

# Maths Workout - Geometry & Measures

| <b>Topic 25 - Circle Geometry</b>  |   |  |  |   |
|--|---|--|--|---|
| <b>Target 1</b>  | <b>Target 2</b>   | <b>Target 3</b>  | <b>Target 4</b>  | <b>Target 5</b>   |
| Calculate the circumference of a circle and the perimeter of a complex shape | Calculate the area of a circle and a complex shape                        | Calculate the length of an arc, the area of a sector and the area of a segment             | Know and use circle theorems not involving tangents  | Know and use circle theorems involving tangents   |
| 1. Know the formula for the circumference of a circle                        | 1. Demo: Understand how the area of a circle can be shown to be $\pi r^2$ | 1. Demo: Calculate the length of an arc  | 1. Demo: Know that the angle in a semi-circle is a right angle   | 1. Demo: Know that the angle between a tangent and a radius is a right angle  |
| 2. Calculate the circumference of a circle                                   | 2. Calculate the area of a circle given the radius or diameter            | 2. Calculate the length of an arc  | 2. Calculate missing values in diagrams using 'angle in a semi-circle'   | 2. Calculate missing values using 'angle between a tangent and radius is a right angle'                                       |
| 3. Calculate the perimeter of a shape with circular elements                 | 3. Calculate the area of a shapes with circular elements                  | 3. Calculate the angle at the centre or the radius given the arc length                    | 3. Demo: Know that angles in the same segment are equal  | 3. Demo: Know that from any point outside a circle there are exactly two tangents and they have equal length                  |
| 4. Calculate the perimeter of a shape with circular elements; extension      | 4. Calculate the area of a shapes with circular elements; extension       | 4. Demo: Calculate the area of a sector  | 4. Calculate missing values in diagrams using 'angles in the same segment are equal'                             | 4. Calculate missing values using 'from any point outside a circle there are exactly two tangents and they have equal length' |
| 5. Calculate the perimeter of a shape with circular elements; extension      | 5. Calculate the area of a shapes with circular elements; extension       | 5. Calculate the area of a sector  | 5. Demo: Know that the angle at the centre is twice the angle at the circumference                               | 5. Demo: Know that the angle between a tangent and a chord is equal to the angle in the alternate segment                     |
| 6. Calculate the perimeter of a shape with circular elements; extension      | 6. Calculate the area of a shapes with circular elements; extension       | 6. Calculate the angle at the centre or the radius given the area of the sector            | 6. Calculate missing values in diagrams using 'the angle at the centre is twice the angle at the circumference'  | 6. Calculate missing values using 'the angle between a tangent and a chord is equal to the angle in the alternate segment'    |
|  | 7. Calculate the area of a shapes with circular elements; extension       | 7. Calculate length of an arc and the area of a sector: table form                         | 7. Demo: Know that opposite angles in a cyclic quadrilateral add up to $180^\circ$                               | 7. Summary Demo: All 3 circle theorems involving tangents   |
|  |   | 8. Calculate angle at centre, radius, length of an arc or the area of a sector: table form | 8. Calculate missing values in diagrams using 'opposite angles in a cyclic quadrilateral add up to $180^\circ$ ' | 8. Mixed calculations from tasks 1 to 7   |
|  |   | 9. Demo: Calculate the area of a segment   | 9. Summary Demo: All 4 circle theorems not involving tangents  | 9. Mixed calculations from tasks 1 to 7   |
|  |   | 10. Calculate the area of a segment  | 10. Mixed calculations from Tasks 1 to 9   | 10. Summary Demo: All 7 circle theorems   |
|  |   |  | 11. Mixed calculations from Tasks 1 to 9   | 11. Mixed calculations from targets 3 and 4   |
|  |   |  | 12. Mixed calculations from Tasks 1 to 9   | 12. Mixed calculations from targets 3 and 4   |