Solution
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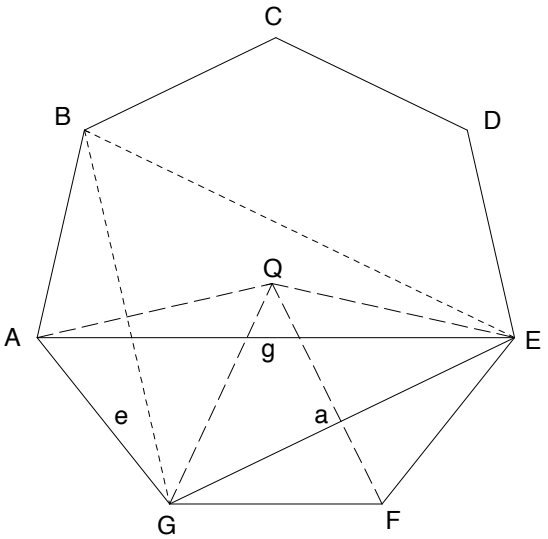

Angle AQE is 3/7 of 360° or 1080°/7

Angle QAE = angle QEA = ½ (180° – 1080°/7) = 90° – 540°/7.

There are 7 sides so there are (7–2)x180° = 900° of interior angles. Each angle at a vertex, e.g. AGF and GFE, is 900°/7 and the angles at the base of the isosceles triangles QEF, QFG and QAG are all 450°/7.

Angle FGE = angle FEG = ½ (180° – 900°/7) = 90° – 450°/7.

Angle AEG = angle QEF – angle QEA – angle FEG
= 450°/7 – (90°– 540°/7) – (90°– 450°/7)
= 180°/7 = 25°42'51.4285"
Angle EAG = angle QAG – angle QAE
= 450°/7 – (90°– 540°/7)
= 360°/7 = 51°25'42.8571"
Angle AGE = angle AGF – angle FGE
= 900°/7 – (90°– 450°/7)
= 720°/7 = 102°51'25.714"

The angles are in the ratio 180°/7 : 360°/7 : 720°/7 or 1:2:4.

In quadrilateral ABEG: BE = AE = g, BG = GE = a, BA = AG = e

By Ptolemy's Theorem:

BA x GE + AG x BE = AE x BG, or ea + eg = ag

dividing by eag, $\frac{1}{g} + \frac{1}{a} = \frac{1}{e}$