Properties of Geometrical Figures – Answer Sheet

Q1 156°

Q2 $n = 15$

Q3 (a) 85° (b) 97.5°

Q4 $QR = 5$ cm

Q5 Area $= 96$ cm^2

Q6 $\angle BCD$ cannot be uniquely determined from the information given.

Q7 Congruent by SSS (order of 8,9 swapped)

Q8 Larger area $= 41.7$ cm^2

Q9 (a) RHS test(b) SAS (ratio) or SSS (ratio)

Q10 $EC = 7.5$ cm

Q11 Mid-segment $= 9$ cm

Q12 Proof: line meets and bisects (reason)

Q13 Third angle 83°

Q14 $\angle PQR = 74^\circ$

Q15 Right-angled at the side 8 and 15 (hypotenuse 17)

Q16 Diagonals equal bisect (proof)

Q17 Each diagonal creates congruent s (SAS)

Q18 $BC = 5$ cm

Q1 Worked Challenge – Chord, Mid-point Angle

(a) Mid-point In any circle the perpendicular from centre to a chord bisects the chord D is midpoint of AB.

(b) Central vs chord angle Arc ACB spans angle $\angle CAB$ at the circumference and $\angle COD$ at the centre; hence $\angle COD = 2\angle CAB$.

(c) Finding CD With $AB = 10$ and radius 7:

$$\text{Distance } OD = \sqrt{7^2 - 5^2} = \sqrt{49 - 25} = 2\sqrt{6} \approx 4.90$$

Point C lies on the perpendicular bisector (line OC), so C has coordinates $(0, 7)$ while D is $(0, 2\sqrt{6})$.

$$CD = 7 - 2\sqrt{6} \approx 2.10 \text{ cm}$$

$$\boxed{CD \approx 2.1 \text{ cm}}$$