

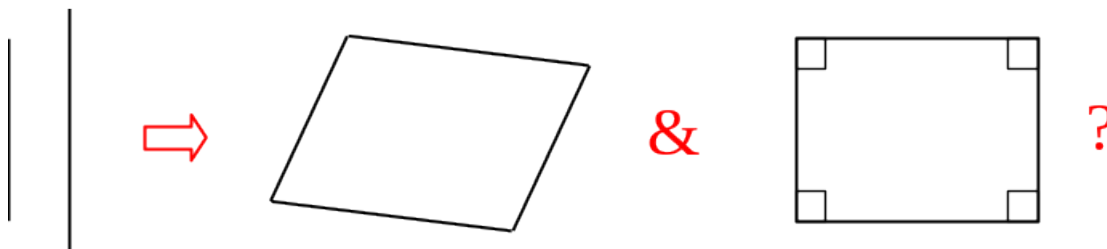
Mathematics 2260H – Geometry I: Euclidean Geometry

TRENT UNIVERSITY, Winter 2024

Assignment #1

Warmup: Making Quadrilaterals

Due* just before midnight on Friday, 19 January.



We will denote the length of a line segment XY by $|XY|$. In what follows AB and CD are two given line segments of unequal length, *i.e.* $|AB| \neq |CD|$.

1. Using the definitions, postulates, and the first few propositions in Book I of Euclid's *Elements*, explain how to construct a quadrilateral $PQRS$ such that $|PQ| = |RS| = |AB|$ and $|PS| = |QR| = |CD|$. [5]

NOTE. As we'll see later on in the course, such a quadrilateral $PQRS$ must be a parallelogram.

2. Using the definitions, postulates, and the first few propositions in Book I of Euclid's *Elements*, explain how to construct a rectangle $TUVW$ such that $|TU| = |VW| = |AB|$ and $|TW| = |UV| = |CD|$. [5]

NOTE. You are not being asked to formally prove that your constructions work, but you should include enough detail – especially as what postulates or propositions you're using at each step – to make it easy to check whether the construction actually does work. Later assignments are very likely to ask for actual proofs ...