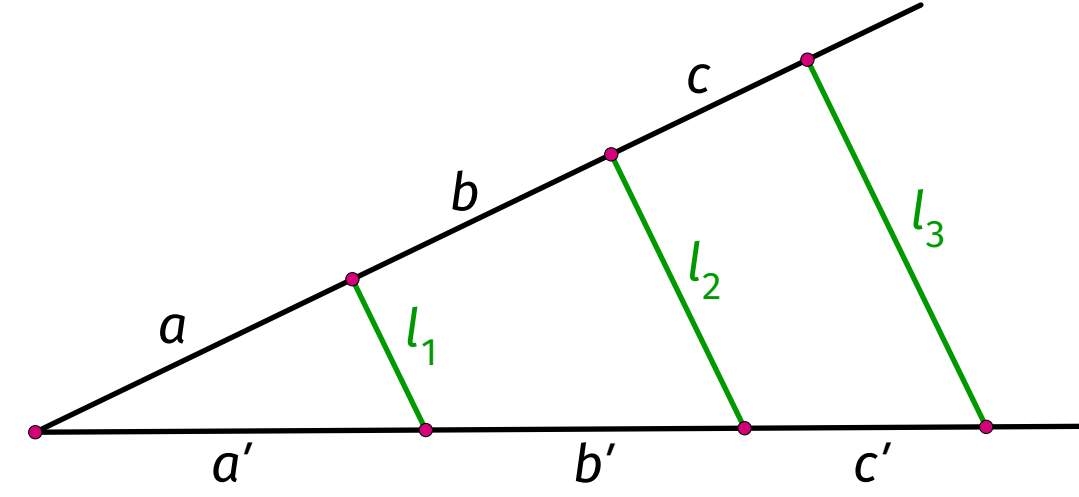


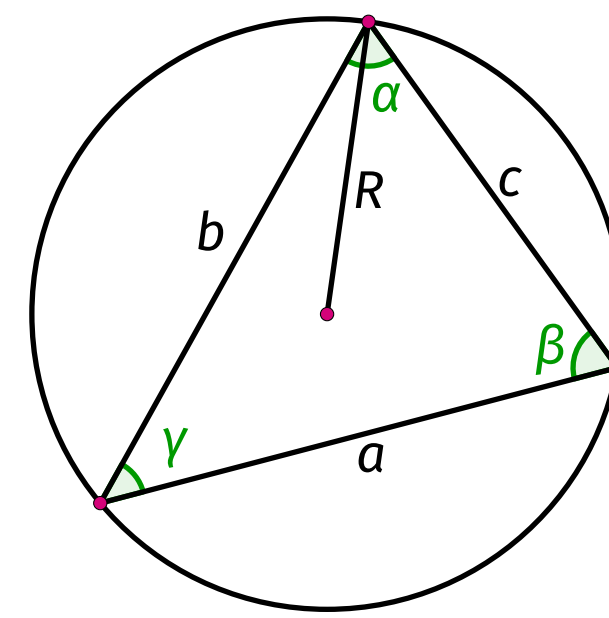
Thales' Theorem

$$l_1 \parallel l_2 \parallel l_3 \Leftrightarrow \frac{a}{a'} = \frac{b}{b'} = \frac{c}{c'}$$



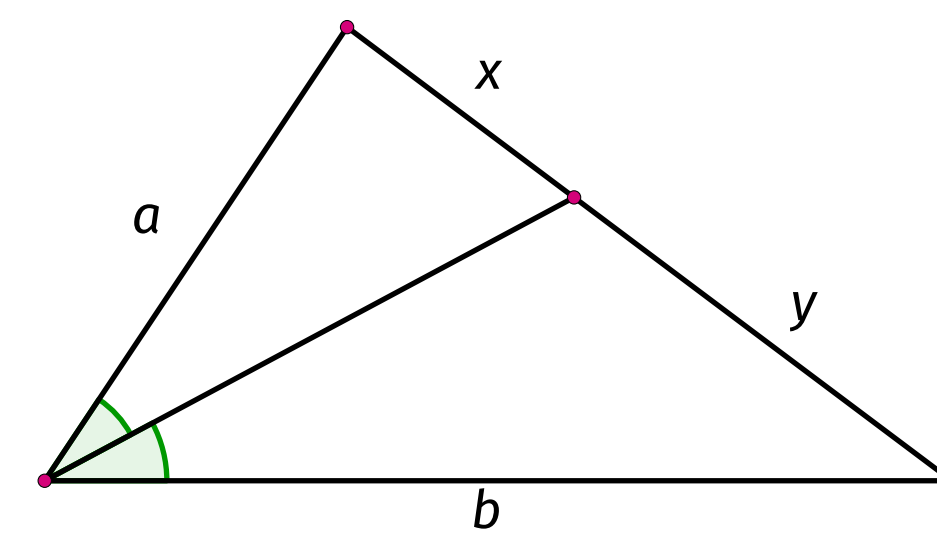
Law of Sines

$$\frac{a}{\sin \alpha} = \frac{b}{\sin \beta} = \frac{c}{\sin \gamma} = 2R$$



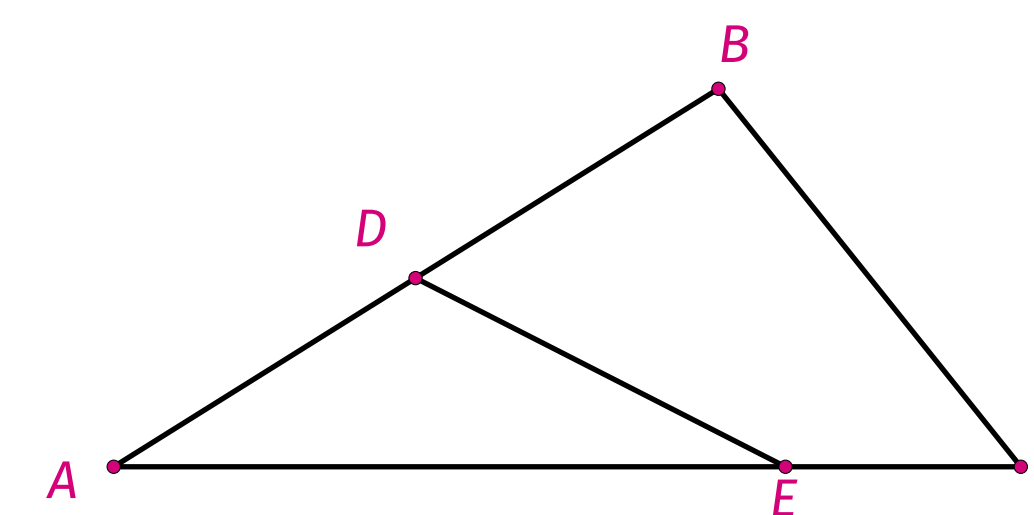
Angle Bisector Theorem

$$\frac{a}{b} = \frac{x}{y}$$



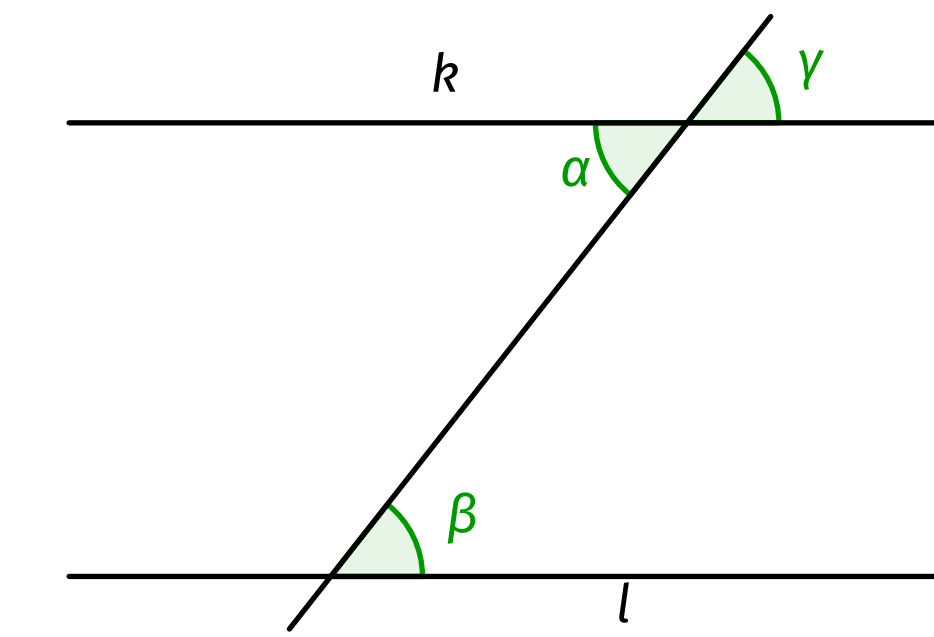
Ratio of the Areas of Two Triangles with a Common Angle

$$\frac{S_{\triangle ABC}}{S_{\triangle ADE}} = \frac{AB}{AD} \cdot \frac{AC}{AE}$$



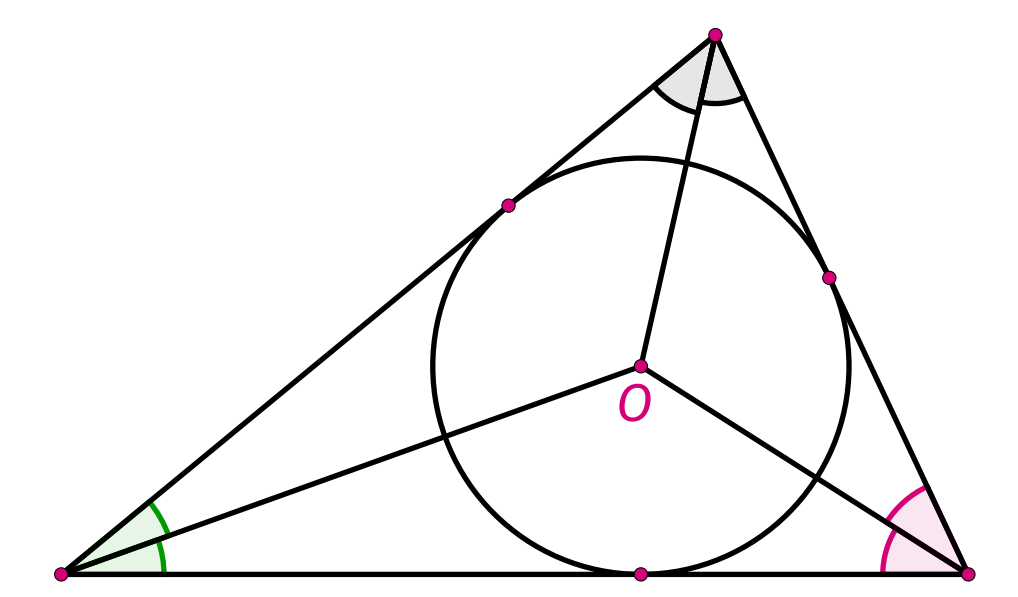
Angles Formed by Parallel Lines and a Transversal

$$k \parallel l \Leftrightarrow \alpha = \beta = \gamma$$



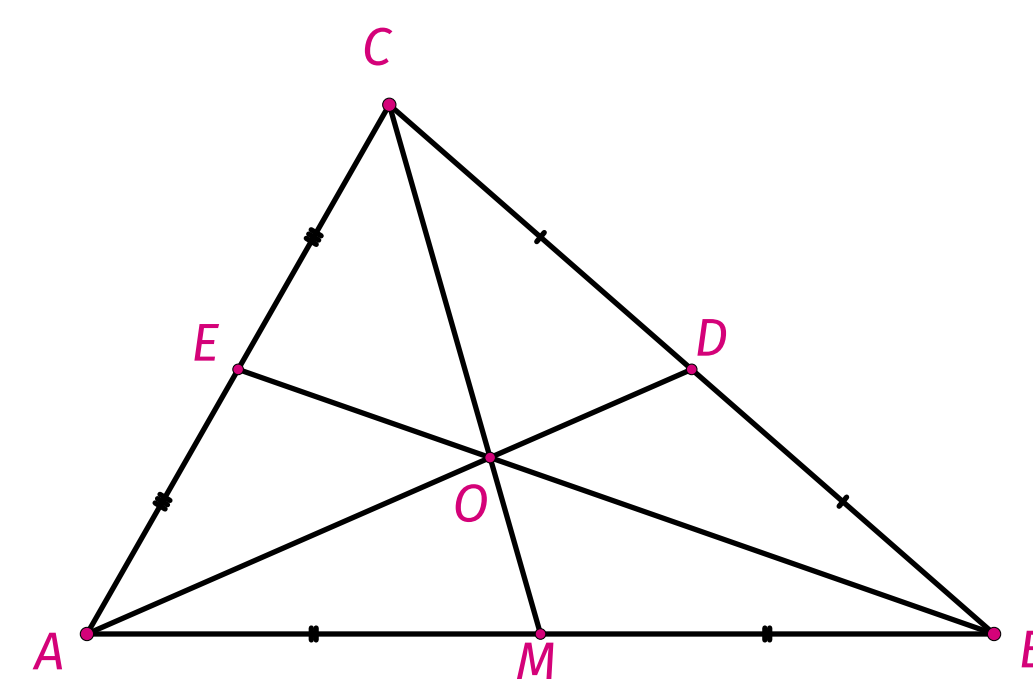
Incenter of a Triangle

The center of the inscribed circle is the point of intersection of the angle bisectors



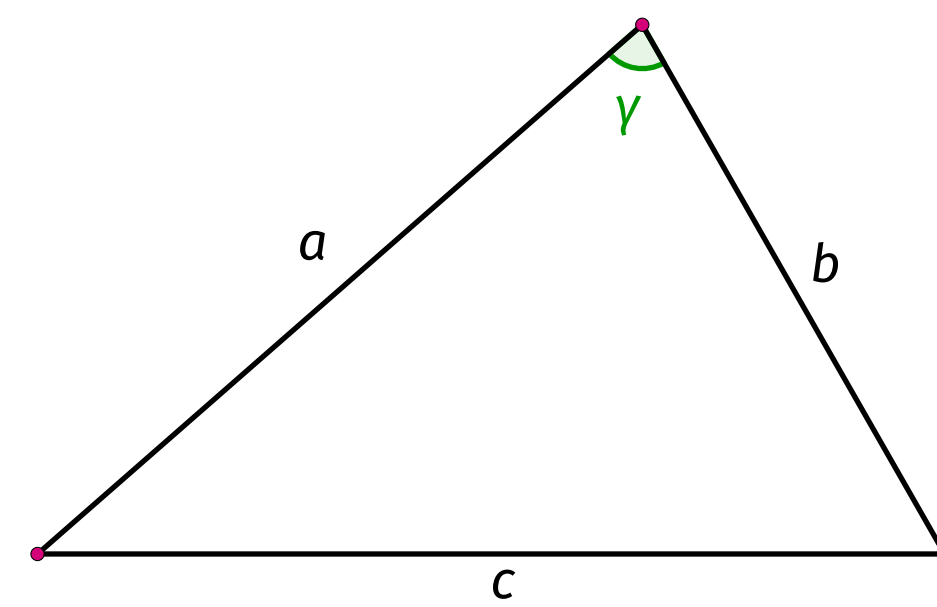
Centroid of a Triangle

$$\frac{CO}{OM} = \frac{AO}{OD} = \frac{BO}{OE} = \frac{2}{1}$$



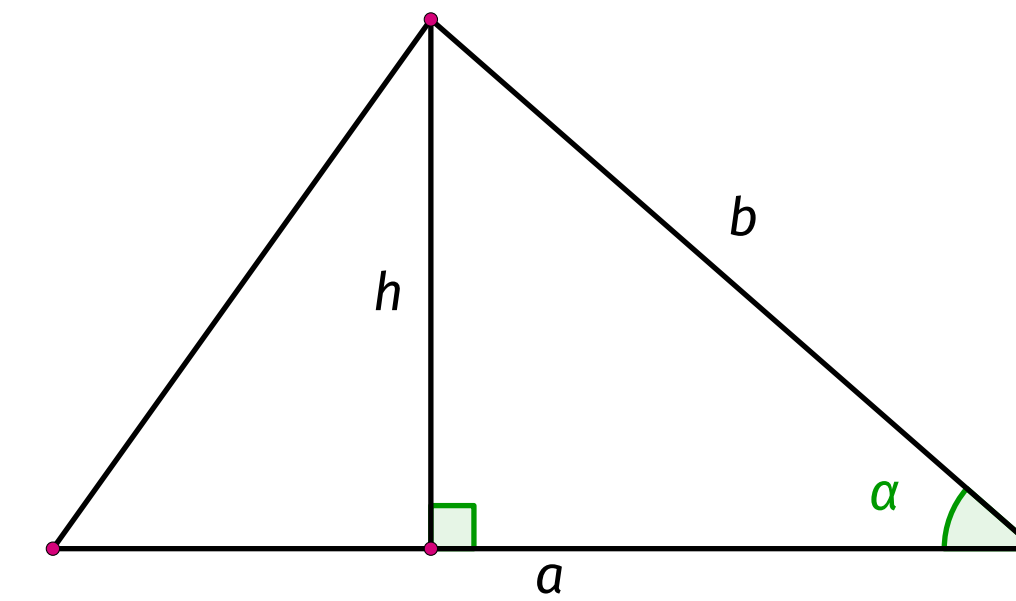
Law of Cosines

$$c^2 = a^2 + b^2 - 2ab \cdot \cos \gamma$$



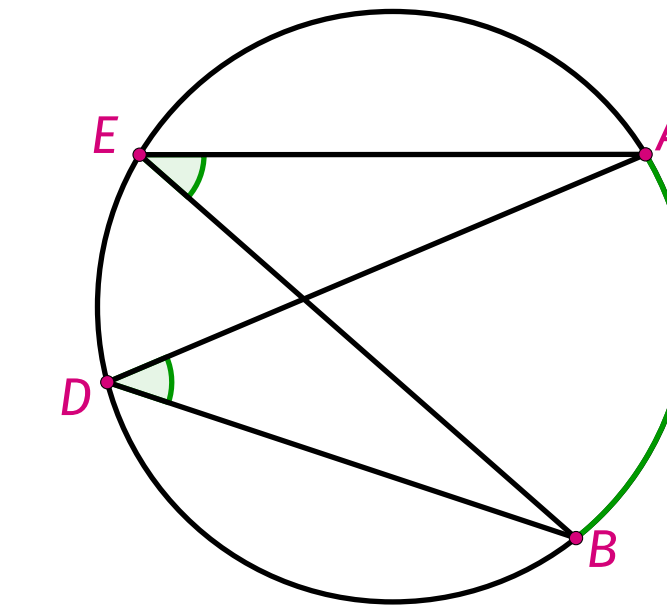
Area of a Triangle

$$S_{\triangle} = \frac{1}{2} \cdot ah = \frac{1}{2} \cdot ab \cdot \sin \alpha$$

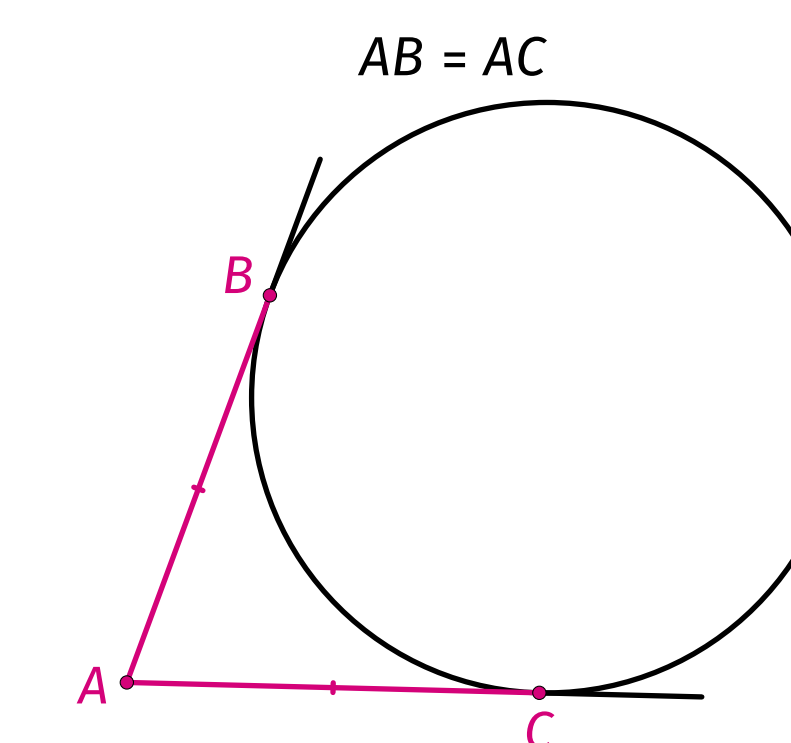


Inscribed Angle Theorem

$$\angle AEB = \angle ADB = \frac{1}{2} \cdot \text{arc } AB$$

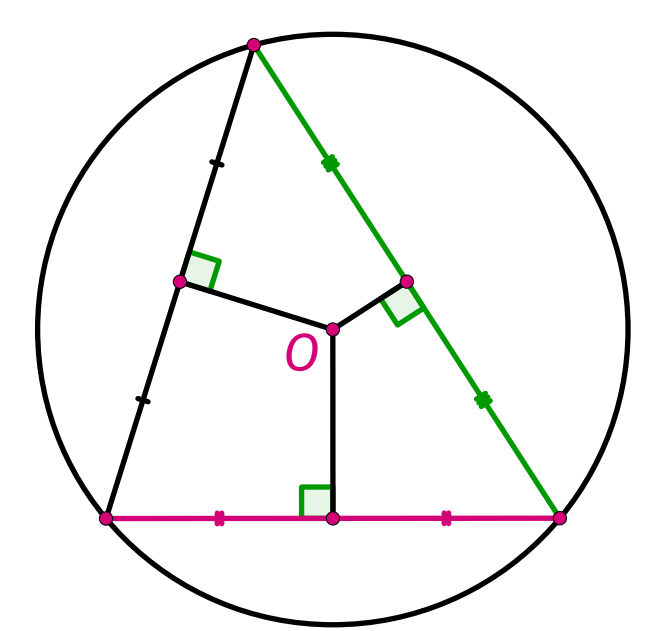


Tangent Segments from a Common External Point



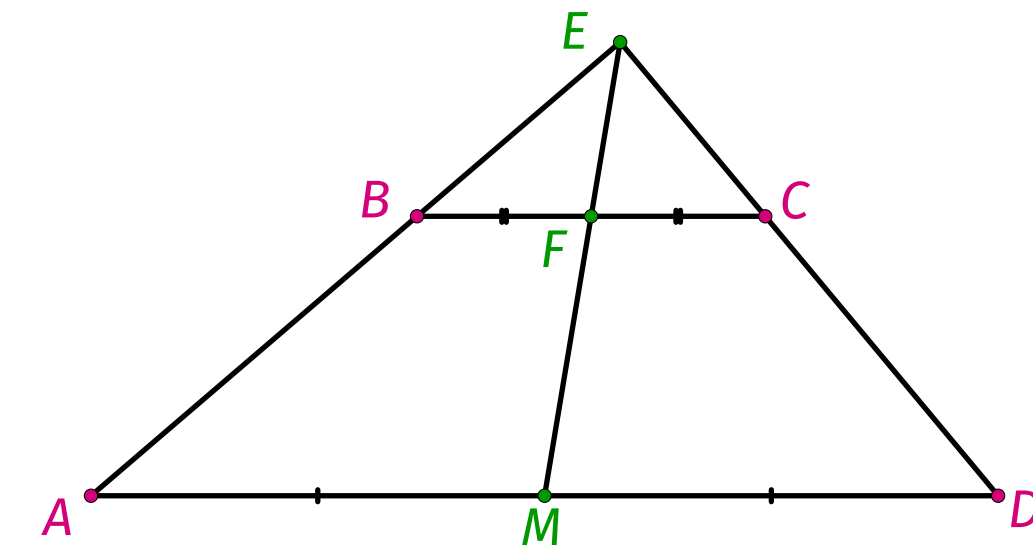
Circumcenter of a Triangle

The center of the circumscribed circle is the point of intersection of the perpendicular bisectors of the sides



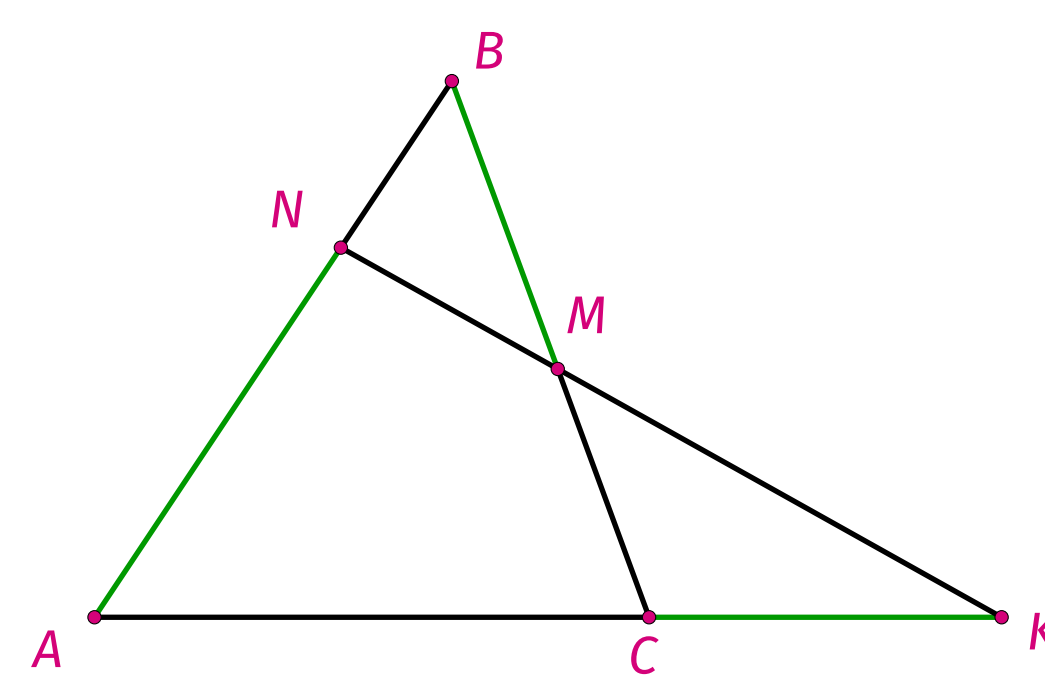
Remarkable Property of a Trapezoid

F, M - midpoints of the bases of trapezoid ABCD
 \Rightarrow points E, F, M lie on the same line



Menelaus' Theorem

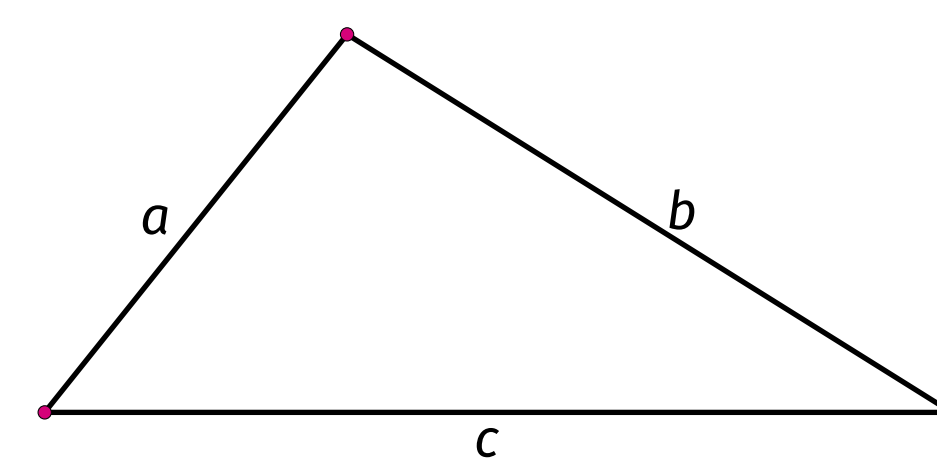
$$\frac{AN}{NB} \cdot \frac{BM}{MC} \cdot \frac{CK}{KA} = 1$$



Heron's Formula

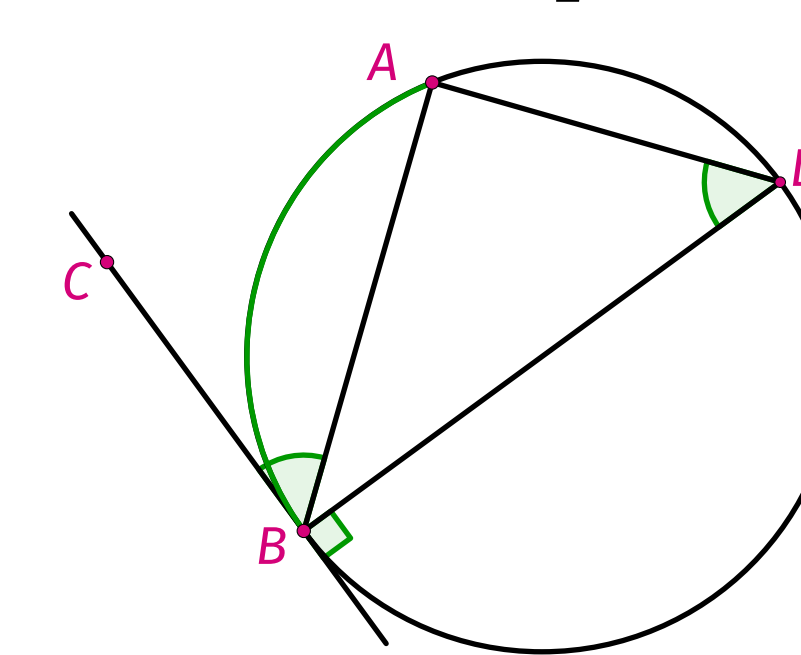
$$p = \frac{a+b+c}{2},$$

$$S_{\triangle} = \sqrt{p(p-a)(p-b)(p-c)}$$



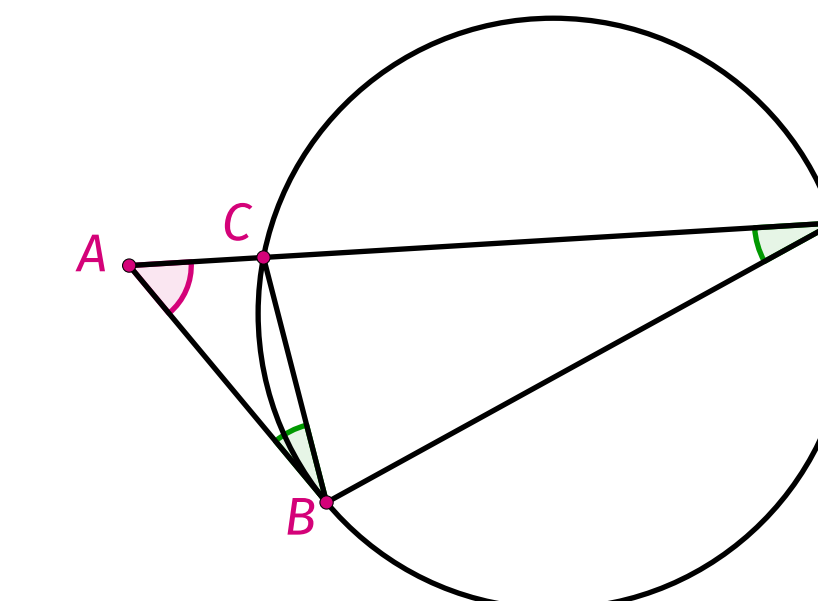
Angle Between a Tangent and a Chord

$$\angle ABC = \angle ADB = \frac{1}{2} \cdot \text{arc } AC$$



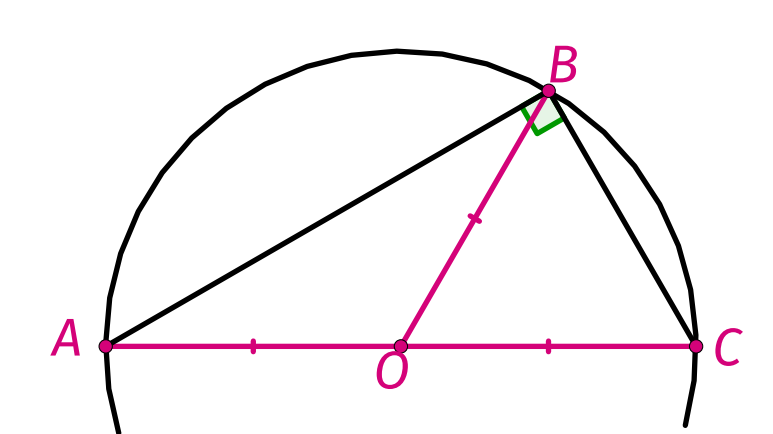
Tangent--Secant Theorem

$$\triangle ABC \sim \triangle ADB, \quad AB^2 = AC \cdot AD$$



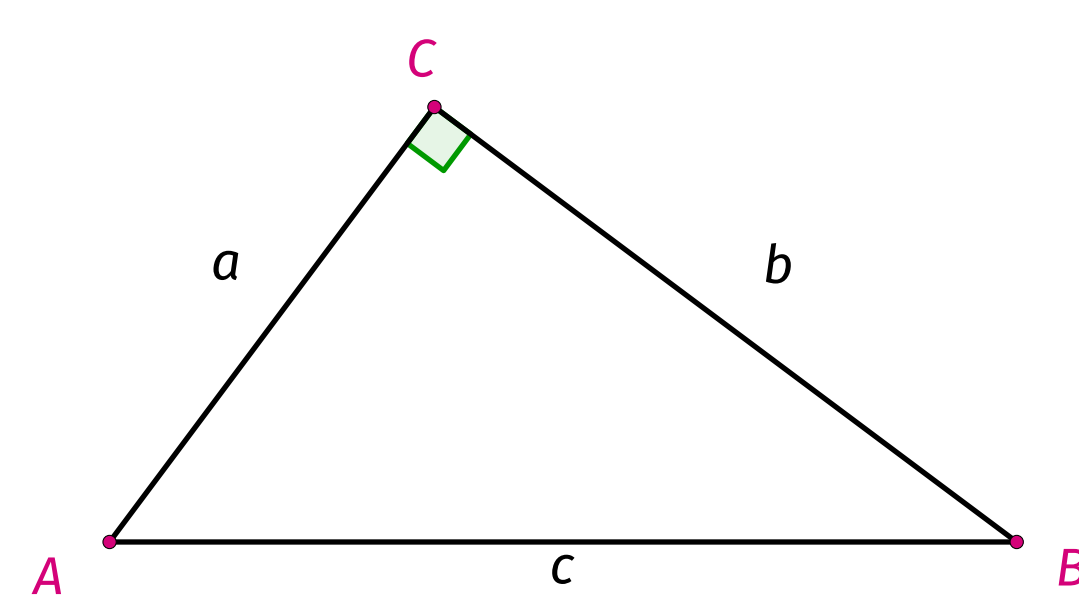
Circumcircle of a Right Triangle

$\triangle ABC$ - right triangle \Leftrightarrow AC - diameter,
 $AO = OC = OB = R$



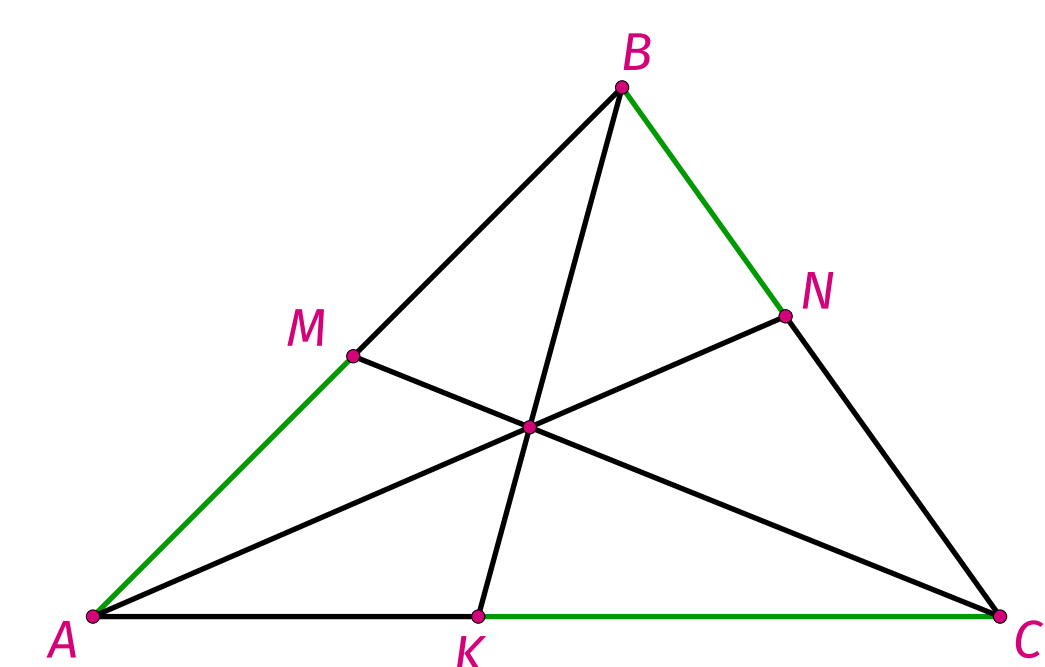
Pythagorean Theorem

$$\triangle ABC - \text{right triangle} \Leftrightarrow a^2 + b^2 = c^2$$



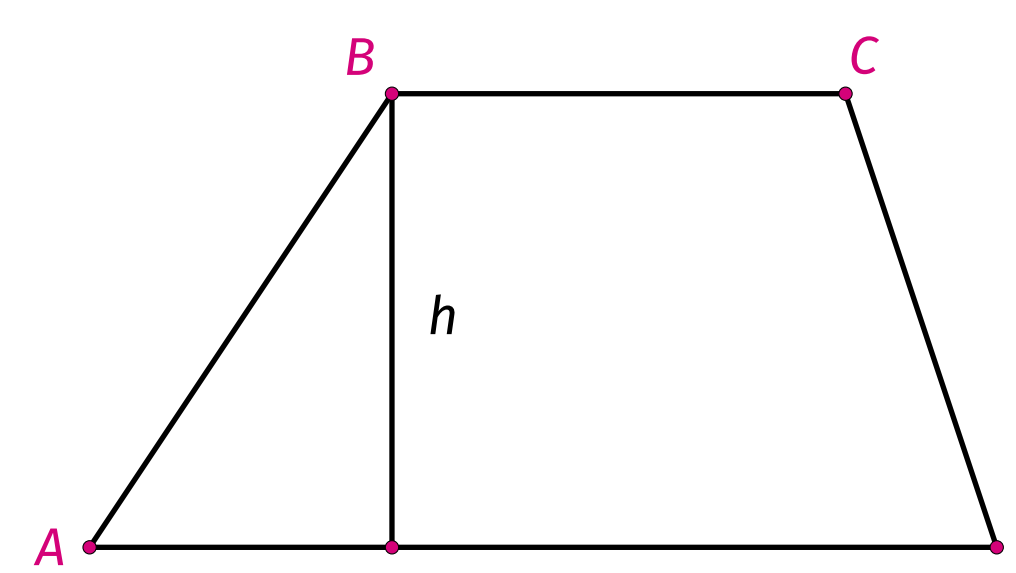
Ceva's Theorem

$$\frac{AM}{MB} \cdot \frac{BN}{NC} \cdot \frac{CK}{KA} = 1$$



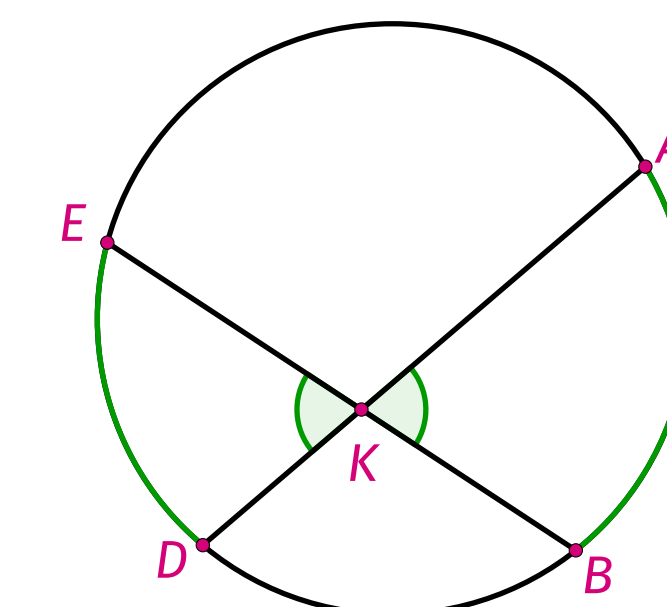
Area of a Trapezoid

$$S_{ABCD} = \frac{AD+BC}{2} \cdot h$$



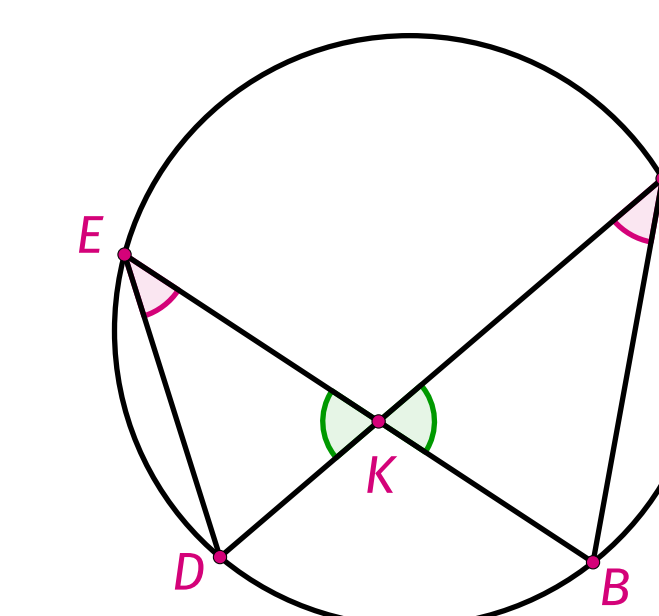
Angle Formed by Two Chords

$$\angle AKB = \angle EKD = \frac{\text{arc } AB + \text{arc } ED}{2}$$



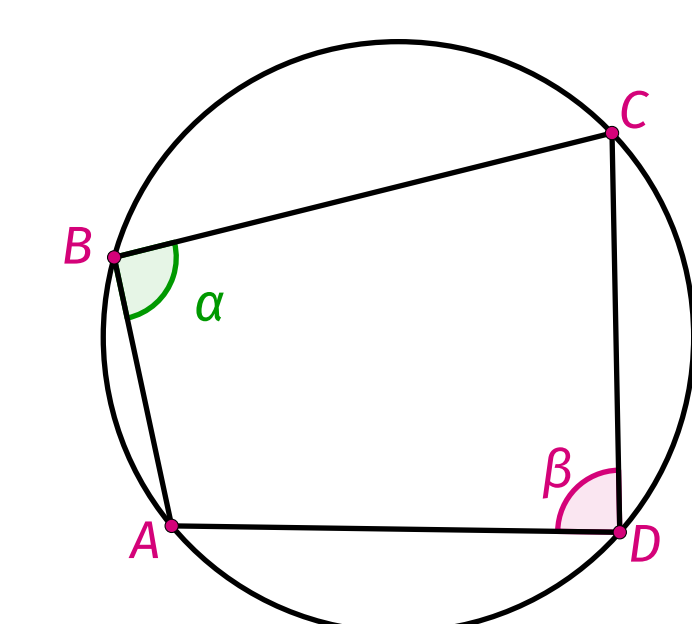
Intersecting Chords Theorem

$$\triangle AKB \sim \triangle EKD, \quad AK \cdot KD = BK \cdot KE$$



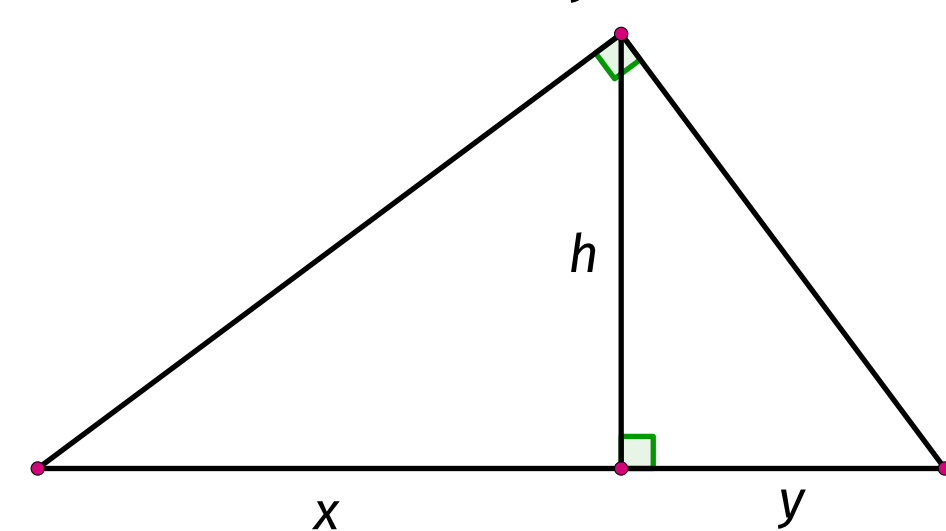
Cyclic Quadrilateral

$$ABCD - \text{inscribed} \Leftrightarrow \alpha + \beta = 180^\circ$$



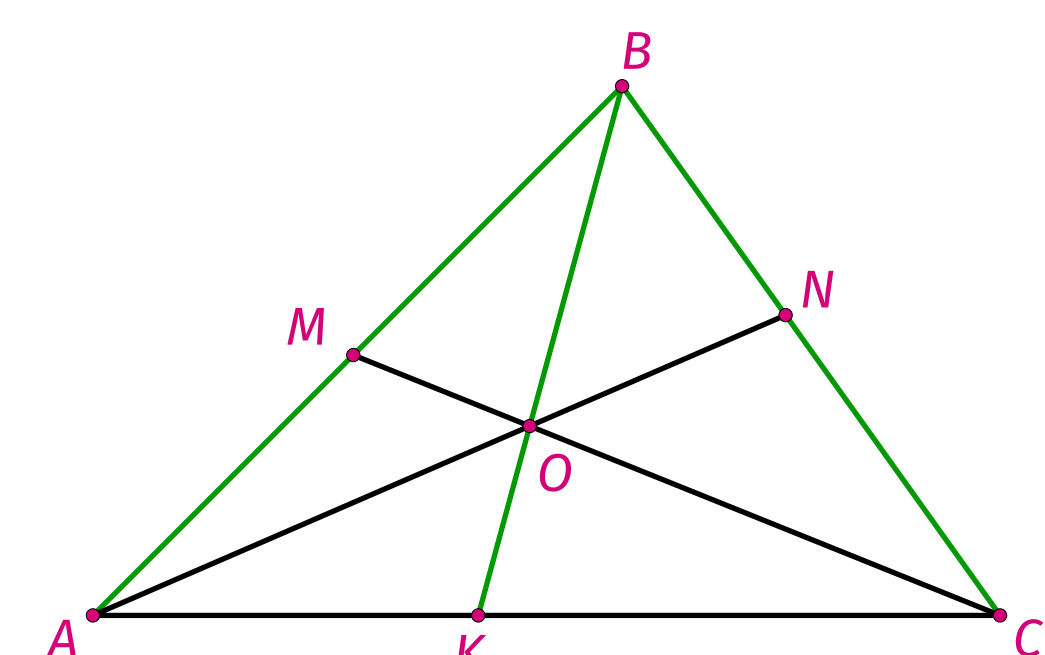
Altitude in a Right Triangle

$$h^2 = x \cdot y$$



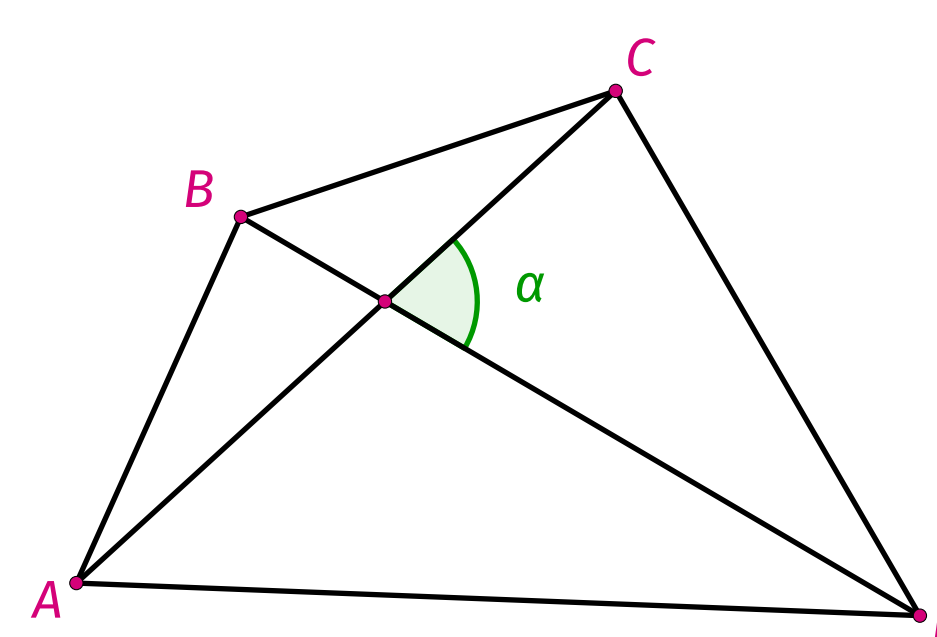
Van Aubel's Theorem

$$\frac{BO}{OK} = \frac{BN}{NC} + \frac{BM}{MA}$$



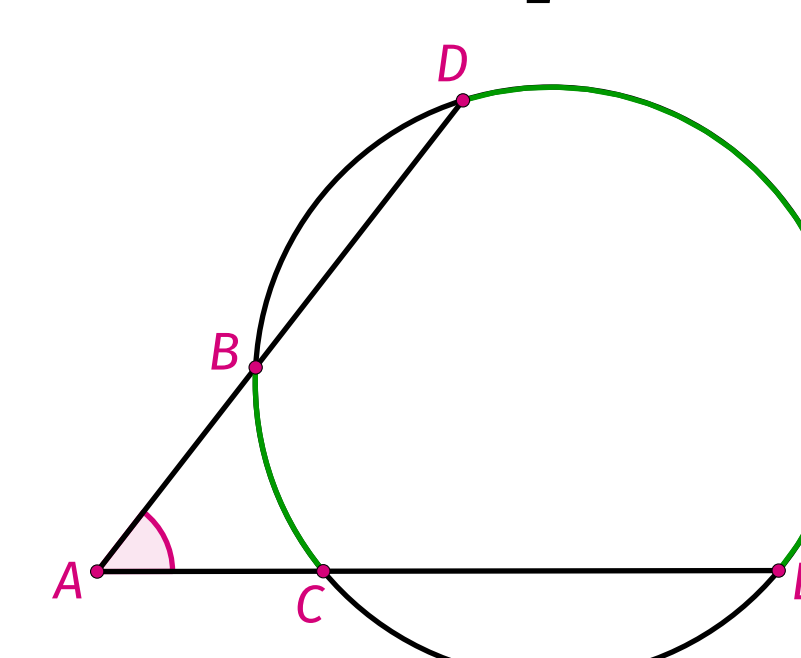
Area of a Quadrilateral

$$S_{ABCD} = \frac{1}{2} \cdot AC \cdot BD \cdot \sin \alpha$$



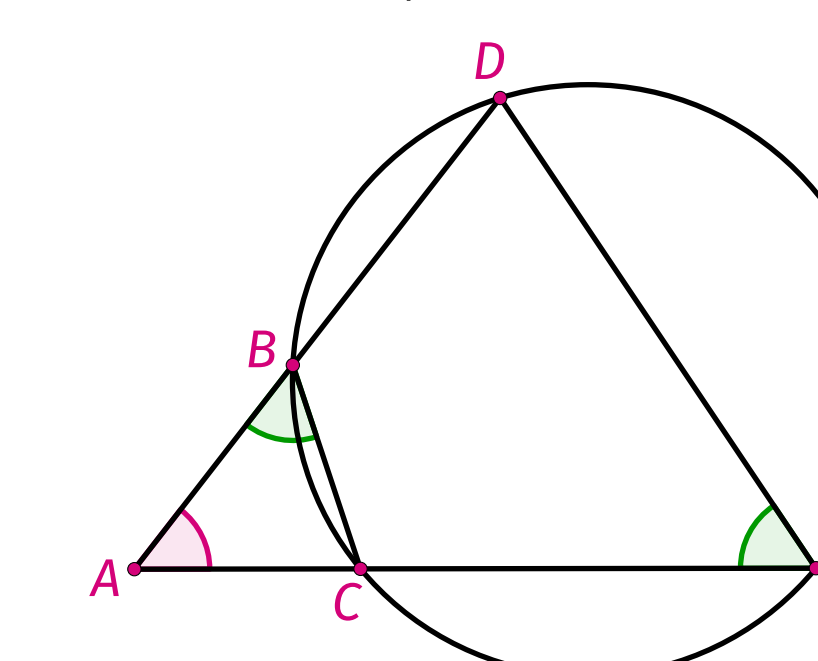
Angle Formed by Two Secants

$$\angle BAC = \frac{\text{arc } DE - \text{arc } BC}{2}$$



Secant--Secant Theorem

$$\triangle ABC \sim \triangle ADE, \quad AB \cdot AD = AC \cdot AE$$



Tangential Quadrilateral

$$ABCD - \text{circumscribed} \Leftrightarrow AB + CD = BC + AD$$

