

# Contents

<b>Contents</b>	<b>iii</b>
<b>1 Learning to Measure</b>	<b>1</b>
1.1 Measurement Problems . . . . .	2
1.2 Measuring Length . . . . .	6
1.3 Measuring Weight and Capacity . . . . .	11
1.4 Measuring Angles . . . . .	18
<b>2 Geometric Figures</b>	<b>27</b>
2.1 Fundamental Geometric Ideas . . . . .	27
2.2 Triangles . . . . .	35
2.3 Symmetry and Triangles . . . . .	41
2.4 Parallelograms, Rhombuses and Trapezoids . . . . .	45
2.5 Geometric Constructions . . . . .	50
<b>3 Finding Unknown Angles</b>	<b>55</b>
3.1 Unknown Angle Problems . . . . .	55
3.2 Finding Angles Using Parallel Lines . . . . .	61
3.3 Angles of a Polygon . . . . .	66
<b>4 Deductive Geometry</b>	<b>73</b>
4.1 Unknown Angle Proofs . . . . .	75
4.2 Congruent Triangles . . . . .	82
4.3 Applying Congruences . . . . .	90
4.4 Congruences in Quadrilaterals . . . . .	96
4.5 Transformations and Tessellations . . . . .	101
<b>5 Area</b>	<b>107</b>
5.1 Area Units . . . . .	107
5.2 Rectangles and Area Properties . . . . .	114
5.3 Area of Triangles, Parallelograms and Trapezoids . . . . .	121
<b>6 Pythagorean Theorem with Applications</b>	<b>129</b>
6.1 Pythagorean Theorem . . . . .	129
6.2 Square Roots and Pythagorean Triples . . . . .	134
6.3 Special Triangles and Further Applications . . . . .	139

<b>7</b>	<b>Similarity</b>	<b>145</b>
7.1	Introducing Similarity and Similar Right Triangles . . . . .	145
7.2	Similar Triangles . . . . .	153
7.3	Coordinate Systems and Slope . . . . .	159
7.4	Similar Right Triangles and Trigonometry . . . . .	167
<b>8</b>	<b>Area Concepts and Circles</b>	<b>171</b>
8.1	Converting Area Units and Scaling . . . . .	171
8.2	Circles and Pi . . . . .	177
8.3	Area of Circles and Sectors . . . . .	181
8.4	Approximation and Accuracy . . . . .	187
<b>9</b>	<b>Volume and Surface Area</b>	<b>193</b>
9.1	Introducing Volume . . . . .	193
9.2	Metric Volume . . . . .	197
9.3	Prisms and Cylinders . . . . .	202
9.4	Pyramids and Cones . . . . .	208
9.5	Spheres . . . . .	214
<b>10</b>	<b>Data Displays, Probability and Statistics</b>	<b>223</b>
10.1	Data Displays . . . . .	223
10.2	Center and Dispersion of Data Sets . . . . .	229
10.3	Probability . . . . .	235
10.4	Inferential Statistics . . . . .	242
10.5	Appendix: Other Ways to Display Data . . . . .	247
	<b>Bibliography</b>	<b>249</b>
	<b>Index</b>	<b>251</b>