

Mathematics 2260H – Geometry I: Euclidean Geometry

TRENT UNIVERSITY, Winter 2023

Assignment #4

Crossing Diagonals

*Due on Friday, 10 February.**

In what follows, suppose that $ABCD$ is a parallelogram, with $AB \parallel CD$ and $AD \parallel BC$. You may also assume that $|AB| = |CD|$ and $|AD| = |BC|$.

1. Suppose that the diagonals AC and BD of the parallelogram intersect at E . Show that E is the midpoint of each diagonal. [5]
2. Suppose that the diagonals AC and BD of the parallelogram intersect at E , and the diagonals are perpendicular to each other. Show that $ABCD$ is actually a rhombus, *i.e.* that $|AB| = |CD| = |AD| = |BC|$. [5]

* If submitting on paper or on Blackboard isn't feasible, please email your solutions to the instructor at: sbilaniuk@trentu.ca