| | | | |
|---|---|---|---|
| 1 | circumference | B1 | |

| Q | Answer | Mark | Comments |
|---|---|---|---|
| 2 | **Alternative method 1** Shows algebraically that the angles are equal | | |
| | $4x + 40$ | M1 | may be embedded or on the diagram |
| | $x + 2(2x + 20)$ or $x + 4x + 40$ | M1 | |
| | $x + 4x + 40 = 5x + 40$ and Yes | A1 | |
| | **Alternative method 2** Derives and solves an equation for angles at a point and substitutes into $5x + 40$ or $x + 2(2x + 20)$ | | |
| | $4x + 40$ | M1 | may be embedded or on the diagram or implied<br>eg implied by $10x + 80 = 360$ |
| | $x + 2(2x + 20) + 5x + 40 = 360$<br>or<br>$x + 4x + 40 + 5x + 40 = 360$<br>or $(x =) 28$ | M1 | oe equation eg $10x + 80 = 360$<br>$(x =) 28$ may be on the diagram |
| | $140 + 40 = 180$ and Yes<br>or<br>$28 + 152 = 180$ and Yes | A1 | oe<br>must obtain $(x =) 28$ from one expression and substitute $(x =) 28$ into a different expression |
| | **Alternative method 3** Assumes line is a diameter. Derives and solves an equation for angles on a line using $5x + 40$ and substitutes into $x + 2(2x + 20)$ or $x + 2(2x + 20) + 5x + 40$ | | |
| | $5x + 40 = 180$ | M1 | |
| | $(x =) (180 - 40) \div 5$<br>or $(x =) 28$ | M1dep | oe<br>$(x =) 28$ may be on the diagram |
| | $28 + 152 = 180$ and Yes<br>or<br>$28 + 152 + 140 + 40 = 360$ and Yes | A1 | oe<br>must obtain $(x =) 28$ from one expression and substitute $(x =) 28$ into a different expression |

| Q | Answer | Mark | Comments |
|---|---|---|---|
| 3 | diameter | B1 | |

| Q | Answer | Mark | Comments |
|---|---|---|---|
| 4 | $20^2$ (× π) or 400 (× π)<br>or<br>$15^2$ (× π) or 225 (× π) | M1 | oe |
| | $\frac{3}{4}$ × $20^2$ (× π) or 300 (× π)<br>or<br>$\frac{1}{3}$ × $15^2$ (× π) or 75 (× π) | M1dep | oe |
| | $\frac{3}{4}$ × $20^2$ (× π) or 300 (× π)<br>and<br>$\frac{1}{3}$ × $15^2$ (× π) or 75 (× π) | M1dep | |
| | 300 (× π)<br>and<br>75 (× π)<br>and<br>4 | A1 | Accept P = 4Q for 4<br>SC2<br>40 (× π) and 30 (× π)<br>and 30 (× π) and 10 (× π)<br>and answer 3 |
| | **Additional Guidance** | | |
| | Answer 4 with no working | | M0A0 |
| | Condone inconsistent use of π eg 300π and 75 and 4 | | M3A1 |
| | Condone, for example, π400 for 400π | | |
| | Allow use of a numerical value for π for method marks and for the A mark with answer 4 | | |
| | Ignore units throughout | | |

| Q | Answer | Mark | Comments |
|---|---|---|---|
| 5 | circumference | B1 | |

| Q | Answer | Mark | Comments |
|---|---|---|---|
| 6 | 5 cm | B1 | |

| Q | Answer | Mark | Comments |
|---|---|---|---|
| 7 | Cannot be true<br>Cannot be true<br>Might be true | B3 | B1 for each<br>any clear indication |
| | **Additional Guidance** | | |
| | Only one cross in a row – mark the cross | | |
| | A tick and cross(es) in a row – mark the tick | | |
| | More than one tick in a row scores B0 for that row | | |

| Q | Answer | Mark | Comments |
|---|---|---|---|
| 8 | $0.5 \times \pi \times 45$<br>or $0.5 \times [141, 141.4]$<br>or $[70.5, 70.7]$<br>or $0.5 \times \pi \times 45 + 75$<br>or $[145.5, 145.7]$ | M1 | oe eg $22.5\pi$ |
| | $(0.5 \times \pi \times 45 + 75) \div 18$<br>or<br>their $[145.5, 145.7] \div 18$ | M1 | oe<br>their $[145.5, 145.7]$ can be any value |
| | 8.08(…) or 8.09(…) | A1 | may be implied by 8.1 |
| | 8.1 | B1ft | ft any answer seen with greater than 2 sf<br>SC2 3.9 |
| | **Additional Guidance** | | |
| | Up to M2 may be awarded for correct work, with no or incorrect answer, even if this is seen amongst multiple attempts, B1ft may also be awarded | | |
| | $\frac{120}{18} = 6.67$ answer 6.7 | | M0M1A0B1ft |
| | $\frac{120}{18} = 6.7$ | | M0M1A0B0ft |
| | $0.5 \times \pi \times 45$ and $70.7 \div 18 = 3.93$ answer 3.9 | | M1M1A0B1ft |
| | SC2 for an answer of 3.9 without working is when 75 is not used | | |