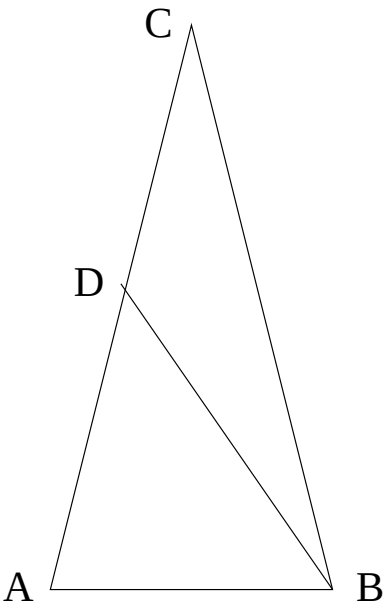
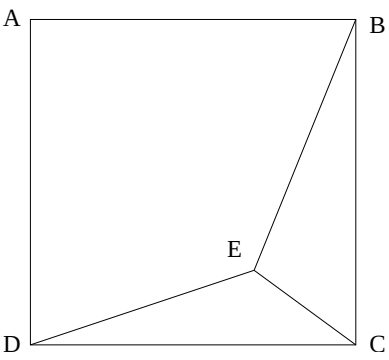
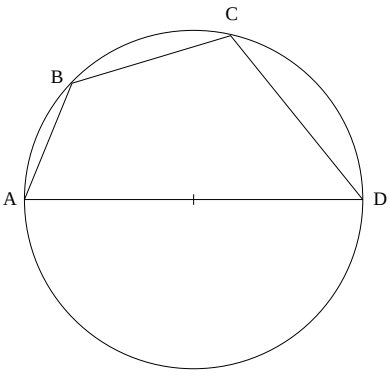
1. In $\Delta ABC,\ m(\angle BAC) = 80^o,\ m(\angle ACB) = 20^o$ and $CD = AB$. What is $m(\angle CBD)$?



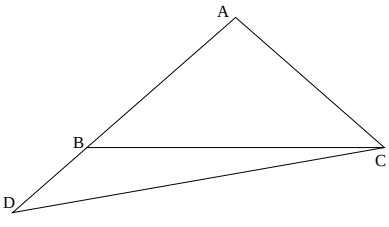
2. Point E is inside square $ABCD$ with $BE = \sqrt{5},\ CE = 1$, and $DE = \sqrt{3}$. What is $m(\angle DEC)$?



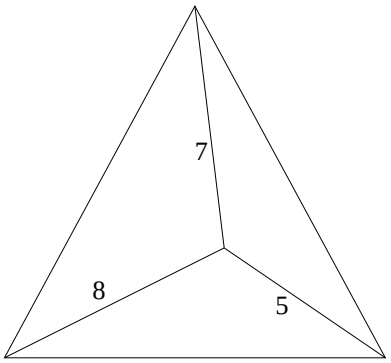
3. A quadrilateral $ABCD$ is inscribed in a circle with AD a diameter, $AB = 3,\ BC = 4$, and $CD = 5$. What is the diameter of the circle?



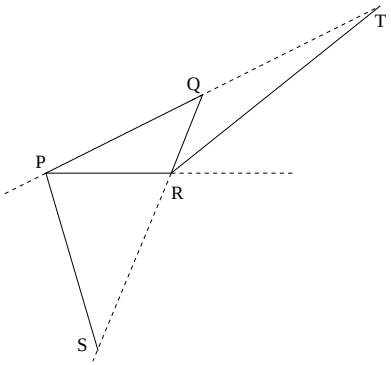
4. In an isosceles triangle $\Delta ABC,\ m(\angle B) = m(\angle C) = 40^o$, AB is extended past B to D so that $AD = BC$. What is $m(\angle BCD)$?



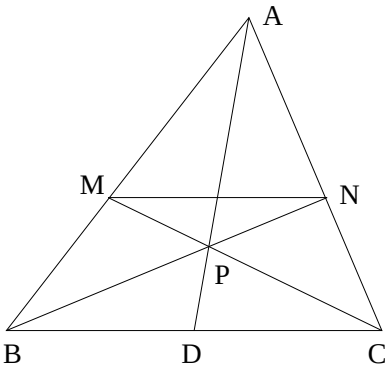
5. An interior point in an equilateral triangle is located at distances of 5, 7 and 8 from the three vertices. What is the (common) length of the sides?



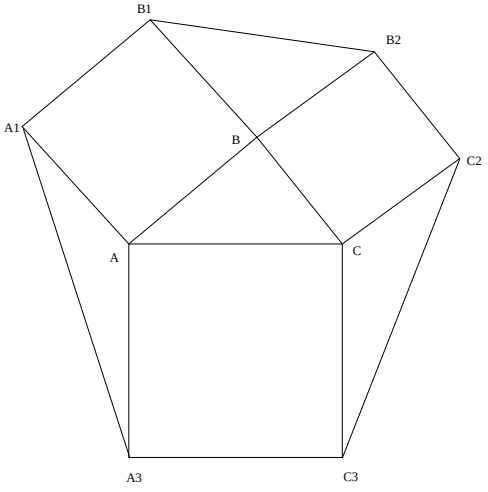
6. In ΔPQR, $QR < PR < PQ$ so that the exterior angle bisector through P intersects ray $\overrightarrow{QR}$ at point S, and the exterior angle bisector at R intersects ray $\overrightarrow{PQ}$ at point T, as shown on the right. Given that $PR = PS = RT$, determine, with proof, the measure of $\angle PRQ$.



7. Let AD be the median of ΔABC. Let P be an arbitrary point on AD. If the rays $\overrightarrow{CP}$ and $\overrightarrow{BP}$ intersect AC and AB at N and M respectively, show that MN is parallel to BC.



8. Let $\square ABA_1B_1$, $\square BCB_2C_2$ and ACA_3C_3 be squares that are attached to the outside a triangle $\triangle ABC$. If the lengths of the segments $\overline{B_1B_2}$, $\overline{C_2C_3}$ and $\overline{A_3A_1}$ are given. How can the sides of the triangle $\triangle ABC$ be determined?



9. The rectangle $\square ABCD$ is the union of three squares of equal size. Determine the sum of three angles $\angle AEB + \angle AFB + \angle ACB$.