Readings for Unit III
(Basic Euclidean concepts and theorems)

III.1 : Perpendicular lines and planes

Supplementary background readings.

Ryan : pp. 16 – 18

Comments.

This passage derives several key theorems in the notes and exercises using different approaches.

III.2 : Basic theorems on triangles

Supplementary background readings.

Ryan : pp. 62 – 64, 66 – 67

Comments.

The subheading "Angle sums for triangles" on pages 66 – 67 gives an alternate approach to the fundamental result in Euclidean geometry about the sums of the (measures of the) vertex angles of a triangle. On the other hand, the subheading "Symmetries of a triangle" on pages 62 – 64 takes a detailed look at a topic not covered in the notes; namely, describing the six affine self – symmetries of a triangle. If the triangle is an equilateral triangle, then these symmetries are in fact **isometries** (see Theorem 37), but otherwise some are not.

III.3 : Convex polygons

Supplementary background readings.

Ryan : pp. 75 – 81, 82 – 83

Comments.

These readings provide a slightly different approach to regular polygons which is considerably more algebraic than the notes, and they also contain some relevant exercises.

III.4 : Concurrence theorems

Supplementary background readings.

Ryan : pp. 54 – 55

Comments.

The treatment of the median theorem in this passage (from Ryan) corresponds to one of the exercises for the course notes**.**

III.5 : Similarity

Supplementary background readings.

Ryan : pp. 47 – 50**,** 55 – 58**,** 68

Comments.

The material on pages 47 – 49 gives a considerably more algebraic approach to similarities than the treatment in the notes**,** and the material on pages 55 – 58 describes the similarities of the plane which take a closed segment or angle to itself**.** There are some relevant exercises on page 68**.**

[There are no suggested readings in Ryan for Sections **III.6** or **III.7** of the notes.**]**