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Quadrilaterals

Solutions & Answer Key

Full worked solutions, marking scheme & answer key

IGCSE Mathematics

The Panda Math Tutor

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Companion to the *Student Worksheet*

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Note

About this booklet. These are the complete solutions to every question in the *Quadrilaterals — Student Worksheet*. Question numbers match exactly: angle sum A1–A9, squares and rectangles R1–R7, parallelograms P1–P7, rhombuses H1–H6, trapeziums T1–T6, kites K1–K6, identifying and comparing C1–C8, the Mixed Review MR1–MR10, and the examination questions Q1–Q8 of Part III.
Every solution names the property being used, because in this topic the reason carries as many marks as the number. Part V collects the common mistakes to watch for, and Part VI is a quick answer key for fast marking.

4 Part IV — Complete Solutions

Note

Each solution states the property first and the arithmetic second, exactly as the notes recommend. Depth is scaled to difficulty — brief for basic questions, fuller for the harder ones.

4.1 Solutions — The Angle Sum of a Quadrilateral

Solution A1

The four interior angles of a quadrilateral add to 360°:

$$85^\circ + 97^\circ + 112^\circ + x = 360^\circ$$

$$294^\circ + x = 360^\circ$$

$$\boxed{x = 66^\circ}$$

Solution A2

$$124^\circ + 68^\circ + 90^\circ = 282^\circ$$

$$360^\circ - 282^\circ = \boxed{78^\circ}$$

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Solution A3

$$x + 2x + 3x + 4x = 360^\circ$$

$$10x = 360^\circ \implies \boxed{x = 36^\circ}$$

The four angles are

$$\boxed{36^\circ,\ 72^\circ,\ 108^\circ,\ 144^\circ}$$

Check: $36 + 72 + 108 + 144 = 360$ ✓

Solution A4

(a) Add the four expressions and set the total equal to 360:

$$(x + 20) + (x - 10) + 2x + (x + 30) = 360$$

$$5x + 40 = 360$$

$$5x = 320 \implies \boxed{x = 64}$$

(b) Substituting $x = 64$:

$$x + 20 = 84^\circ, \quad x - 10 = 54^\circ, \quad 2x = 128^\circ, \quad x + 30 = 94^\circ$$

$$\boxed{84^\circ,\ 54^\circ,\ 128^\circ,\ 94^\circ}$$

Check: $84 + 54 + 128 + 94 = 360$ ✓

Solution A5

Let each of the three equal angles be y:

$$3y + 132^\circ = 360^\circ$$

$$3y = 228^\circ$$

$$\boxed{y = 76^\circ}$$

Check: $76 \times 3 + 132 = 228 + 132 = 360$ ✓

Solution A6

The ratio has $2 + 3 + 5 + 8 = 18$ parts in total, so one part is worth

$$\frac{360^\circ}{18} = 20^\circ.$$

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