

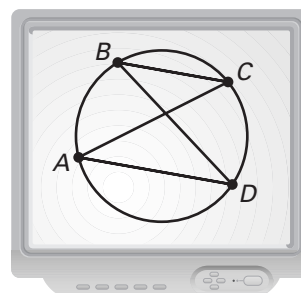
Geometry Software Lesson Opener

For use with pages 613–620

Use geometry software to construct and investigate a “butterfly” inside a circle.

1. Construct a circle and any four points on the circle. Label the points A , B , C , and D , clockwise around the circle. Draw segments AC , BD , AD , and BC . The figure that results is called a *butterfly*.

Drag a point of your butterfly along the circle, without crossing other points, to change its shape. Continue to drag points until you have a butterfly whose shape you like. On paper, sketch and label your butterfly.



2. Using your butterfly, measure $\angle ADB$ and $\angle BCA$. Drag points and observe how the angle measures change. What do you notice? What relationship does each angle have with arc AB ?
3. Predict the relationship between $m\angle DAC$ and $m\angle CBD$ in your butterfly. Measure the angles to check your prediction. With which arc do these angles have a common relationship?
4. Construct a new butterfly with center point M , the midpoint of a chord \overline{YZ} as follows: Start with a large circle and construct any chord \overline{YZ} and its midpoint M . Draw any two chords \overline{AC} and \overline{BD} that contain M . Draw \overline{AD} and \overline{BC} , and you have a butterfly. Construct P , the intersection of \overline{AD} and \overline{YZ} . Construct Q , the intersection of \overline{BC} and \overline{YZ} . Make and test a conjecture about MP and MQ .

