

1

- Construct a circle.
- Construct a triangle whose vertices all lie on the circumference. This could be called a cyclic triangle.
- Make some conjectures about the angles you have created.

2

- Continue with the sketch created from Card 1, with a cyclic triangle.
- Construct an isosceles triangle with the *odd* angle at the centre of the circle. Do not construct any new points on the circumference.
- Investigate the angles and make conjectures.

3

- Start with a new sketch
- Construct a cyclic quadrilateral. (All the vertices must lie on the circumference of the circle.)
- Find out as much as you can about the angles in cyclic quadrilaterals.

4

- Start with a new sketch.
- Construct a circle and one radius.
- Construct a line, through the point where the radius meets the circumference, which is perpendicular to the radius (a tangent).
- Investigate.

5

- Continue with the sketch created from Card 4
- Construct a second radius and the tangent where this radius meets the circumference.
- Investigate.

6

- Construct a circle.
- Construct a triangle whose vertices are all on the circumference of the circle.
- Construct a tangent to the circle through one of the vertices of the triangle
- Find out as much as you can about the angles in this sketch.

Wrenn School Mathematics Department
Investigating Circles

This pack of cards gives you some activities to help you to discover some of the properties of circles using
The Geometer's Sketchpad.

Take your time.

Do not move onto the next card until you are sure that you have found out as much as you can from the card you are working on.

For each Card:

Use the **Text** tool  to:
Include your name.
Record any conjectures that you have made.

Use **Save As** from the **File** menu to save the sketch you create.

Try to **prove** any conjectures you make.

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Investigating Circles

Each of the cards in this pack state a property of circles.

For each card:

- Use *Geometer's Sketchpad* to construct an **example** to check your understanding of the property given.
- Try to use **GSP** to **prove** that the property is ALWAYS true.

For each **Sketch**:

Use the **Text** tool  to:

Include your name.

Record any ideas that you have.

Use **Save As** from the **File** menu to save the sketch you create.

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1

Show that:

The angle subtended at the centre of a circle is twice the angle subtended at the circumference.

2

Show that:

Angles subtended in the same segment of a circle are equal.

3

Show that:

The angle subtended at the circumference of a circle by a diameter is a right-angle.

4

Show that:

Opposite angles of a cyclic quadrilateral add to 180° (are supplementary).

5

Show that:

The two tangents from a point outside the circle to a circle are equal in length.

6

Show that:

The perpendicular from the centre of a circle to a chord bisects the chord.