



TI-AIE

Enacting vocabulary and asking questions: exploring the circle

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Walton Hall, Milton Keynes
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First published 200X. [Second edition 200Y. Third edition] [Reprinted 200Z]

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Edited and designed by The Open University.

Typeset by [name and address of typesetter if applicable or The Open University].

Printed and bound in the United Kingdom by [name and address of printer].

ISBN XXX X XXXX XXXX X

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Contents

What this unit is about	5
What you can learn in this unit	5
1 Intuitive learning	5

What this unit is about

Circles are around us everywhere. The circle is a shape we rely on heavily in our lives: wheels are circles, as are dinner plates, cups, lids on bottles, DVDs and cogs in machinery. We also use the image of a circle in expressions such as ‘the circle of life’ and ‘going around in circles’. We sit in circles, eat circular chapattis and preserve food in circular tins; we also ride bicycles and drive cars with wheels. So we are all exposed to circles – working and playing with them, or talking about them – from an early age.

Students come to school with an intuitive understanding of circles and their properties. This unit will explore how to use that intuitive knowledge effectively by asking ‘good’ questions that help students notice the important mathematical ideas of variance and invariance. This will help your students to develop a better theoretical understanding of the concepts.

What you can learn in this unit

- How to build on your students’ intuitive understanding to develop a better understanding of the geometrical theory associated with circles.
- How to develop tasks to work on variance and invariance in circle geometry.
- Some suggestions of ‘good questions’ to ask your students to help them to notice and understand these mathematical concepts.

This unit links to the teaching requirements of the NCF (2005) and NCFTE (2009) as specified in Resource 1.

1 Intuitive learning

Learning about circles is part of learning about geometry. Geometry is often regarded as a part of the school mathematics curriculum that is difficult to understand and, as a result, can only be learned by memorisation.

This may seem surprising because life is full of geometry and we use it all the time and by doing so, develop an intuitive understanding of geometry. Byers and Herscovics describe intuitive understanding as ‘the ability to solve a problem without prior analysis of the problem’ (1977, p. 26).

So it should be possible to experience school geometry as an interesting, understandable and relevant subject area that relates to life experiences and builds on existing and often practical knowledge. There are barriers to achieving this, however.

