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| **Unit 6: Angles and right angled triangles** | | | | **Year 9 Road Map** | | | | |
| In this unit you will learn about number. The aims are as follows:  **LG1**: Knowledge **LG2**: Application **LG3**: Skills | | | | | | | | |
| **S/N** | **Level** | | **Learning Goals/Outcomes/Content** | | Video clips  R A G | G A R  G A R |  |  |
| **6a) Properties of shapes, parallel lines and angle facts** | | | | | | | | |
| 1 | S | Estimate sizes of angles; | | |  |  |  |  |
| 2 | S | Measure angles using a protractor; | | | G10a |  |  |  |
| 3 | S | Use geometric language appropriately; | | | 13 |  |  |  |
| 4 | S | Use letters to identify points, lines and angles; | | |  |  |  |  |
| 5 | S | Use two-letter notation for a line and three-letter notation for an angle; | | |  |  |  |  |
| 6 | S | Describe angles as turns and in degrees; | | |  |  |  |  |
| 7 | S | Understand clockwise and anticlockwise; | | |  |  |  |  |
| 8 | S | Know that there are 360° in a full turn, 180° in a half turn and 90° in a quarter turn; | | |  |  |  |  |
| 9 | S | Mark perpendicular lines on a diagram and use their properties; | | | 9 |  |  |  |
| 10 | S | Mark parallel lines on a diagram and use their properties; | | | 9 |  |  |  |
| 11 | SCE | Recall the properties and definitions of special types of quadrilaterals, including symmetry properties; | | | 9 |  |  |  |
| 12 | SCE | Name all quadrilaterals that have a specific property; | | | 9 |  |  |  |
| 13 | S | Identify quadrilaterals from everyday usage; | | |  |  |  |  |
| 14 | SCE | Classify quadrilaterals by their geometric properties; | | |  |  |  |  |
| 15 | SCE | Understand and use the angle properties of quadrilaterals; | | |  |  |  |  |
| 16 | SCE | Use the fact that angle sum of a quadrilateral is 360°; | | |  |  |  |  |
| 17 | SC | Draw sketches of shapes; | | | 47 |  |  |  |
| 18 | SC | Given some information about a shape on coordinate axes, complete the shape; | | |  |  |  |  |
| 19 | SCE | Use geometrical language appropriately and give reasons for angle calculations; | | | G13 |  |  |  |
| 20 | SCE | Recall and use properties of angles at a point, angles at a point on a straight line, right angles, and vertically opposite angles; | | | G13 |  |  |  |
| 21 | SCE | Distinguish between scalene, equilateral, isosceles and right-angled triangles; | | | G16 |  |  |  |
| 22 | SCE | Derive and use the sum of angles in a triangle; | | | 123 |  |  |  |
| 23 | SC | Find a missing angle in a triangle, using the angle sum of a triangle is 180°; | | | 121 |  |  |  |
| 24 | SCE | Understand and use the angle properties of triangles, use the symmetry property of isosceles triangle to show that base angles are equal; | | |  |  |  |  |
| 25 | SCE | Use the side/angle properties of isosceles and equilateral triangles; | | | 120 |  |  |  |
| 26 | SCE | Show step-by-step deduction when solving problems; | | | 120 |  |  |  |
| 27 | SCE | Understand and use the angle properties of intersecting lines; | | |  |  |  |  |
| 28 | CE | Understand a proof that the exterior angle of a triangle is equal to the sum of the interior angles at the other two vertices; | | | 123 |  |  |  |
| 29 | SCE | Find missing angles using properties of corresponding and alternate angles; | | | 120 |  |  |  |
| 30 | CE | Understand and use the angle properties of parallel lines. | | | 120 |  |  |  |

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| **6b) Interior and Exterior angles of polygon** | | | | | | |
| 31 | S | Recognise and name pentagons, hexagons, heptagons, octagons and decagons; | G11 |  |  |  |
| 32 | SC | Understand ‘regular’ and ‘irregular’ as applied to polygons; | G11 |  |  |  |
| 33 | SCE | Use the sum of angles of irregular polygons; use the sum of angles in a triangle to deduce and use the angle sum in any polygon and to derive the properties of regular polygons; | G19 |  |  |  |
| 34 | SCE | Calculate and use the sums of the interior angles of polygons; | G19 |  |  |  |
| 35 | SCE | Use the sum of the interior angles of an *n*-sided polygon; | 123 |  |  |  |
| 36 | SCE | Use the sum of the exterior angles of any polygon is 360°; | 123 |  |  |  |
| 37 | SCE | Use the sum of the interior angle and the exterior angle is 180°; | 123 |  |  |  |
| 38 | SCE | Identify shapes which are congruent (by eye); | G31 |  |  |  |
| 39 | SCE | Find the size of each interior angle, or the size of each exterior angle, or the number of sides of a regular polygon, and use the sum of angles of irregular polygons; | 123 |  |  |  |
| 40 | CE | Calculate the angles of regular polygons and use these to solve problems; | 123 |  |  |  |
| 41 | CE | Use the side/angle properties of compound shapes made up of triangles, lines and quadrilaterals, including solving angle and symmetry problems for shapes in the first quadrant, more complex problems and using algebra; | 123 |  |  |  |
| 42 | CE | Use angle facts to demonstrate how shapes would ‘fit together’, and work out interior angles of shapes in a pattern. |  |  |  |  |
| 43 | CE | Explain why some polygons fit together and others do not; |  |  |  |  |
| **6c) Pythagoras’ Theorem and Trigonometry** | | | | | | |
| 44 | SCE | Understand, recall and use Pythagoras’ Theorem in 2D; | G30 |  |  |  |
| 45 | CE | Given three sides of a triangle, justify if it is right-angled or not; | 150a |  |  |  |
| 46 | SCE | Calculate the length of the hypotenuse in a right-angled triangle (including decimal lengths and a range of units); | 150a |  |  |  |
| 47 | SCE | Find the length of a shorter side in a right-angled triangle; | 150a |  |  |  |
| 48 | CE | Calculate the length of a line segment *AB* given pairs of points; | 150c |  |  |  |
| 49 | CE | Give an answer to the use of Pythagoras’ Theorem in surd form; |  |  |  |  |
| 50 | CE | Understand, use and recall the trigonometric ratios sine, cosine and tan, and apply them to find angles and lengths in general triangles in 2D figures; | G35a |  |  |  |
| 51 | CE | Use the trigonometric ratios to solve 2D problems; | G35a |  |  |  |
| 52 | CE | Find angles of elevation and depression; | G35a |  |  |  |
| 53 | E | Know the exact values of sin *θ* and cos *θ* for *θ* = 0°, 30°, 45°, 60° and 90°; know the exact value of tan *θ* for *θ* = 0°, 30°, 45° and 60°. | 173 |  |  |  |
| Student’s comments and questions | | | | | | |