# Foundation Check In - 8.04 Properties of polygons

1. Find the size of angle *a* in the triangle below.

5 cm

*a*

5 cm

5 cm

**Not to scale**

1. Find the size of length *b* in the triangle below.

56°

68°

15 cm

19 cm

*b*

**Not to scale**

1. Find the size of angle *c* in the quadrilateral below.

*c*

73°

**Not to scale**

1. Name a quadrilateral that has 2 lines of symmetry and rotational symmetry of order 2 about its centre.
2. Work out the size of each angle in the triangle below.

*x*°

3*x*°

**Not to scale**

1. Mary says that she can draw a triangle with 2 obtuse angles. Explain why this is not possible.
2. Decide whether the following statement is correct and give a reason for your decision.

The only quadrilateral with equal length diagonals is a square.

1. Prove that triangle BCD is isosceles.

D

C

A

B

30°

25°

105°

**Not to scale**

1. If , calculate the size of  in the triangle below.

C

**Not to scale**

(4*x* + 90)°

B

A

1. Find the lengths of each side of the kite below.

(3*x* + 4) cm

8*y* cm

(5*x* – 1) cm

(8*y* + 3) cm

**Not to scale**

Extension

For the 3 quadrilaterals (rhombus, kite and parallelogram) explain why each could be the odd one out.

## Answers

1. 60°
2. 15 cm
3. 107°
4. Rectangle or rhombus
5. 36°, 36°, 108°
6. An obtuse angle is greater than 90° so the sum of two obtuse angles would be greater than 180° and as the sum of angles in a triangle is 180° this is not possible.
7. The statement is incorrect because a rectangle has equal length diagonals. (Also accept isosceles trapezium.)
8.  (Sum of angles at a point on a line is 180°)

 (Sum of angles in a triangle is 180°)

 triangle BCD is isosceles.

1. 
2. 16 cm and 19 cm

Extension

The rhombus could be the odd one out as it is the only one with all equal sides.

The parallelogram could be the odd one out as the diagonals do not cross at 90°.

The kite could be the odd one out as it has one line of symmetry and no rotational symmetry.

**OCR Resources**: *the small print*OCR’s resources are provided to support the delivery of OCR qualifications, but in no way constitute an endorsed teaching method that is required by the Board, and the decision to use them lies with the individual teacher. Whilst every effort is made to ensure the accuracy of the content, OCR cannot be held responsible for any errors or omissions within these resources. This formative assessment resource has been produced as part of our free GCSE teaching and learning support package. All the GCSE teaching and learning resources, including delivery guides, topic exploration packs, lesson elements and more are available on the qualification webpages. If you are looking for examination practice materials, you can find Sample Assessment Materials (SAMs) on the qualification webpage [here](http://www.ocr.org.uk/qualifications/gcse-mathematics-j560-from-2015/).  
© OCR 2016 - This resource may be freely copied and distributed, as long as the OCR logo and this message remain intact and OCR is acknowledged as the originator of this work.

OCR acknowledges the use of the following content: n/a

Please get in touch if you want to discuss the accessibility of resources we offer to support delivery of our qualifications: [resources.feedback@ocr.org.uk](mailto:resources.feedback@ocr.org.uk)

We’d like to know your view on the resources we produce. By clicking on ‘[Like](mailto:resources.feedback@ocr.org.uk?subject=I%20liked%20the%20GCSE%20(9-1)%20Mathematics%20Foundation%20Check%20In%20–%208.04%20Properties%20of%20polygons)’ or ‘[Dislike](mailto:resources.feedback@ocr.org.uk?subject=I%20disliked%20the%20GCSE%20(9-1)%20Mathematics%20Foundation%20Check%20In%20–%208.04%20Properties%20of%20polygons)’ you can help us to ensure that our resources work for you. When the email template pops up please add additional comments if you wish and then just click ‘Send’. Thank you.

Whether you already offer OCR qualifications, are new to OCR, or are considering switching from your current provider/awarding organisation, you can request more information by completing the Expression of Interest form which can be found here: [www.ocr.org.uk/expression-of-interest](http://www.ocr.org.uk/expression-of-interest)

Looking for a resource? There is now a quick and easy search tool to help find free resources for your qualification:   
[www.ocr.org.uk/i-want-to/find-resources/](http://www.ocr.org.uk/i-want-to/find-resources/)

To give us feedback on, or ideas about the OCR resources you have used, email [resourcesfeedback@ocr.org.uk](mailto:resourcesfeedback@ocr.org.uk)

To give us feedback on, or ideas about the OCR resources you have used, email [resourcesfeedback@ocr.org.uk](mailto:resourcesfeedback@ocr.org.uk)

To give us feedback on, or ideas about the OCR resources you have used, email [resourcesfeedback@ocr.org.uk](mailto:resourcesfeedback@ocr.org.uk)

To give us feedback on, or ideas about the OCR resources you have used, email [resourcesfeedback@ocr.org.uk](mailto:resourcesfeedback@ocr.org.uk)

To give us feedback on, or ideas about the OCR resources you have used, email [resourcesfeedback@ocr.org.uk](mailto:resourcesfeedback@ocr.org.uk)

To give us feedback on, or ideas about the OCR resources you have used, email [resourcesfeedback@ocr.org.uk](mailto:resourcesfeedback@ocr.org.uk)

**OCR Resources**: *the small print*OCR’s resources are provided to support the teaching of OCR specifications, but in no way constitute an endorsed teaching method that is required by the Board, and the decision to use them lies with the individual teacher. Whilst every effort is made to ensure the accuracy of the content, OCR cannot be held responsible for any errors or omissions within these resources.   
© OCR 2014 - This resource may be freely copied and distributed, as long as the OCR logo and this message remain intact and OCR is acknowledged as the originator of this work.

**OCR Resources**: *the small print*OCR’s resources are provided to support the teaching of OCR specifications, but in no way constitute an endorsed teaching method that is required by the Board, and the decision to use them lies with the individual teacher. Whilst every effort is made to ensure the accuracy of the content, OCR cannot be held responsible for any errors or omissions within these resources.   
© OCR 2014 - This resource may be freely copied and distributed, as long as the OCR logo and this message remain intact and OCR is acknowledged as the originator of this work.

OCR acknowledges the use of the following content::  
⚫ Garden: Elen Eliseeva/Shutterstock.com ⚫ Flag: Pixel Europe/Shutterstock.com

To give us feedback on, or ideas about the OCR resources you have used, email resourcesfeedback@ocr.org.uk

| **Assessment Objective** | **Qu.** | **Topic** | **R** | **A** | **G** |  | **Assessment Objective** | **Qu.** | **Topic** | **R** | **A** | **G** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| AO1 | 1 | Know the properties of an equilateral triangle |  |  |  |  | AO1 | 1 | Know the properties of an equilateral triangle |  |  |  |
| AO1 | 2 | Use the properties of an isosceles triangle to find a length |  |  |  |  | AO1 | 2 | Use the properties of an isosceles triangle to find a length |  |  |  |
| AO1 | 3 | Use the properties of a parallelogram to find an angle |  |  |  |  | AO1 | 3 | Use the properties of a parallelogram to find an angle |  |  |  |
| AO1 | 4 | Identify reflection and rotation symmetries of quadrilaterals |  |  |  |  | AO1 | 4 | Identify reflection and rotation symmetries of quadrilaterals |  |  |  |
| AO1 | 5 | Use the properties of an isosceles triangle to find an angle |  |  |  |  | AO1 | 5 | Use the properties of an isosceles triangle to find an angle |  |  |  |
| AO2 | 6 | Know the angle properties of a triangle and give geometrical reasons to justify these properties |  |  |  |  | AO2 | 6 | Know the angle properties of a triangle and give geometrical reasons to justify these properties |  |  |  |
| AO2 | 7 | Know the angle properties of quadrilaterals and give geometrical reasons to justify these properties |  |  |  |  | AO2 | 7 | Know the angle properties of quadrilaterals and give geometrical reasons to justify these properties |  |  |  |
| AO2 | 8 | Use the properties of triangles in a simple proof |  |  |  |  | AO2 | 8 | Use the properties of triangles in a simple proof |  |  |  |
| AO3 | 9 | Solve a problem using the properties of triangles |  |  |  |  | AO3 | 9 | Solve a problem using the properties of triangles |  |  |  |
| AO3 | 10 | Solve a problem using the properties of quadrilaterals |  |  |  |  | AO3 | 10 | Solve a problem using the properties of quadrilaterals |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Assessment Objective** | **Qu.** | **Topic** | **R** | **A** | **G** |  | **Assessment Objective** | **Qu.** | **Topic** | **R** | **A** | **G** |
| AO1 | 1 | Know the properties of an equilateral triangle |  |  |  |  | AO1 | 1 | Know the properties of an equilateral triangle |  |  |  |
| AO1 | 2 | Use the properties of an isosceles triangle to find a length |  |  |  |  | AO1 | 2 | Use the properties of an isosceles triangle to find a length |  |  |  |
| AO1 | 3 | Use the properties of a parallelogram to find an angle |  |  |  |  | AO1 | 3 | Use the properties of a parallelogram to find an angle |  |  |  |
| AO1 | 4 | Identify reflection and rotation symmetries of quadrilaterals |  |  |  |  | AO1 | 4 | Identify reflection and rotation symmetries of quadrilaterals |  |  |  |
| AO1 | 5 | Use the properties of an isosceles triangle to find an angle |  |  |  |  | AO1 | 5 | Use the properties of an isosceles triangle to find an angle |  |  |  |
| AO2 | 6 | Know the angle properties of a triangle and give geometrical reasons to justify these properties |  |  |  |  | AO2 | 6 | Know the angle properties of a triangle and give geometrical reasons to justify these properties |  |  |  |
| AO2 | 7 | Know the angle properties of quadrilaterals and give geometrical reasons to justify these properties |  |  |  |  | AO2 | 7 | Know the angle properties of quadrilaterals and give geometrical reasons to justify these properties |  |  |  |
| AO2 | 8 | Use the properties of triangles in a simple proof |  |  |  |  | AO2 | 8 | Use the properties of triangles in a simple proof |  |  |  |
| AO3 | 9 | Solve a problem using the properties of triangles |  |  |  |  | AO3 | 9 | Solve a problem using the properties of triangles |  |  |  |
| AO3 | 10 | Solve a problem using the properties of quadrilaterals |  |  |  |  | AO3 | 10 | Solve a problem using the properties of quadrilaterals |  |  |  |