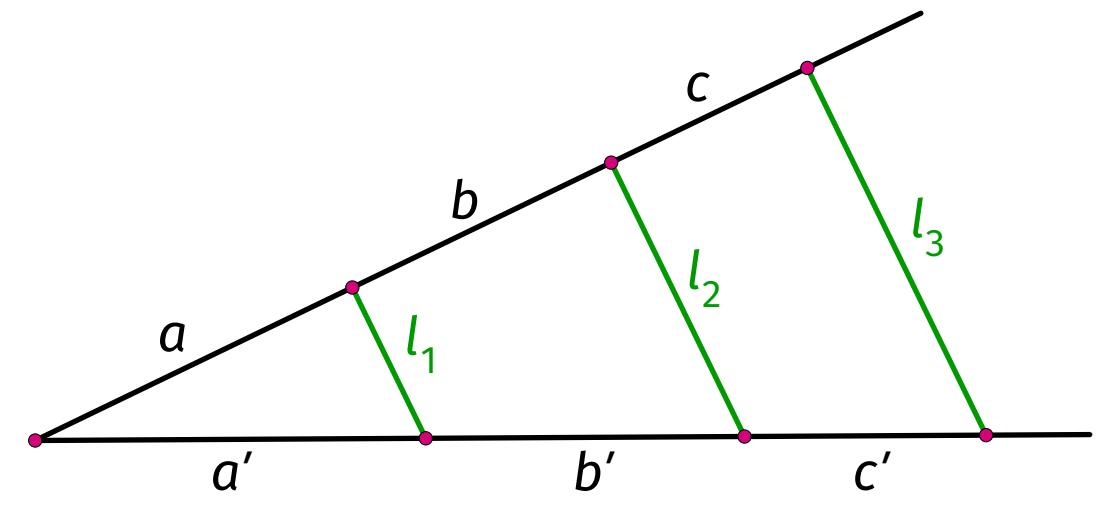


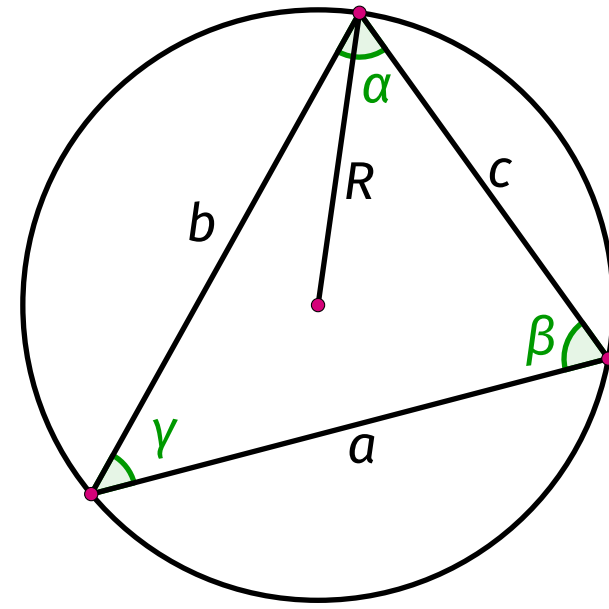
Intercept Theorem (Thales)

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



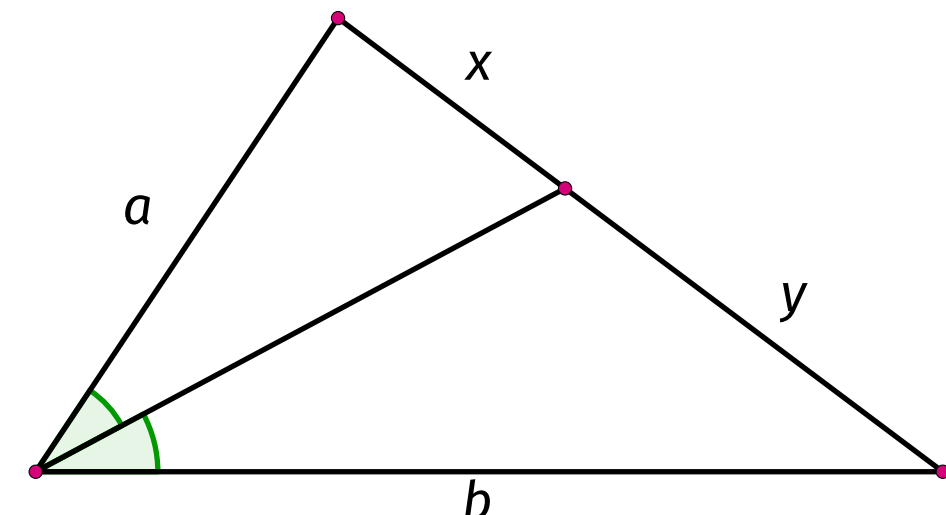
Law of Sines

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



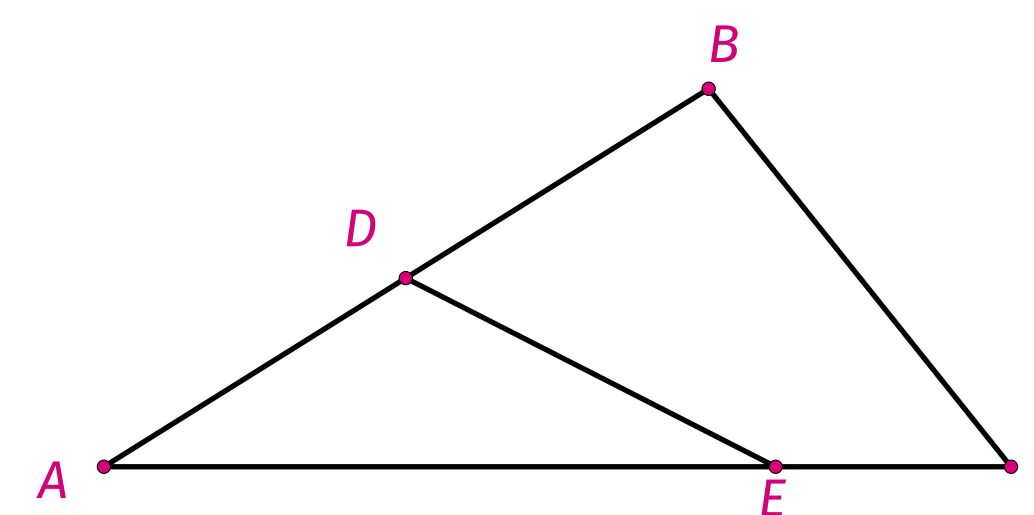
Angle Bisector Theorem

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



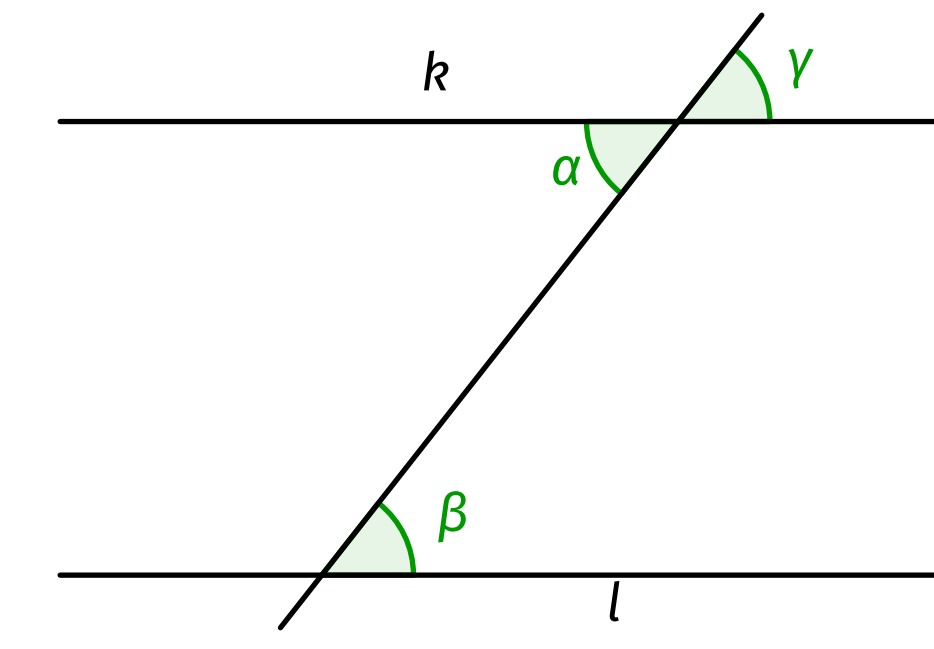
Ratio of areas of triangles with common angle

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



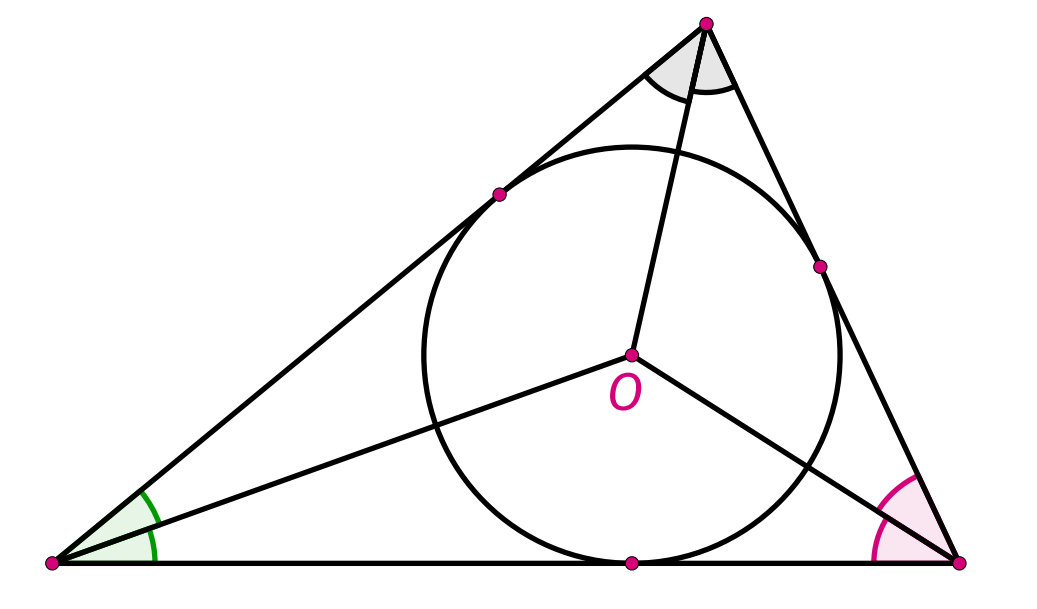
Angles formed by parallel lines

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



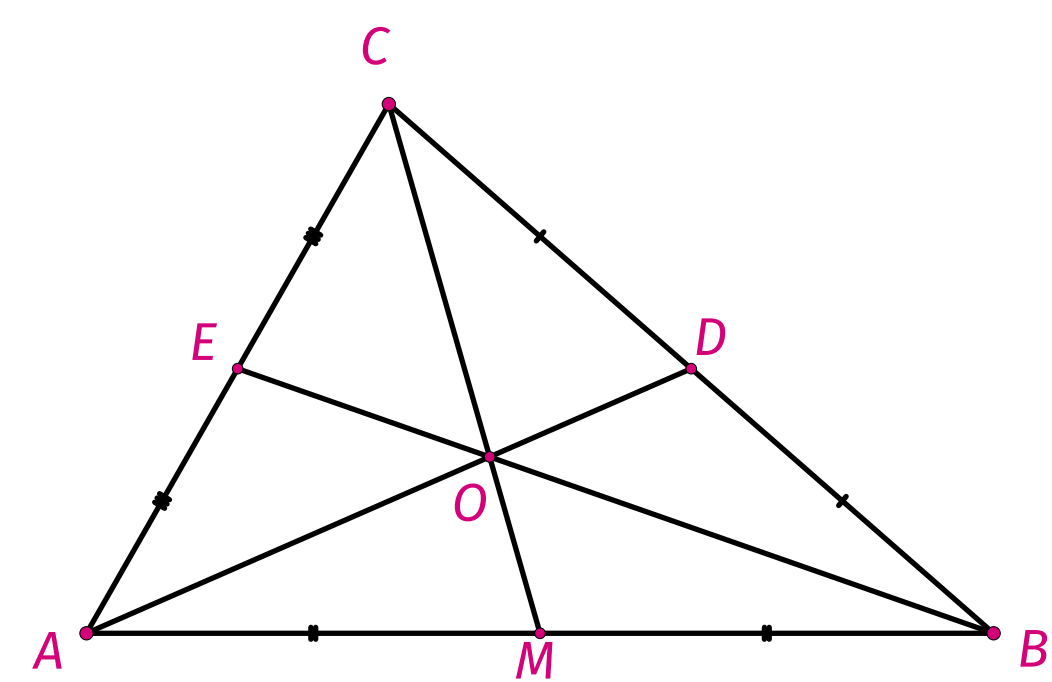
Incircle of a Triangle

The incenter is the intersection point of the angle bisectors



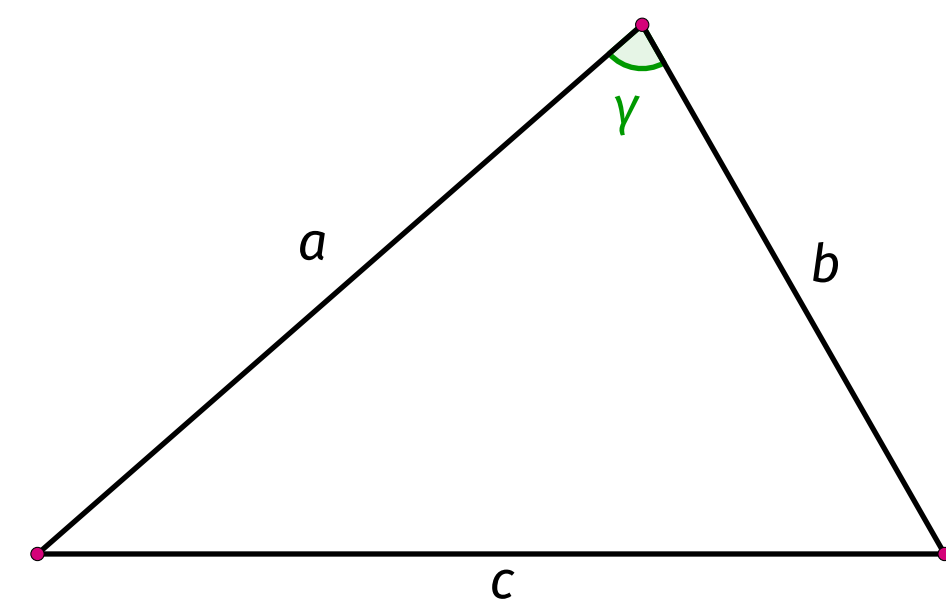
Centroid of a Triangle

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



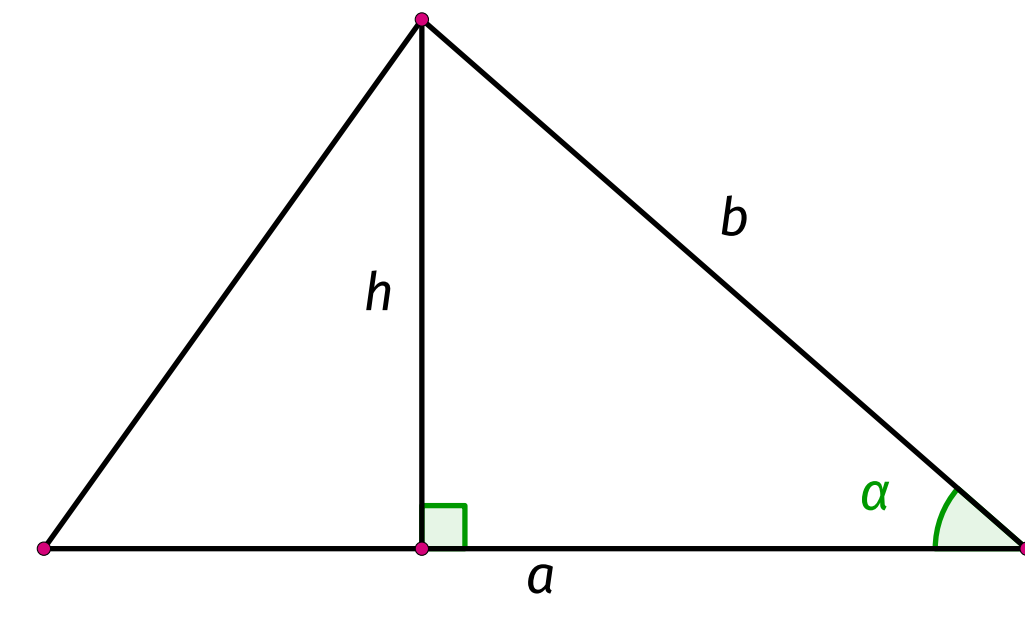
Law of Cosines

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



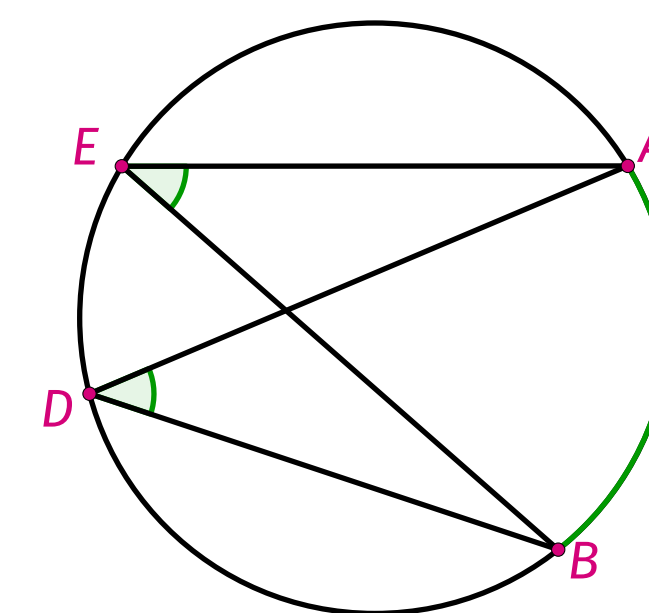
Area of a Triangle

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



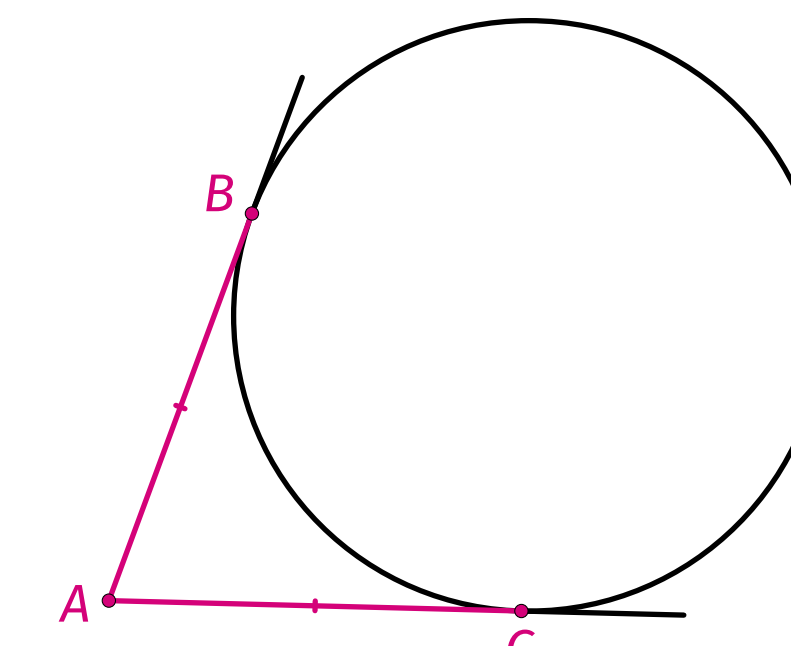
Angles subtended by an arc

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



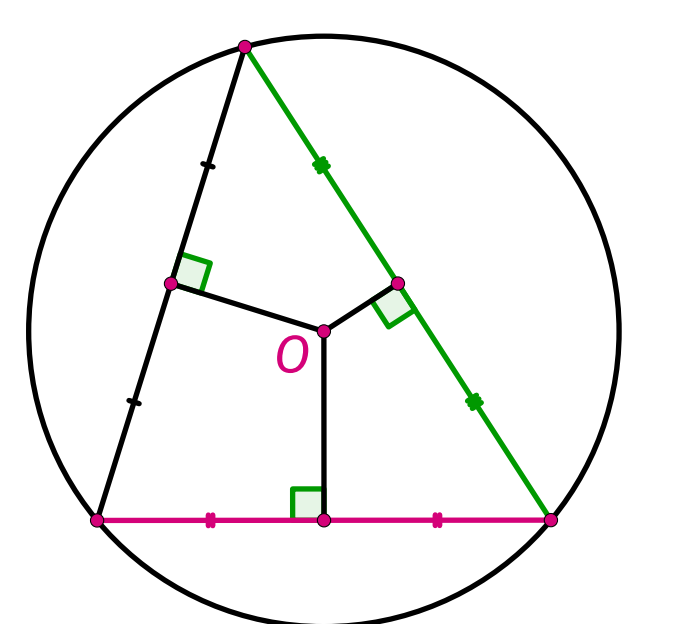
Tangents drawn from one point

$$AB = AC$$



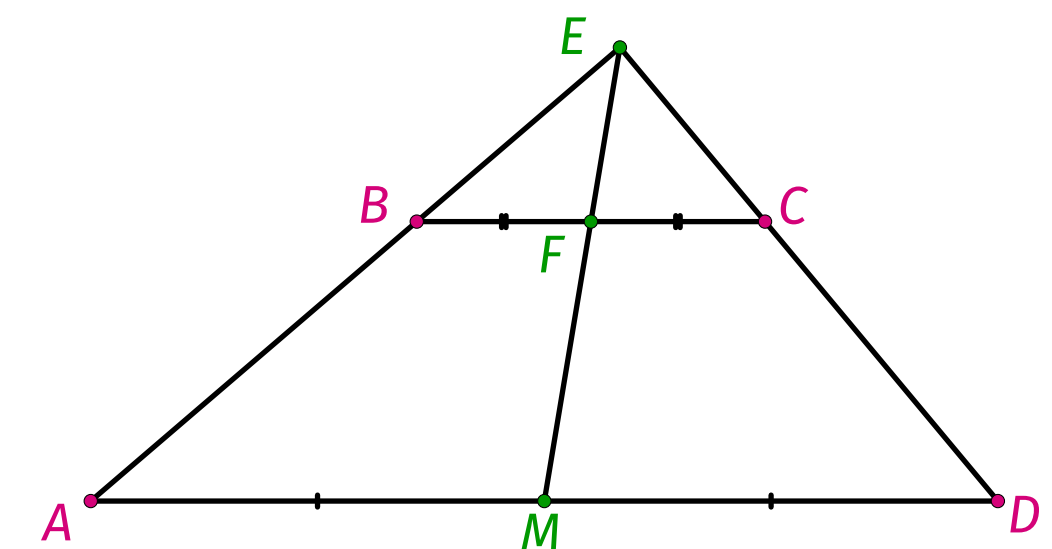
Circumcircle of a Triangle

The circumcenter is the intersection point of the perpendicular bisectors



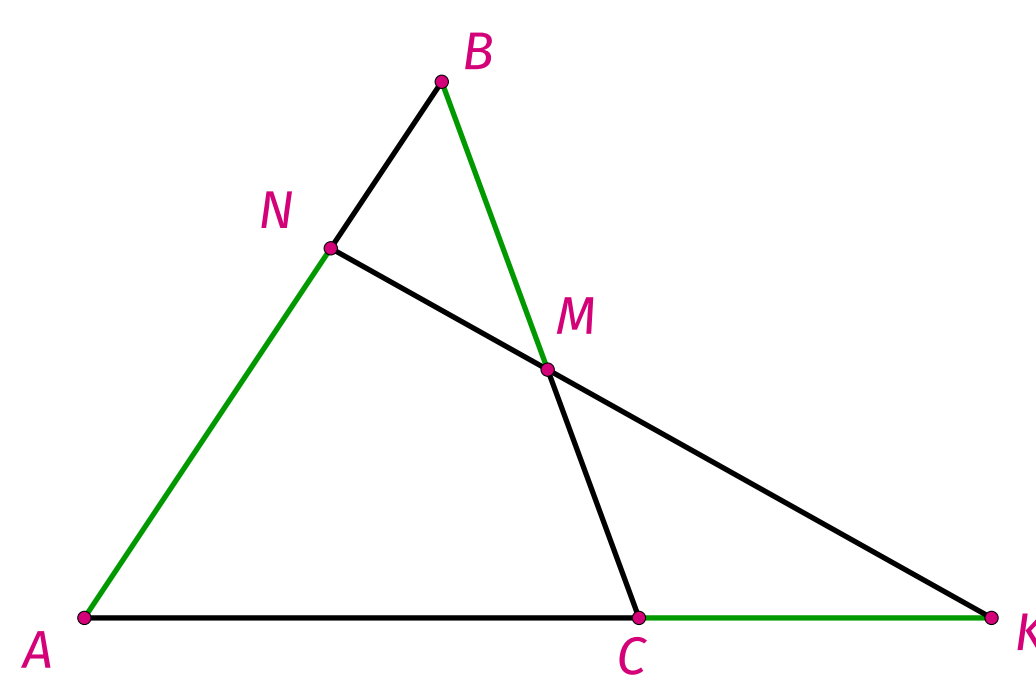
Trapezoid Property

F, M - midpoints of bases of trapezoid ABCD
 \Rightarrow points E, F, M are collinear



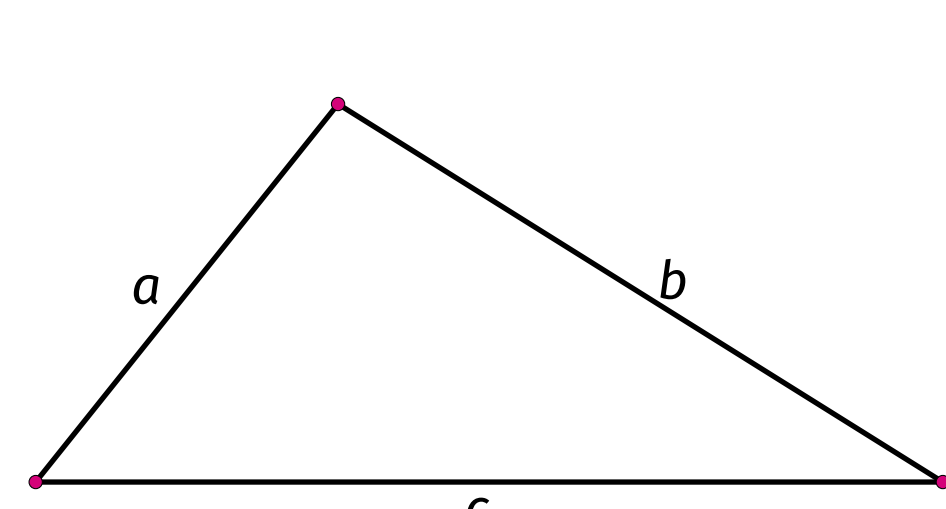
Menelaus' Theorem

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



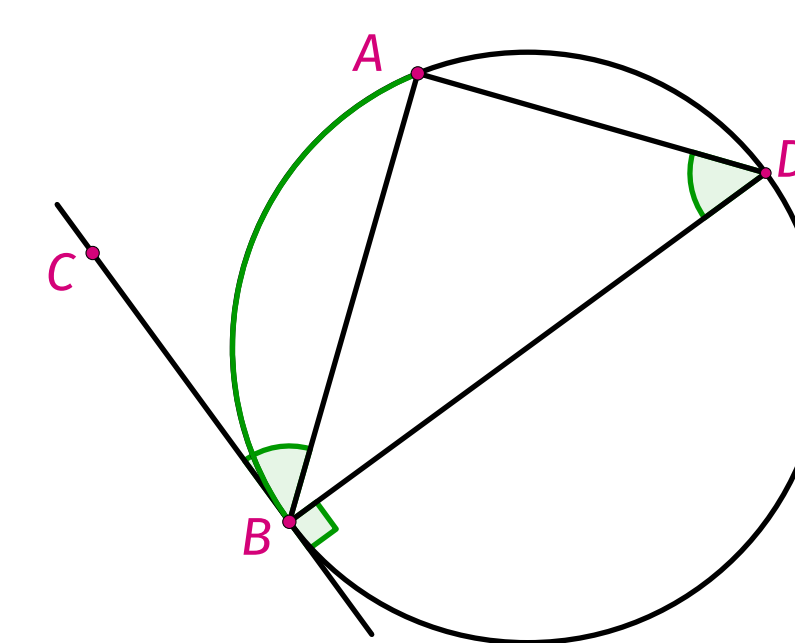
Heron's Formula

$$p = \frac{a+b+c}{2}, \quad S_{\triangle} = \sqrt{p(p-a)(p-b)(p-c)}$$



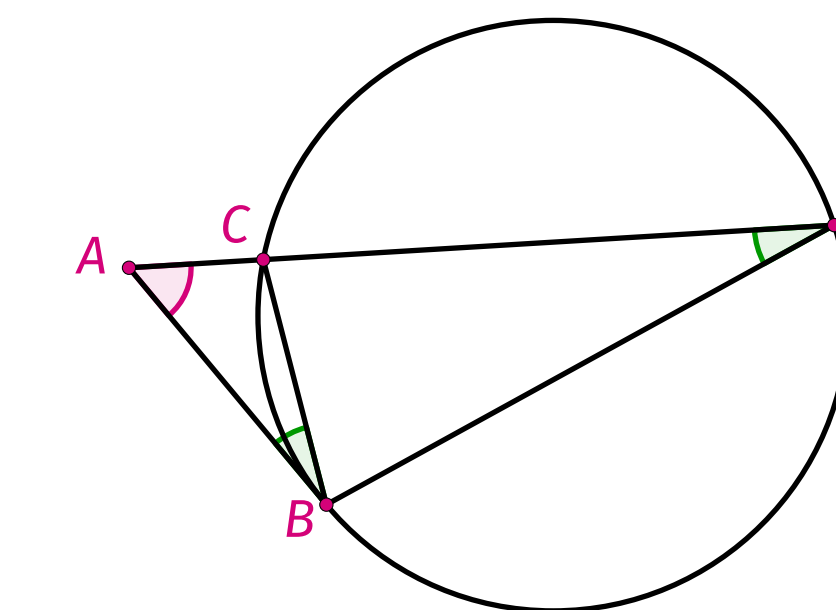
Angle between tangent and chord

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



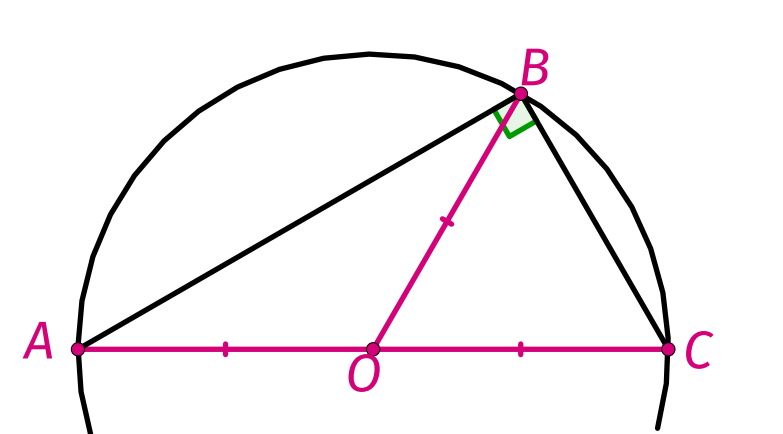
Tangent-Secant Theorem

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



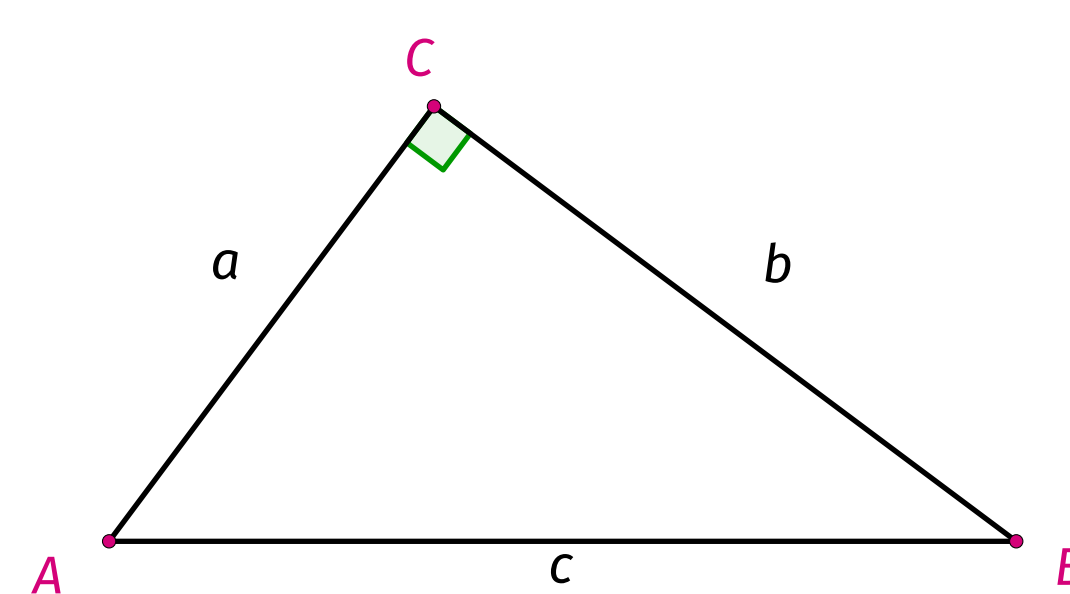
Circumcircle of a Right Triangle

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



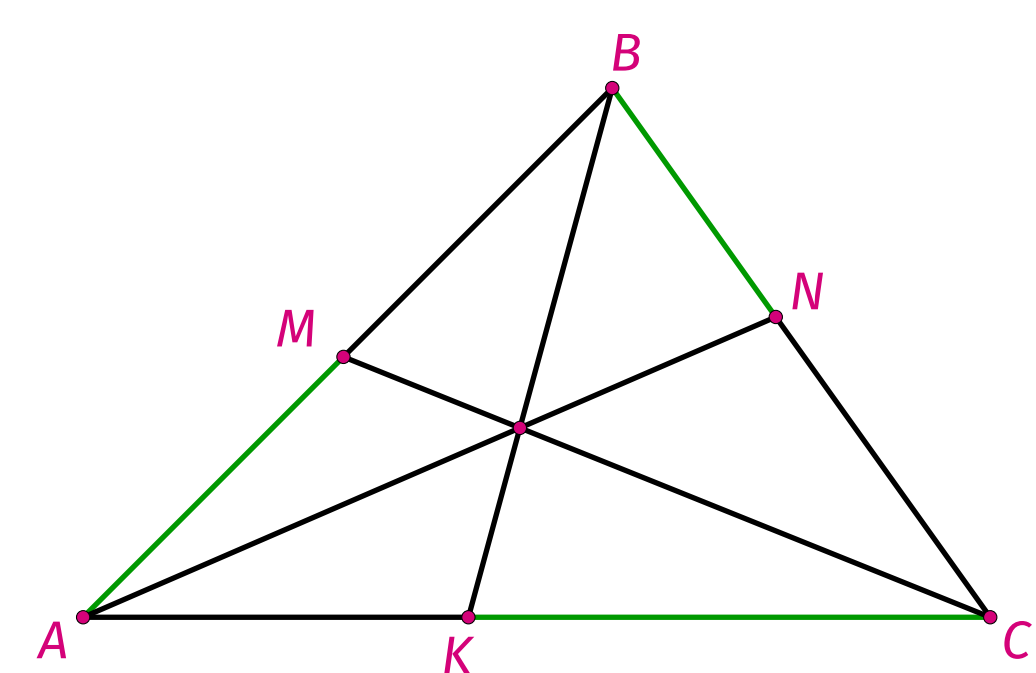
Pythagorean Theorem

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



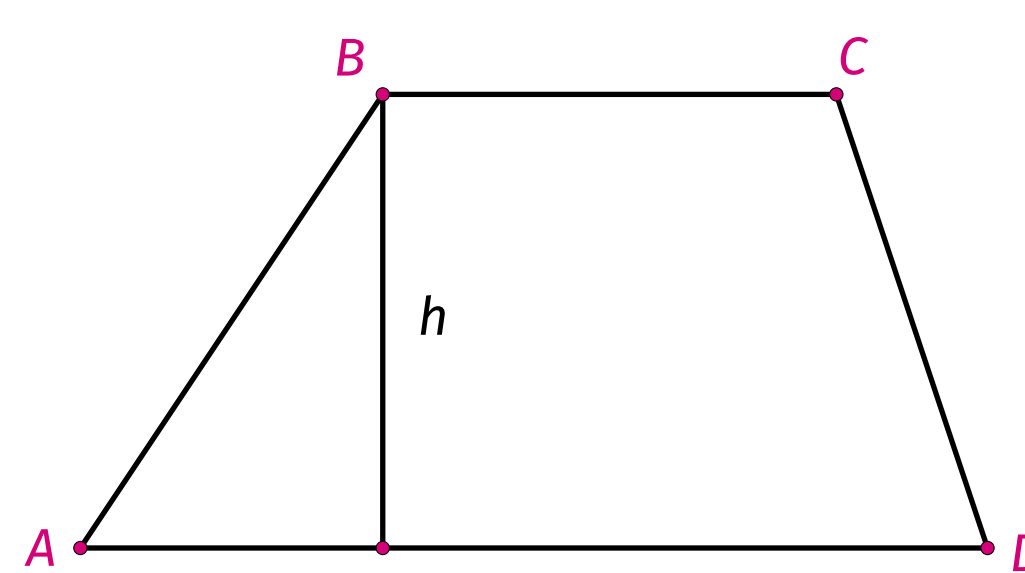
Ceva's Theorem

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



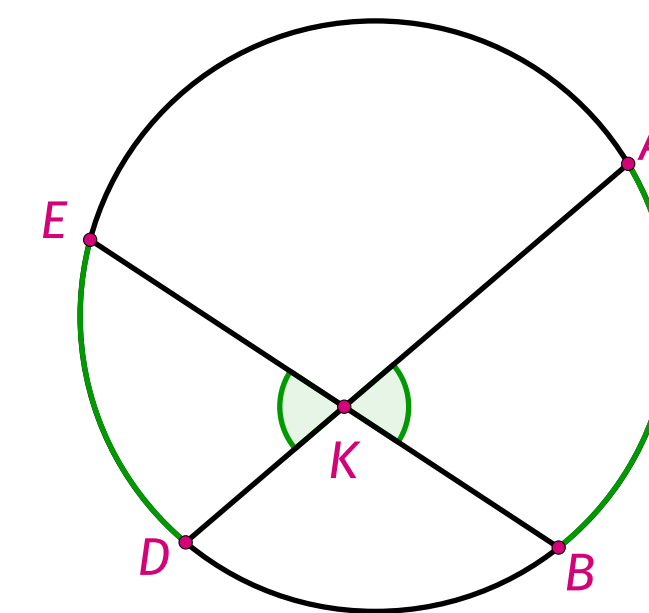
Area of a Trapezoid

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



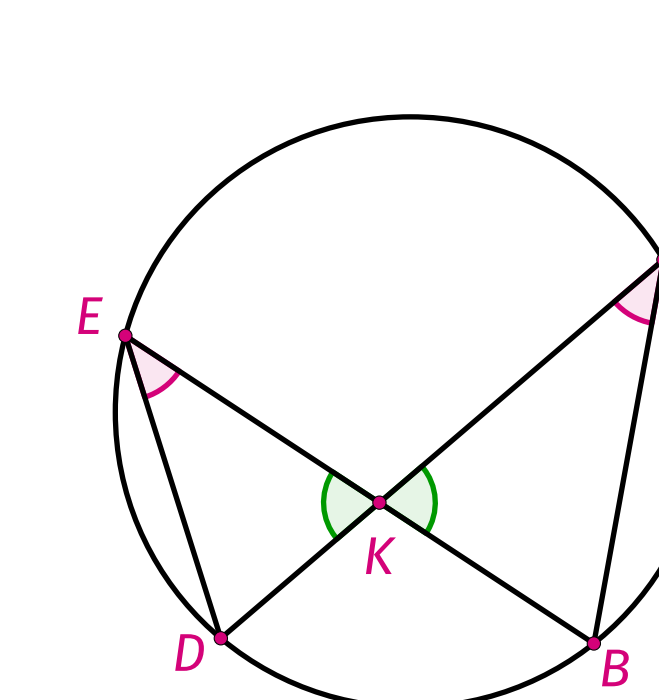
Angle between chords

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



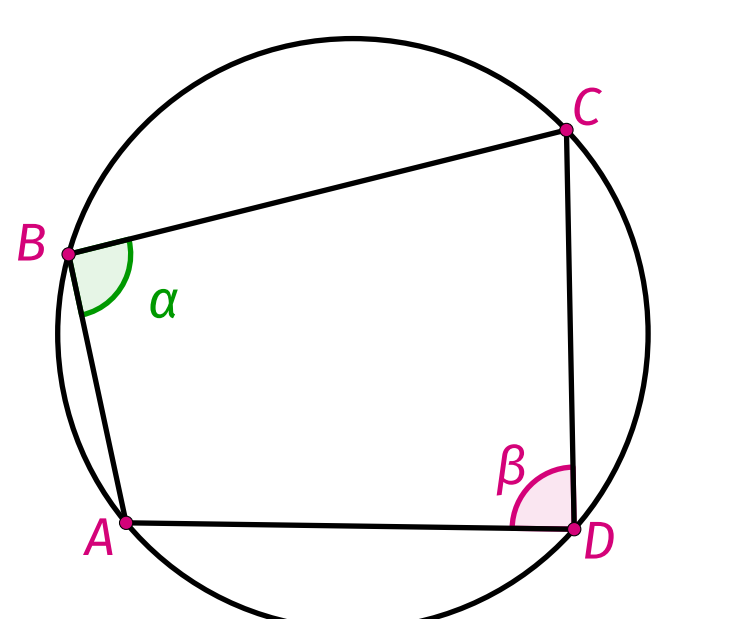
Intersecting Chords Theorem

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



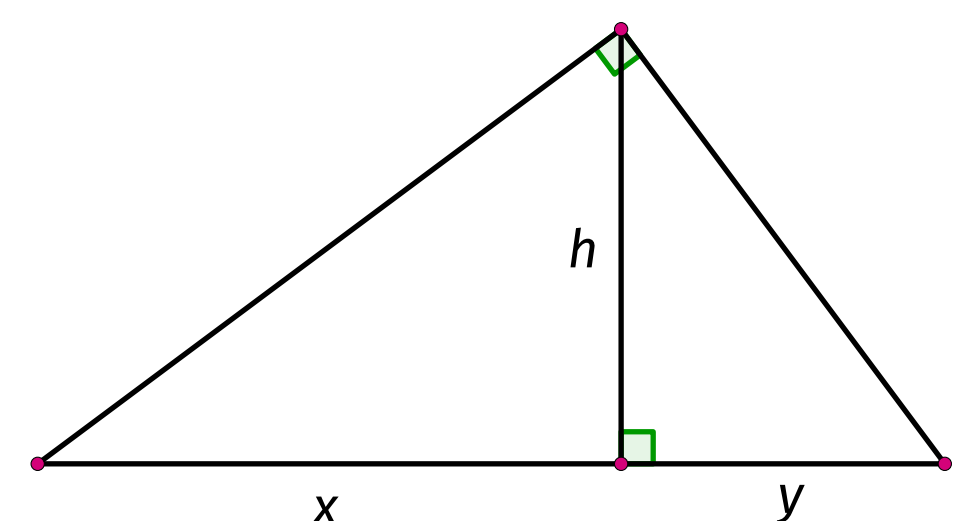
Cyclic Quadrilateral

$$ABCD \text{ - cyclic } \iff \alpha + \beta = 180^\circ$$



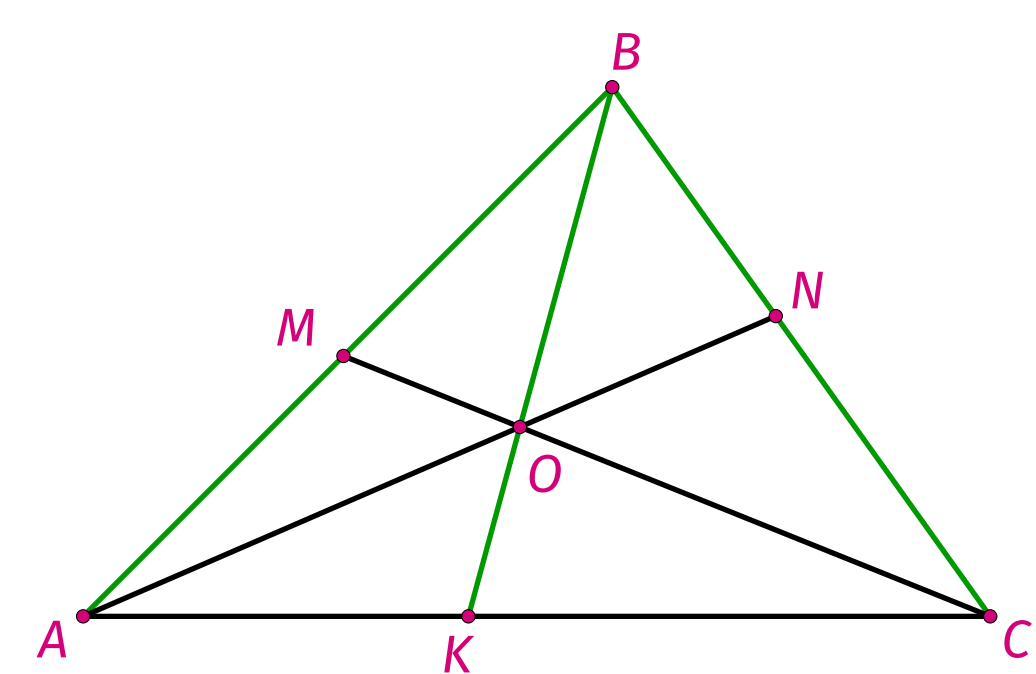
Altitude of a Right Triangle

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



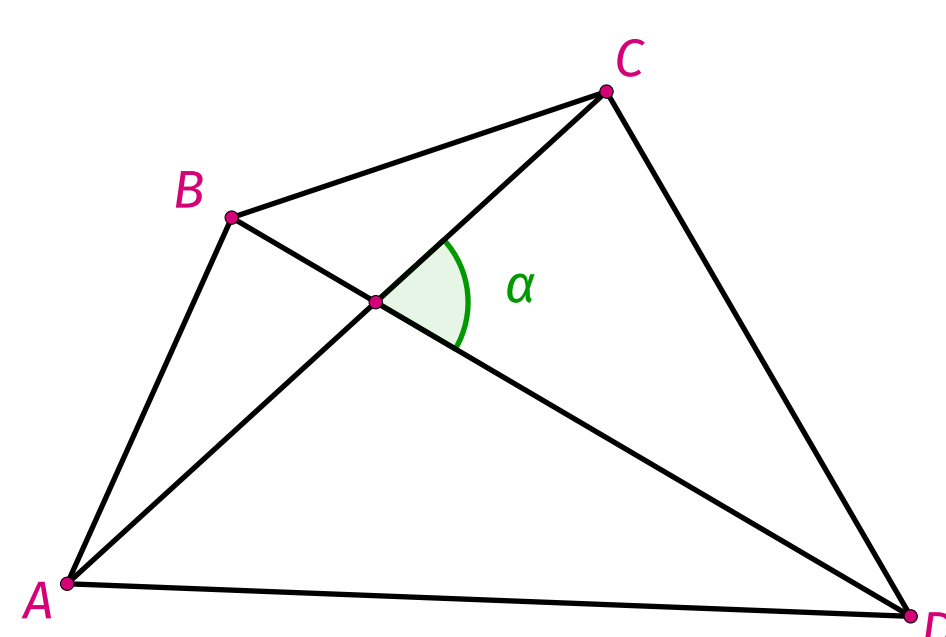
Van Aubel's Theorem

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



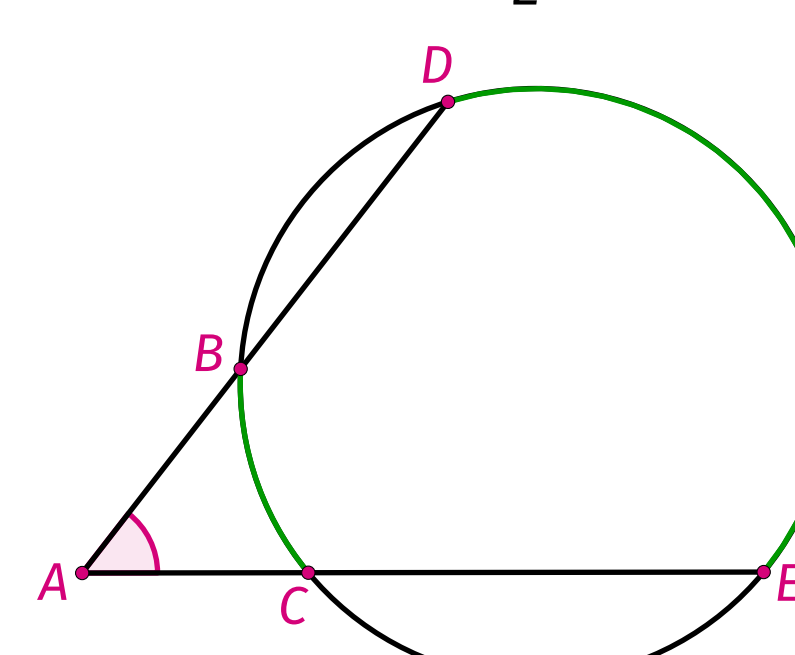
Area of a Quadrilateral

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



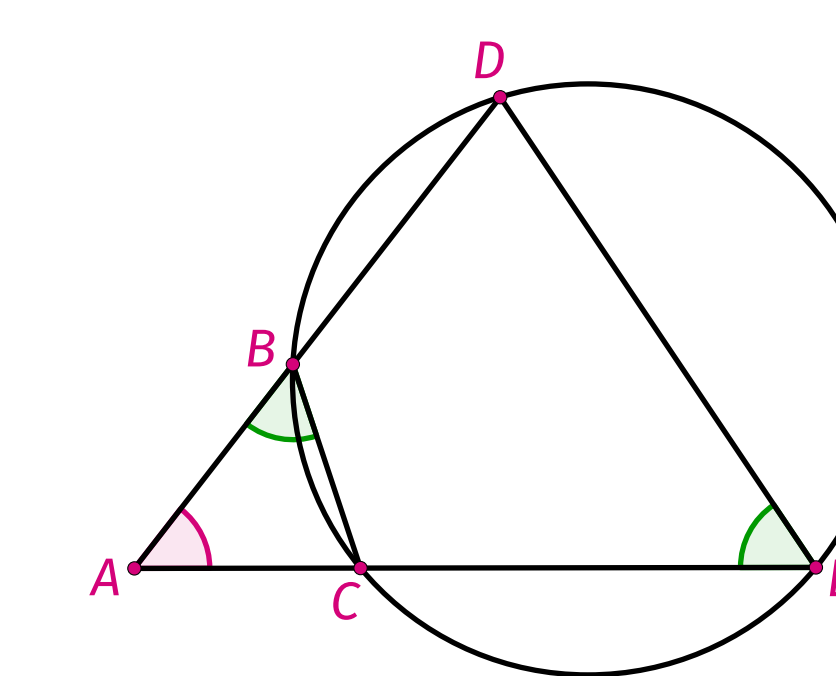
Angle between secants

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



Secant-Secant Theorem

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



Tangential Quadrilateral

$$ABCD \text{ - tangential } \iff AB + CD = BC + AD$$

