

The Panda Math Tutor

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Circle Theorems

Student Worksheet
Questions & Working Space
IGCSE Mathematics

Name: _____

Date: _____

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Teach → Practice → Reason → Apply → Challenge → Master

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Note

How to use this worksheet. These questions are built *strictly* on the *Circle Theorems* notes: parts of a circle, the eight circle theorems, tangent properties, the alternate segment theorem, chain reasoning with two or three theorems, and exam-style applications.

Naming your reasons. Circle theorem marks are reasoning marks. After every deduction, write the theorem name in brackets — for example “ $\angle ACB = 90^\circ$ (angle in a semicircle)”. An answer with no reason earns very little credit even when the number is right.

Working space. Ruled lines follow each question. Where no figure is printed, *draw your own* large sketch first and label every angle you find as you go.

Checking your answers. Full step-by-step solutions, a marking scheme for the exam paper, and a quick answer key are in the separate booklet “*Circle Theorems — Solutions & Answer Key*.” Try each question honestly before you look.

1 Part I — Topic-by-Topic Exercises

1.1 Parts of a Circle

Exercise V1 [Basic]

Name the part of a circle described in each case:

- (a) a straight line segment joining two points on the circumference;
 - (b) a region bounded by two radii and the arc between them;
 - (c) a straight line that touches the circle at exactly one point.
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Exercise V2 [Basic]

- (a) A circle has radius 6.5 cm. Write down its diameter.
 - (b) A different circle has diameter 23 cm. Write down its radius.
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Exercise V3 [Standard]

Explain the difference between a *segment* and a *sector* of a circle. Include a small labelled sketch of each.

Exercise V4 [Standard]

O is the centre of a circle and A and B are two points on the circumference. Explain why triangle OAB must always be isosceles, whatever positions A and B take.

Hint

Think about the two sides of the triangle that start at the centre.

Exercise V5 [Intermediate]

Points A , B , C and D lie on a circle in that order.

- (a) Explain what is meant by saying that $ABCD$ is a *cyclic quadrilateral*.
 - (b) Write down the relationship between $\angle DAB$ and $\angle BCD$.
-
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Preview ends here

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