

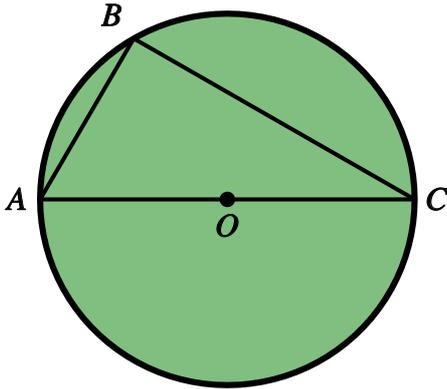
## Revision 5: Circle Theorems

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

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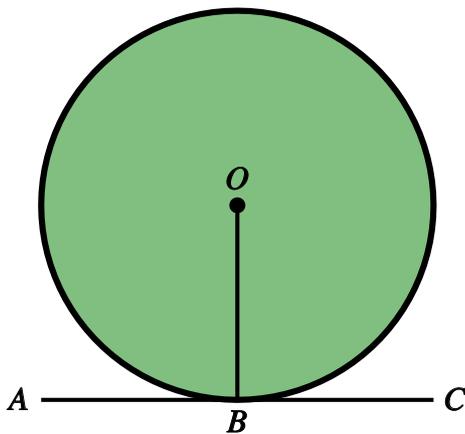
1) Find angle ABC in the diagram below, giving a reason for your answer.

[1]



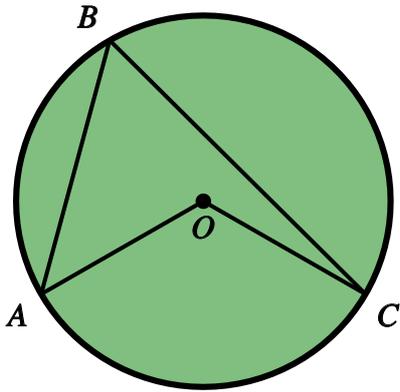
2) Find angle OBA in the following diagram, giving a reason for your answer.

[1]



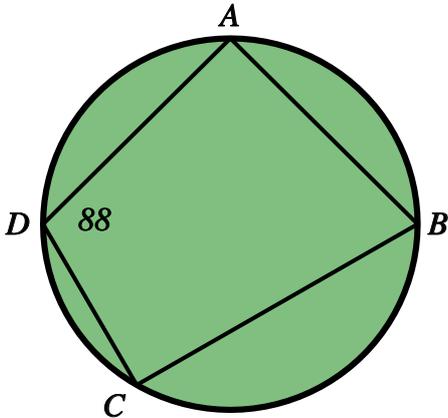
3) In the diagram below, angle  $AOC = 135^\circ$ .  
Find angle  $ABC$ , giving a reason for your answer.

[1]



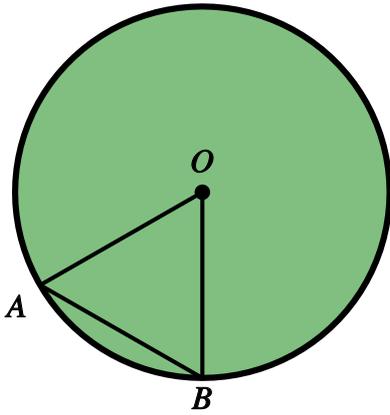
4) In the diagram below, angle  $ADC = 88^\circ$ .  
Find angle  $ABC$ , giving a reason for your answer.

[1]



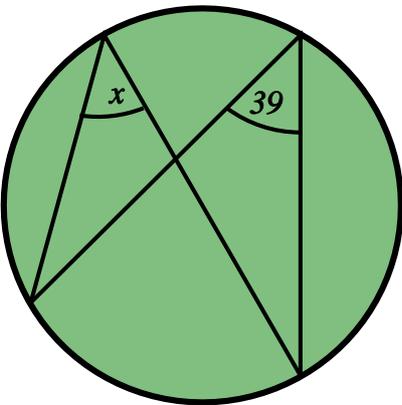
5) In the diagram below, angle  $OAB = 43^\circ$ .  
Find angle  $OBA$ , giving a reason for your answer.

[1]

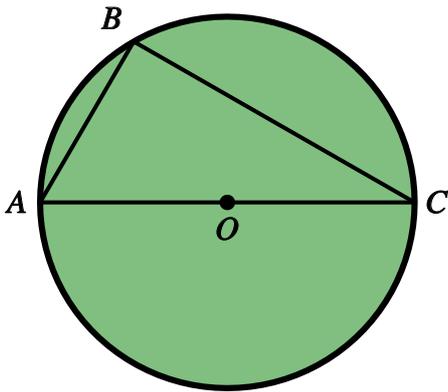


6) Find angle  $x$  in the following diagram, giving a reason for your answer.

[1]



7) In the diagram below, angle  $BAC = 65^\circ$ .



Find the following angles, giving reasons for your answers:

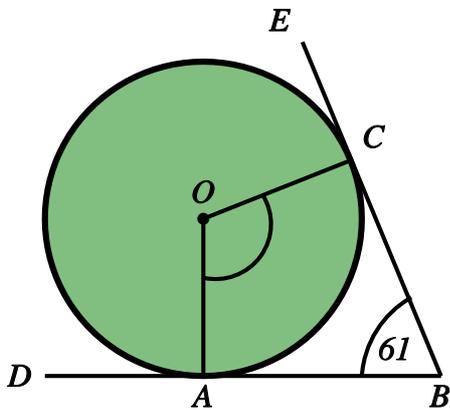
a) angle  $ABC$

b) angle  $ACB$

[1]

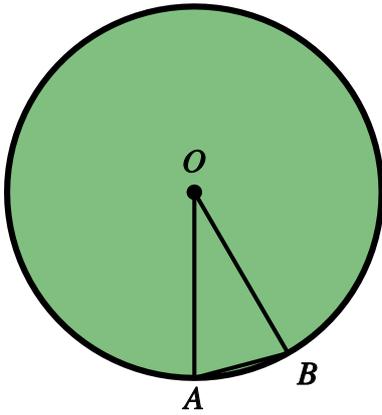
8) Find angle  $AOC$  in the following diagram, giving reasons for your answer.

[1]



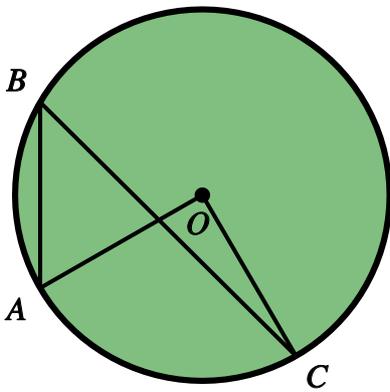
9) In the diagram below, angle  $ABO = 42^\circ$ .  
Find angle  $AOB$ , giving reasons for your answer.

[1]

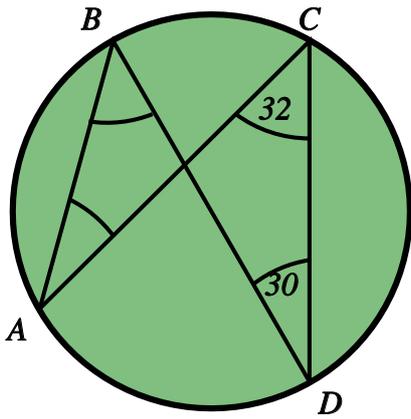


10) In the diagram below, angle  $ABC = 58^\circ$ .  
Find angle  $AOC$ , giving a reason for your answer.

[1]



11) 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

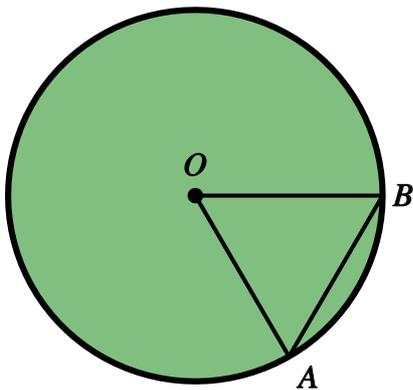
b) angle BAC

[1]

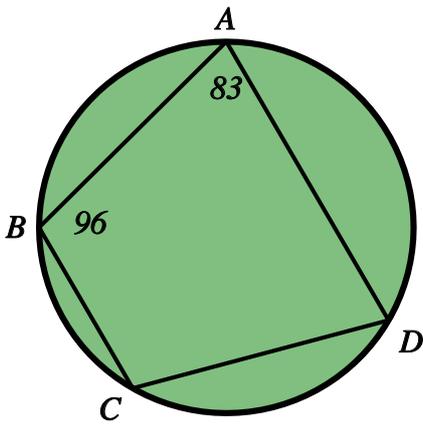
12) In the diagram below, angle AOB =  $83^\circ$ .

Find angle OAB, giving reasons for your answer.

[1]



13) In the diagram below, angle  $DAB = 83^\circ$  and angle  $ABC = 96^\circ$ .



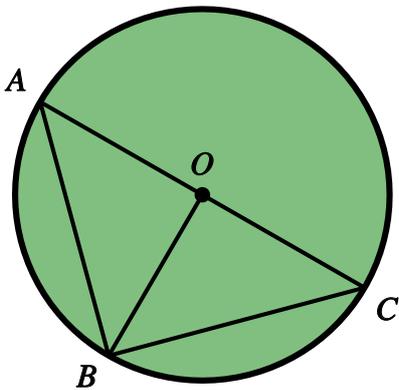
Find the following angles, giving reasons for your answers:

a) angle  $BCD$

b) angle  $CDA$

[1]

14) In the diagram below, angle  $BOC = 97^\circ$ .



Find the following angles, giving reasons for your answers:

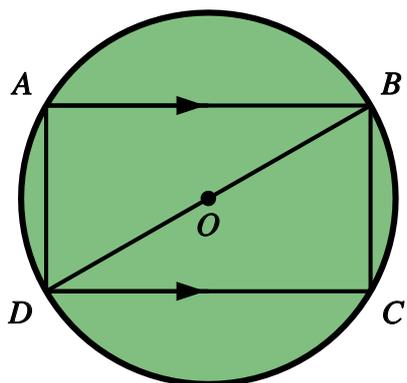
a) angle  $OCB$

b) angle  $CBO$

c) angle  $OAB$

[1]

15) In the diagram below, angle  $ABD = 37^\circ$ .



Find the following angles, giving reasons for your answers:

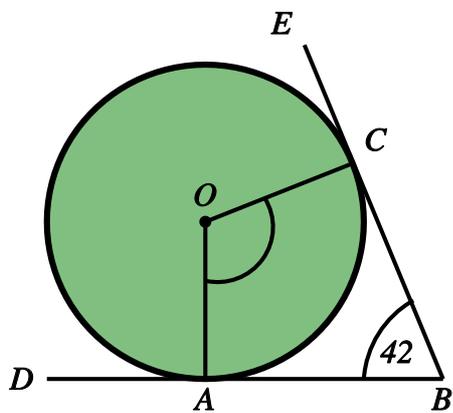
a) angle  $BDC$

b) angle  $CBD$

[1]

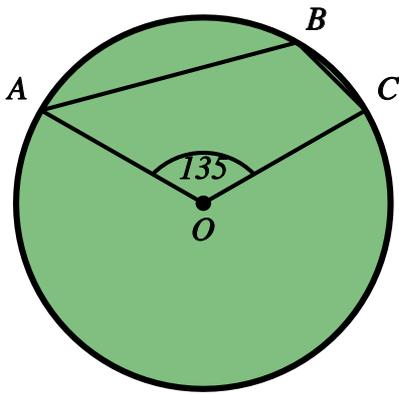
16) Find angle  $AOB$  in the following diagram, giving reasons for your answer.

[1]



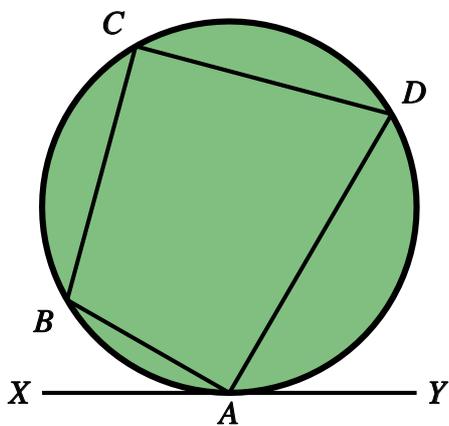
17) In the diagram below, angle  $AOC = 135^\circ$ .  
Find angle  $ABC$ , giving a reason for your answer.

[1]

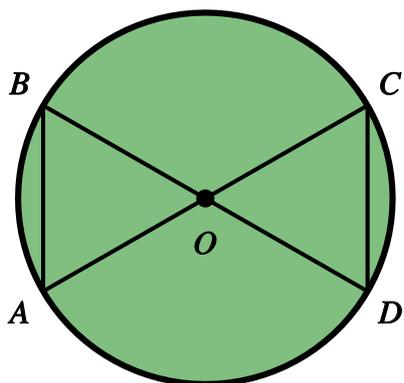


18) In the diagram below, angle  $XAB = 46^\circ$ .  
Angle  $YAD = 50^\circ$ . Find angle  $BCD$ , giving a reason for your answer.

[1]



19) In the diagram below, angle  $BAC = 48^\circ$ .



Find the following angles, giving reasons for your answers:

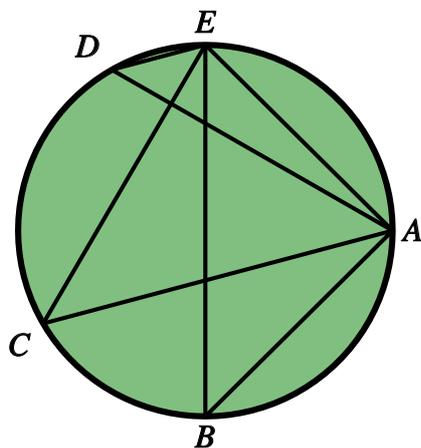
a) angle  $ABD$

b) angle  $COD$

c) angle  $CDO$

[1]

20) In the diagram below, angle  $ABE = 44^\circ$ .



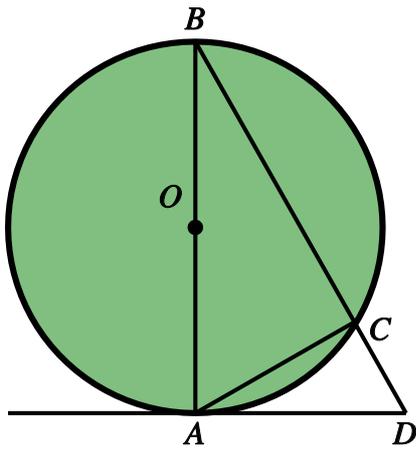
Find the following angles, giving reasons for your answers:

a) angle  $ACE$

b) angle  $ADE$

[1]

21) In the diagram below, angle  $ABC = 32^\circ$ .



Find the following angles, giving reasons for your answers:

a) angle  $BAC$

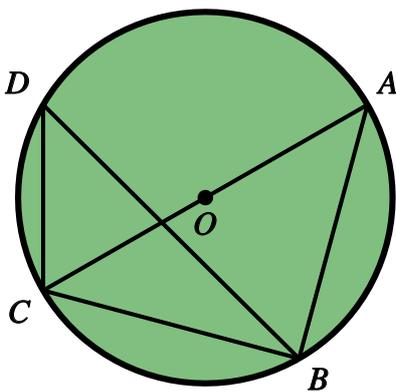
b) angle  $ADC$

[1]

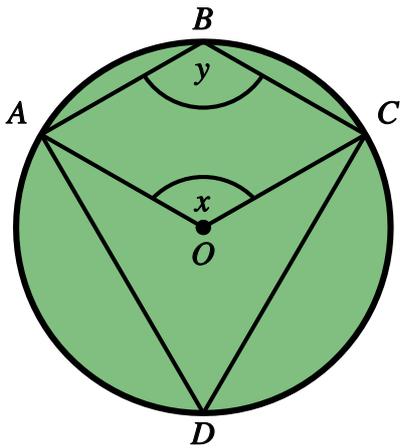
22) In the diagram below, angle  $ACB = 45^\circ$ .

Find angle  $BDC$ , giving reasons for your answer.

[1]



23) In the diagram below, angle  $ADC = 50^\circ$ .



Find the following angles, giving reasons for your answers:

a) angle  $x$

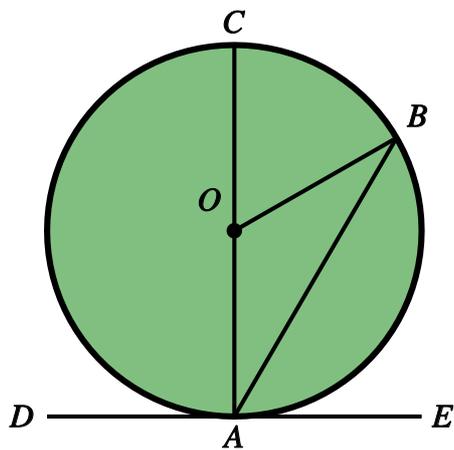
b) angle  $y$

[1]

24) In the diagram below, angle  $BOC = 54^\circ$ .

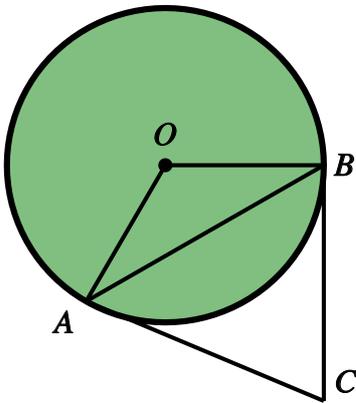
Find angle  $BAE$ , giving reasons for your answer.

[1]

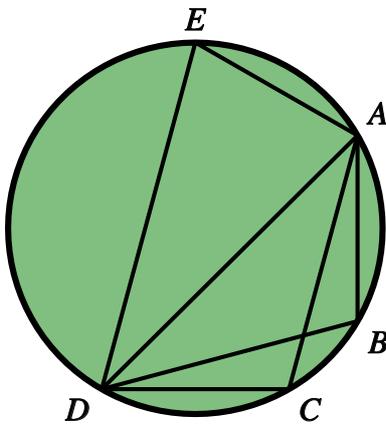


25) AB and BC are tangents to the circle shown below. Angle OAB =  $44^\circ$ .  
Find angle ACB, giving reasons for your answer.

[1]



26) In the diagram below, angle ABD =  $82^\circ$ .



Find the following angles, giving reasons for your answers:

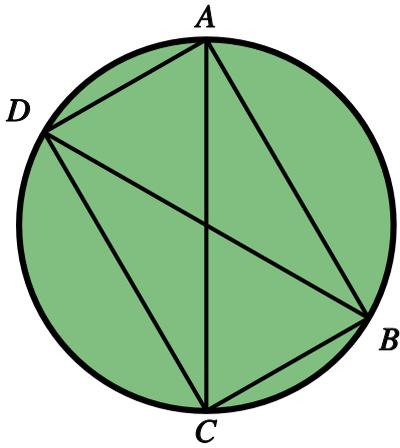
a) angle ACD

b) angle AED

[1]

27) In the diagram below, angle  $ADC = 94^\circ$  and angle  $ACD = 40^\circ$ .  
Find angle  $DBC$ , giving reasons for your answer.

[1]



## Solutions for the assessment Revision 5: Circle Theorems

1) angle  $ABC = 90^\circ$

Reason: Angle in a semicircle is  $90^\circ$

2) angle  $OBA = 90^\circ$

Reason: Angle between tangent and radius is  $90^\circ$

3) angle  $ABC = 67.5^\circ$

Reason: Angle at centre is twice angle at circumference

4) Angle  $ABC = 92^\circ$

Reason: Opposite angles in a cyclic quadrilateral sum to  $180^\circ$

5) angle  $OBA = 43^\circ$

Reason: Isosceles triangle

6)  $x = 39^\circ$

Reason: Angles in the same segment are equal

7) a) angle  $ABC = 90^\circ$

b) angle  $ACB = 25^\circ$

Reasons: Angle in a semicircle is  $90^\circ$  and angle sum of a triangle is  $180^\circ$

8) angle  $AOC = 119^\circ$

Reasons: Angle between tangent and radius is  $90^\circ$  and angle sum of a quadrilateral is  $360^\circ$

9) angle  $AOB = 96^\circ$

Reason: Isosceles triangle and angle sum of a triangle

10) angle  $AOC = 116^\circ$

Reason: Angle at centre is twice angle at circumference

11) a) angle  $ABD = 32^\circ$

b) angle  $BAC = 30^\circ$

Reason: Angles in the same segment are equal

12) angle  $OAB = 48.5^\circ$

Reason: Angle sum of a triangle is  $180^\circ$  and isosceles triangle

13) a) angle  $BCD = 97^\circ$

b) angle  $CDA = 84^\circ$

Reason: Opposite angles in a cyclic quadrilateral sum to  $180^\circ$

14) a) angle  $OCB = 41.5^\circ$

b) angle  $CBO = 41.5^\circ$

c) angle  $OAB = 48.5^\circ$

Reason: Angle sum of a triangle is  $180^\circ$  + isosceles triangle + angles on a straight line

15) a) angle  $BDC = 37^\circ$

b) angle  $CBD = 53^\circ$

Reasons: Alternate angles and angle in a semicircle is  $90^\circ$

16) angle  $AOB = 69^\circ$

Reasons: Angle between tangent and radius is  $90^\circ$  and congruent triangles

17) angle  $ABC = 112.5^\circ$

Reason: Angle at centre is twice angle at circumference

18) angle  $BCD = 96^\circ$

Reason: Alternate Segment Theorem

**19)** a) angle ABD =  $48^\circ$

b) angle COD =  $84^\circ$

c) angle CDO =  $48^\circ$

Reason: Isosceles triangle + angle sum of a triangle + vertically opposite angles

*or* isosceles triangle + angles in the same segment are equal + angle sum of a triangle

**21)** a) angle BAC =  $58^\circ$

b) angle ADC =  $58^\circ$

Reason: Angle in a semicircle + angle between tangent and radius + angle sum of triangle

**23)** a) angle  $x = 100^\circ$

b) angle  $y = 130^\circ$

Reason: Angle at centre and circumference + cyclic quadrilateral

**25)** angle ACB =  $88^\circ$

Reason: Angle between tangent and radius + isosceles triangle + angle sum of triangle

**27)** angle DBC =  $46^\circ$

Reason: Angles in the same segment + cyclic quadrilateral

**20)** a) angle ACE =  $44^\circ$

b) angle ADE =  $44^\circ$

Reason: Angles in the same segment are equal

**22)** angle BDC =  $45^\circ$

Reason: Angle in a semicircle + angle sum of triangle + angles in same segment

**24)** angle BAE =  $63^\circ$

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

**26)** a) angle ACD =  $82^\circ$

b) angle AED =  $98^\circ$

Reason: Angles in the same segment + cyclic quadrilateral