

Mathematics 2260H – Geometry I: Euclidean geometry  
TRENT UNIVERSITY, Winter 2013

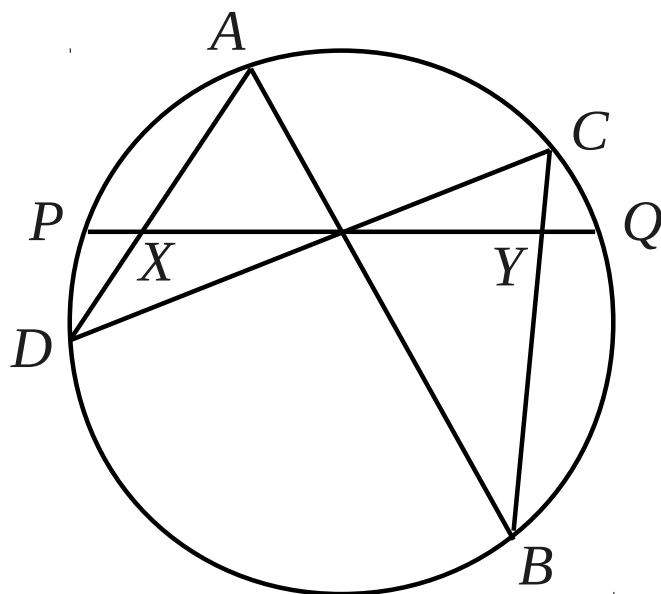
Assignment #9

A circle flutters by ...

Due on Friday, 22 March, 2013.

The following is a classic result in Euclidean geometry:

THE BUTTERFLY THEOREM. Suppose  $M$  is the midpoint of a chord  $PQ$  of a circle and  $AB$  and  $CD$  are two other chords that pass through  $M$ . Let  $AD$  and  $BC$  intersect  $PQ$  at  $X$  and  $Y$ , respectively. Then  $M$  is also the midpoint of  $XY$ .



*Oops! Forgot to label  $M$  ...*

1. Prove the Butterfly Theorem. [10]

*Hint:* You know a lot about angles in a circle, and about triangles, and also ...