# 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°. Three are 75°, 90° and 110°. Find the fourth. [1 mark]

**2.** An isosceles triangle has vertex angle 44°. 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°, 60°, 70°. 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°. Find its central angle. [2 marks]

**10.** A circle has centre O and minor central angle AOB=80°. D is on the minor arc AB. Find ∠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°. 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]