, S20 Dot paper,

Solids: S21 Dice problems, S22 Building with cubes, S23 Some Soma puzzles, S24 Nets of a cube, S25 Nets of a square pyramid, S26 Plaiting a cube, S27 Nets of a tetrahedron, S28 Nets of a triangular prism, S29 Nets of an octahedron, S30 Cub-octahedron and net, S31 Nets for open solids, S32 Nets for strange solids, S42 Triangle dot paper, S43 Isometric practice, S44 Impossible figures, S45 Exploded views, S46 Soma cube pieces, S47 Nets of common prisms, S48 Flexagons, S49 Hexominoes, S50 Nets of pyramids, S51 Platonic solids, S52 Skeletons, S53

Introduction to domes,

Transformations and constructions: S54 Square dot paper, S55 Slide images, S56 Rectangles with -ominoes, S57 How many angles and triangles? S58 Tessellations on a triangle grid, S59 Mosaics, S60 Turn images, S61 Tangram rotations, S62 Finding centres and turn angles, S63 Reflection images, S64 Mark the transformation, S65 Acetate circles template, S66 MIRA constructions 1, S67 MIRA constructions 2, S68 MIRA constructions 3, S69 Constructing nets for solids, S70 Square dot grids, S71 Some consequences of scale, S72 The travelling knight

RIME: Measurement, Space, C&D (MAV) Lesson plans

24 Protractor golf, 25 How many angles? 26 Pentominoes and nets, 27 Knight's tour

RIME 5/6 (MAV) Lesson plans

Spirolaterals

Maths300 (CC) Lesson plans

53 Spirolaterals, 82 Knight's Tour, 116 Cube Nets, 127 Red To Blue

Problem Solving Task Centre (CC) Rich tasks for students

38 Making Triangles, 60 Back To Back Building, 68 Six Square Puzzle, 73 In The Bag, 83 Racetrack, 93 Leading The Blind, 94 Crossing The Desert, 95 Reflections, 100 Mirror Patterns 1, 113 Calendar, 115 Dividing Shapes, 116 Who Owns The Monkey? 122 Football Ladder, 124 Human Moves Monster, 135 Famous Mathematicians, 143 Hearts And Loops, 151 Knight Swap, 157 Paving Views, 169 Wallpaper Patterns, 192 Keith's Kubes

• **Real problem-solving**

Geometry Everywhere (MAV)

Worksheets 35 Make a kite, 45 Levers,

Sample units of work www.vcaa.vic.edu.au/prep10/csf/support/sampleunits/sample_units.html Free software from the internet

Packing it in,

b Properties of parallel lines, polygons, etc.

• **Toolbox: concepts and skills**

People Count: book and/or CD (MAV) Text for teachers, with spreadsheets for students.

51 Polygons, 52 Tessellations,

Interactive learning for concepts & skills (MAV) Demo on whiteboard or student use

Hunting quadrilaterals, Quadrilateral diagonals, Regular polygons, Star polygons, Special points in triangles,

Geometry Everywhere (MAV) Teaching ideas and worksheets

Page 15, 16, worksheets 28, 35;

National Library of Virtual Manipulatives: <http://nlvm.usu.edu/en/nav/vlibrary.html> Free software from the internet

• **Mathematical problem-solving**

Active Learning: Space (MAV) Worksheets

S10 Triangles with strips 1, S11 Triangles with strips 2, S12 Finding triangles, S13 Quadrilaterals with strips 1, S14 Quadrilaterals with strips 2, S15 Finding types of quadrilaterals, S16 Tangram polygons, S17 Three-piece polygons, S18 How many polygons?

Maths300 (CC) Lesson plans

48 String Shapes, 53 Spirolaterals, 127 Red To Blue

• **Real problem-solving**

Active Learning: Space (MAV) Worksheets

S33 Dividing a line geometrically,

Sample units of work www.vcaa.vic.edu.au/prep10/csf/support/sampleunits/sample_units.html Free software from the internet

Solar house,

c Use coordinates in the plane

• **Toolbox: concepts and skills**

People Count: book and/or CD (MAV) Text for teachers, with spreadsheets for students.

63 Position,

Interactive learning for concepts & skills (MAV) *Demo on whiteboard or student use*

Drawing on a grid, Hunting quadrilaterals, Squares, Compass walks, Shape games, Drawing with gradients,

National Library of Virtual Manipulatives: <http://nlvm.usu.edu/en/nav/vlibrary.html> *Free software from the internet*

• **Mathematical problem-solving**

Active Learning: Space (MAV) Worksheets

S39 Coordinate games, S40 Coordinate pictures,

• **Real problem-solving**

Active Learning: Space (MAV) Worksheets

S41 Plotting AFL results,

d Use scale, directions and location on maps and plans

• **Toolbox: concepts and skills**

People Count: book and/or CD (MAV) *Text for teachers, with spreadsheets for students.*

62 Networks,

Interactive learning for concepts & skills (MAV) *Demo on whiteboard or student use*

Doodles, Clash, Drawing in polar, Bipolar,

The Learning Federation www.thelearningfederation.edu.au/tlf2/ *Free software from the internet*

Journey planner, Building site, Viewfinder, Photo hunt, Contours

Geometry Everywhere (MAV) *Teaching ideas and worksheets*

Page 10, 12, worksheets 17 – 21; page 22, worksheet 36; page 33, 37, worksheet 56;

• **Mathematical problem-solving**

Active Learning: Space (MAV) Worksheets

S35 Compass games, S36 Contour maps,

• **Real problem-solving**

Active Learning: Space (MAV) Worksheets

S34 Make your own map, S37 Photos and scale, S38 Posters and the overhead projector,

Geometry Everywhere (MAV) *Teaching ideas and worksheets*

Worksheets 17 – 21 Plans

STANDARD 6

a Construct and draw shapes and solids

• **Toolbox: concepts and skills**

People Count: book and/or CD (MAV) *Text for teachers, with spreadsheets for students.*

57 Solid shapes, 58 Nets and skeletons of solids, 59 Polyhedra and Euler's rule, 60 Prisms and cylinders, 61 Pyramids and cones

Interactive learning for concepts & skills (MAV) *Demo on whiteboard or student use*

Triangle, Solar house, Perspective, Lines inside a circle, String ellipse, Parabola envelope, Special points in triangles, String ellipse, Trammel, Perpendicular bisectors, Angle bisectors, Midpoint locus, Projectiles, Wave, Cycloid, Spirals, Prism, cylinder, Pyramid, Truncated pyramid, Cone, Truncated cone,

Geometry Everywhere (MAV) *Teaching ideas and worksheets*

2D constructions: pages 30, worksheets 46 to 50;

3D constructions: page 32, 59, 61, 62, worksheet 76, 82, 84;

Conic sections and sine waves: page 39, 49 to 53, worksheets 69 to 75;

Symmetry in 2D and 3D: page 40, worksheets 60 to 64;

Isometric drawing: pages 3, 4, 23, to 25, worksheets 7 to 9, 37 to 40, 68, 85;

Perspective drawing: pages 46, 47, 48, worksheets, 66 to 68:

The Learning Federation www.thelearningfederation.edu.au/tlf2/ *Free software from the internet*

Building site, Viewfinder, Photo hunt

standards.nctm.org/document/eexamples/index.htm *Free software from the internet*

6.4 Understanding Congruence, Similarity, and Symmetry Using Transformations and Interactive Figures

<http://illuminations.nctm.org/Activities.aspx> *Free software from the internet*

Congruence theorems, Isometric drawing tool, Triangle classification,

<http://nlvm.usu.edu/en/nav/vlibrary.html>: National Library of Virtual Manipulatives *Free software from the internet*

• **Mathematical problem-solving**

Active Learning: Space (MAV) Worksheets

Tessellations: S73 Tessellations on a square grid, S74 Tessellations on a triangle grid, S75 Using a MIRA, S76 Constructing with a parallel-sided ruler, S117 Tessellations 1, S118 Tessellations 2, S119 Tessellations 3, S120 Tessellations 4,

Solids: S82 Nets of crystal forms, S83 Stacking solids, S84 Rotation symmetry of cube, S85 Rotation symmetry of tetrahedron, S86 Domes, S87 Soma, S88 Perspective drawing,

Constructions: S102 Star polygons, S103 MIRA construction problems 1, S104 MIRA construction problems 2, S105 Outdoor constructions, S106 Investigations 1, S107 Investigations 2, S108 Investigations 3, S116 The cardioid, S121 Are you an eggbird?

Conics: S109 Conic curves 1, S110 Conic curves 2, S111 Conic curves 3, S112 Parabola reflections, S113 Ellipses using a ruler,

Maths300 (CC) Lesson plans

36 Soft Drink Crates, 118 Four Cube Houses, 119 Eight Queens, 128 Cars In A Garage, 129 Chess Queens

Problem Solving Task Centre (CC) Rich tasks for students

2 Cars In A Garage, 16 Octaflex, 44 Latin Squares, 66 Pentominoes, 81 Pentagon Triangles, 107 Mc Mahon's Triangles 2, 112 Coloured Squares, 134 Eight Queens, 145 Land Of ET, 146 The Haberdashers' Problem, 148 Mc Mahon's Triangles 1, 149 A Stacking Problem, 150 Chess Queens, 167 Sliding Tiles, 209 Pattern Cube, 211 Soft Drink Crates, 228 Koala Carts

Geometry Everywhere (MAV) Teaching ideas and worksheets

Page 42, worksheet 65 Gears;

• **Real problem-solving**

Active Learning: Space (MAV) Worksheets

S97 Border patterns, S98 All-over patterns, S99 Quilt patterns, S114 Linkage strips, S115 Quadrilateral linkages,

<http://illuminations.nctm.org/Activities.aspx> *Free software from the internet*

Robot sketcher,

<http://nlvm.usu.edu/en/nav/vlibrary.html>: National Library of Virtual Manipulatives *Free software from the internet*

b Angle properties of circles

• **Toolbox: concepts and skills**

People Count: book and/or CD (MAV) Text for teachers, with spreadsheets for students.

55 Circles and ellipses

Interactive learning for concepts & skills (MAV) Demo on whiteboard or student use

Find the centre, Circle theorems,

Geometry Everywhere (MAV) Teaching ideas and worksheets

Pages 39; worksheets 57 to 59,

<http://illuminations.nctm.org/Activities.aspx> *Free software from the internet*

Half angle (incentre),

<http://nlvm.usu.edu/en/nav/vlibrary.html>: National Library of Virtual Manipulatives *Free software from the internet*

• **Mathematical problem-solving**

Active Learning: Space (MAV) Worksheets

S100 Using a set square angle, S101 Circle applications 1, S122 Circle applications 2, S123 Transformation proofs

Problem Solving Task Centre (CC) *Rich tasks for students*

70 Symmetric Shapes, 168 Mirror Patterns 3, 184 Reverse,

• **Real problem-solving**

Maths & Soccer (MAV) *DVD or video and worksheets*

<http://illuminations.nctm.org/Activities.aspx> *Free software from the internet*

Soccer problem (angle at goal), Soda cans,

c Use transformations & enlargements (maps & effect of scale factors)

• **Toolbox: concepts and skills**

People Count: book and/or CD (MAV) *Text for teachers, with spreadsheets for students.*

49 Mirror symmetry & reflection, 50 Turn symmetry & rotation, 44 Scale: effect on lengths, 45 Scale: areas and volumes,

Interactive learning for concepts & skills (MAV) *Demo on whiteboard or student use*

Two reflections,

Geometry Everywhere (MAV) *Teaching ideas and worksheets*

Pages 21, 29, 33, 37, worksheet 56;

<http://illuminations.nctm.org/Activities.aspx> *Free software from the internet*

Two terrains (shortest path),

<http://nlvm.usu.edu/en/nav/vlibrary.html>: National Library of Virtual Manipulatives *Free software from the internet*

www.worldofeschel.com/gallery/ *Free software from the internet*

www.mcescher.com/ and go to the Picture gallery, then choose Symmetry *Free software from the internet*

<http://library.thinkquest.org/16661/> a vast array of useful tools; try the Totally Tessellated Gallery. *Free software from the internet*

<http://www.geometrygames.org/Kali/index.html>). Kali is a tool for drawing tessellations and designs. *Free software from the internet*

www.geom.uiuc.edu/ *Free software from the internet*

• **Mathematical problem-solving**

Active Learning: Space (MAV) *Worksheets*

Maps: S34 Make your own map, S35 Compass games, S36 Contour maps, S37 Photos and scale, S77 Pinhole viewer, S78 Enlargements on a square grid, S79 Enlargements on a triangle grid, S80 Orienteering, S81 Plane table surveying,

Transformations: S89 Reviewing transformations, S90 Two slides, S91 Two parallel reflections, S92 Two intersecting reflections, S93 Two rotations, S94 MIRA constructions, S95 Cards for symmetry patterns, S96 Grids and instructions,

• **Real problem-solving**

Geometry Everywhere (MAV) *Teaching ideas and worksheets*

Pages 58, 61, 62 worksheets 77 to 81 Linkages

<http://library.thinkquest.org/16661/> try the Totally Tessellated Gallery. *Free software from the internet*

d Use latitude and longitude

• **Toolbox: concepts and skills**

People Count: book and/or CD (MAV) *Text for teachers, with spreadsheets for students.*

48 Angles,

Interactive learning for concepts & skills (MAV) *Demo on whiteboard or student use*

Latitude and longitude, Daylight, Sun position,

Geometry Everywhere (MAV) *Teaching ideas and worksheets*

Pages 57, 61, worksheet 83;

• **Mathematical problem-solving**

Active Learning: Space (MAV) *Worksheets*

• *Real problem-solving*