The Panda Math Tutor

www.thepandamathtutor.com

Circle Theorems

Student Worksheet

Questions & Working Space

IGCSE Mathematics

Name: _____

Date: _____

The Panda Math Tutor

Prepared by

Nikolas Agisilaou

Contents

1 Part I — Topic-by-Topic Exercises **2**
1.1 Parts of a Circle . . . 2
1.2 Theorem 1 — Angle at the Centre . . . 4
1.3 Theorem 2 — Angles in the Same Segment . . . 6
1.4 Theorem 3 — Angle in a Semicircle . . . 8
1.5 Theorem 4 — Cyclic Quadrilaterals . . . 9
1.6 Theorems 5 and 6 — Tangents . . . 12
1.7 Theorem 7 — Perpendicular from the Centre to a Chord . . . 15
1.8 Theorem 8 — Alternate Segment Theorem . . . 16
1.9 Chain Reasoning with Several Theorems . . . 19
1.10 Real-World Applications . . . 22

2 Part II — Mixed Review **24**

3 Part III — Examination-Style Practice **28**

The Panda Math Tutor

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 "$\angle ACB = 90°$ (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.

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.

The Panda Math Tutor

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 $\angle BCD$.

The Panda Math Tutor

Preview ends here

29 more pages are in the full pack.

Circle Theorems — Worksheet — €11.99

Buy the pack and the complete PDF lands in your inbox.

Personal study use only — please don't resell or share.