Circle Theorems

Name:	Class:	Date:

1) In the diagram below, angle BAC = 60°.
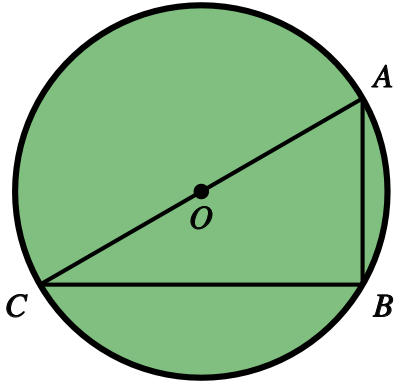
Find the following angles, giving reasons for your answers:
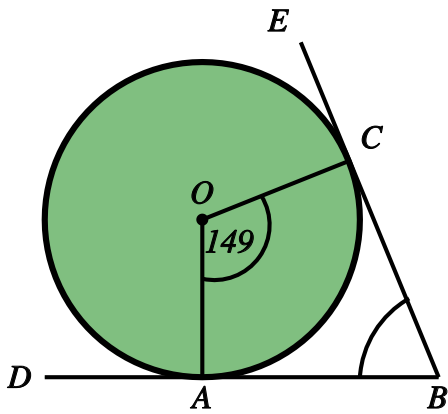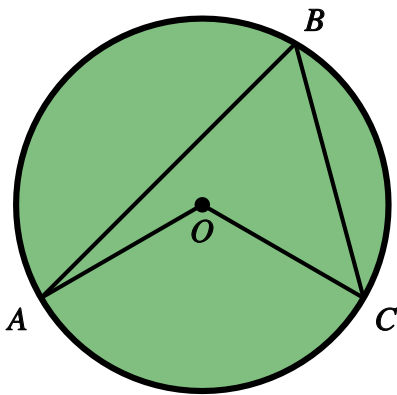
a)   angle ABC

b)   angle ACB

[1]

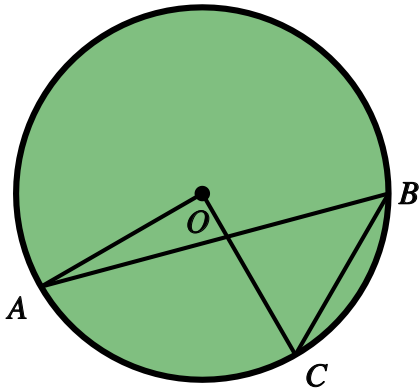**2)** Find angle ABC in the following diagram, giving reasons for your answer.   [1]

3) In the diagram below, angle AOC = 135°.   [1]
Find angle ABC, giving a reason for your answer.
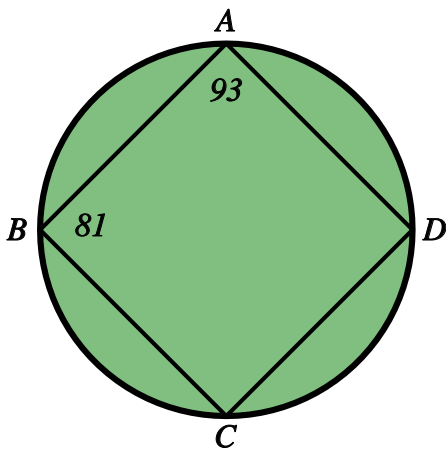
4) In the diagram below, angle AOC = 131°. [1]
Find angle ABC, giving a reason for your answer.

5) In the diagram below, angle DAB = 93° and angle ABC = 81°.

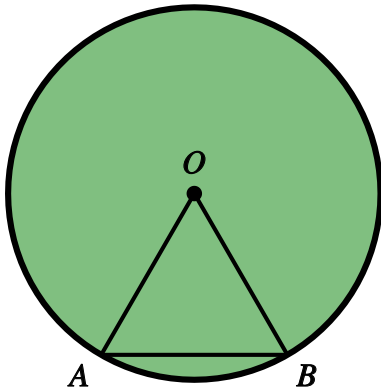Find the following angles, giving reasons for your answers:

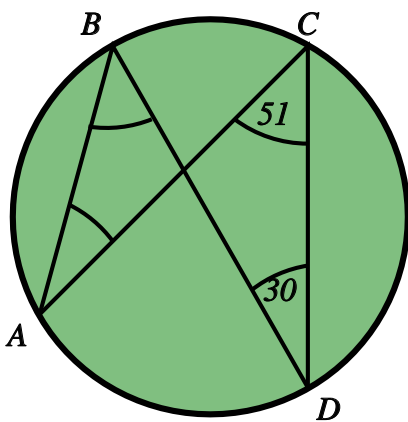a)   angle BCD   b)   angle CDA

[1]

6) In the diagram below, angle AOB = 99°.   [1]

Find angle OAB, giving reasons for your answer.

7) The diagram below shows a circle with points A, B, C and D on the circumference.

Find the following angles, giving reasons for your answers:

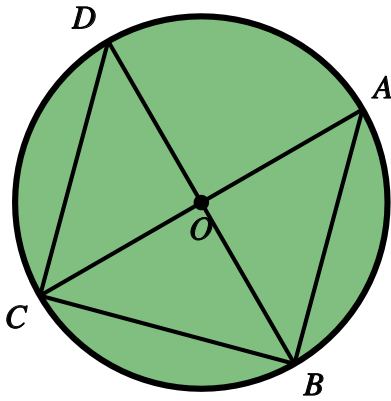   a)   angle ABD   b)   angle BAC
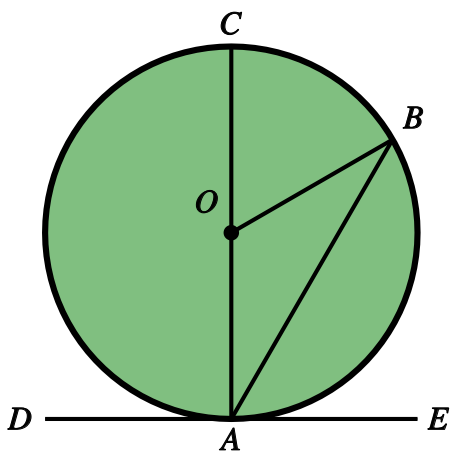
[1]

8) In the diagram below, angle ACB = 43°. [1]
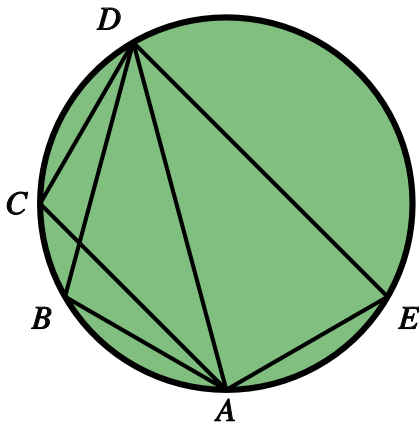Find angle BDC, giving reasons for your answer.

9) In the diagram below, angle BOC = 60°. [1]
Find angle BAE, giving reasons for your answer.

10) In the diagram below, angle ABD = 94°.

Find the following angles, giving reasons for your answers:

a)   angle ACD

b)   angle AED

[1]

Solutions for the assessment Circle Theorems

1) a) angle ABC = 90°
b) angle ACB = 30°
Reasons: Angle in a semicircle is 90° *and* angle sum of a triangle is 180°

2) angle ABC = 31°
Reasons: Angle between tangent and radius is 90° *and* angle sum of a quadrilateral is 360°

3) angle ABC = 67.5°
Reason: Angle at centre is twice angle at circumference

4) angle ABC = 65.5°
Reason: Angle at centre is twice angle at circumference

5) a) angle BCD = 87°
b) angle CDA = 99°
Reason: Opposite angles in a cyclic quadrilateral sum to 180°

6) angle OAB = 40.5°
Reason: Angle sum of a triangle is 180° *and* isosceles triangle

7) a) angle ABD = 51°
b) angle BAC = 30°
Reason: Angles in the same segment are equal

8) angle BDC = 47°
Reason: Angle in a semicircle + angle sum of triangle + angles in same segment

9) angle BAE = 60°
Reason: Angle at centre and circumference + angle between tangent and radius
or angles on a straight line + isosceles triangle + angle sum of triangle + angle between tangent and radius

10) a) angle ACD = 94°
b) angle AED = 86°
Reason: Angles in the same segment + cyclic quadrilateral