# Geometry and proof - Practice test 2

Name: _____ Date: _____

16 questions | 38 marks | 55 minutes

Build angle, triangle and circle reasoning with justified steps.

A scientific calculator may be used.

**1.** Angles around a point total $360^\circ$. Three are $75^\circ, 90^\circ$ and $110^\circ$. Find the fourth. [1 mark]

**2.** An isosceles triangle has vertex angle $44^\circ$. Find each base angle. [1 mark]

**3.** Two equal alternate angles are formed by a transversal. What does the converse theorem show? [2 marks]

**4.** Triangles have side lengths 4, 5, 6 and 8, 10, 12. Are they similar? [2 marks]

**5.** Triangles each have angles $50^\circ, 60^\circ, 70^\circ$. Must they be congruent? Explain. [2 marks]

**6.** A circle radius 13 cm has chord 24 cm. Find perpendicular centre distance. [2 marks]

**7.** A tangent length is 24 cm and the contact radius is 7 cm. Find centre-to-exterior-point distance. [2 marks]

**8.** Two tangents from P have lengths $4x - 1$ and $2x + 7$. Find $x$ and the common length. [3 marks]

**9.** An inscribed angle intercepting a minor arc is $43^\circ$. Find its central angle. [2 marks]

**10.** A circle has centre O and minor central angle $AOB = 80^\circ$. D is on the minor arc AB. Find $\angle ADB$. [3 marks]

**11.** Opposite cyclic angles are $2x + 20$ and $4x - 8$ degrees. Find $x$. [3 marks]

**12.** A tangent-chord angle is $64^\circ$. Find the angle in the alternate segment. [2 marks]

**13.** A circle has a chord that is not a diameter. A line joins the circle centre to the chord midpoint. Explain why the line is perpendicular to the chord. [4 marks]

**14.** Find the perpendicular bisector of $A = (1, -2), B = (7, -2)$. [3 marks]

**15.** A student claims every rhombus is cyclic. Give a counterexample with angles. [3 marks]

**16.** A student uses SSA as a congruence test: two corresponding sides are 5 cm and 8 cm, and one corresponding non-included angle is equal. Explain why this information does not guarantee congruence in every case. [3 marks]