

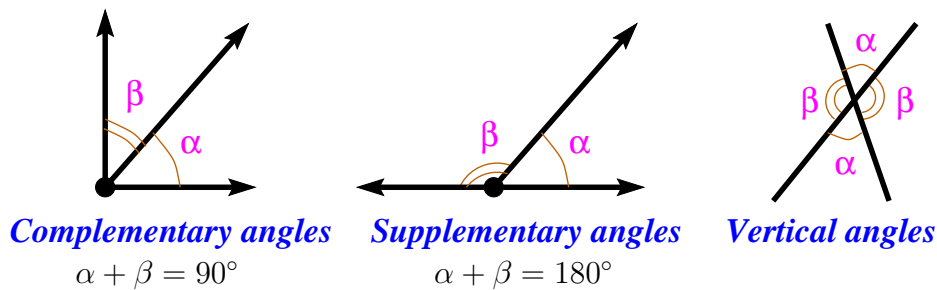
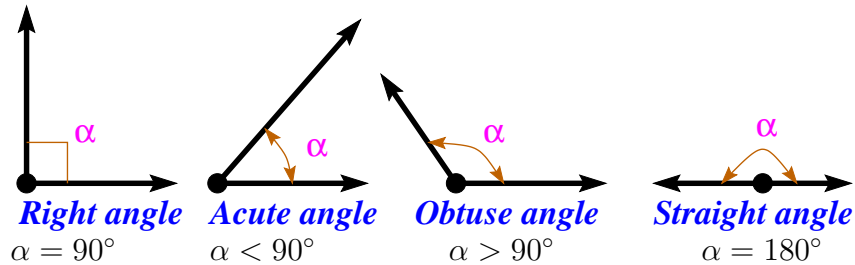
MathTime. GEOMETRY.

February 09, 2007

Greek letters

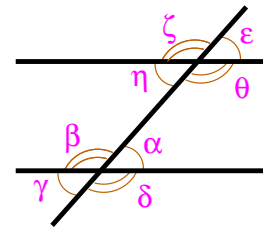
α	alpha	β	beta	γ	gamma	δ	delta	ε	epsilon	ζ	zeta
η	eta	θ	theta	ι	iota	κ	kappa	λ	lambda	μ	mu
ν	nu	ξ	xi	\omicron	omicron	π	pi	ρ	rho	σ	sigma
τ	tau	υ	upsilon	φ	phi	χ	chi	ψ	psi	ω	omega

Angles

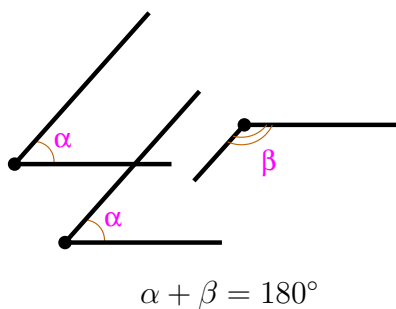


Parallel lines cut by a transversal line

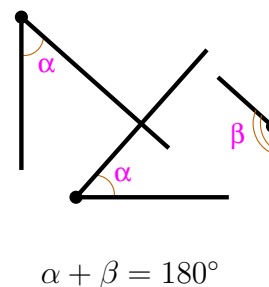
corresponding angles are congruent: $\alpha = \varepsilon, \beta = \zeta, \gamma = \eta, \delta = \theta$;
 alternate interior angles are congruent: $\alpha = \eta, \beta = \theta$;
 alternate exterior angles are congruent: $\delta = \varepsilon, \gamma = \zeta$;
 consecutive interior angles are supplementary: $\alpha + \theta = 180^\circ,$
 $\beta + \eta = 180^\circ$



Angles with parallel sides



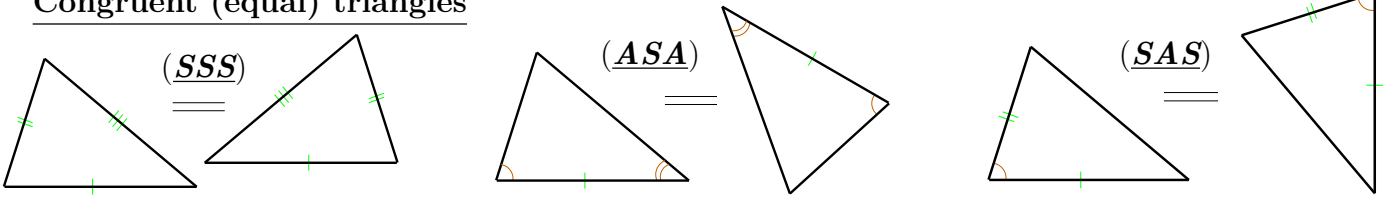
Angles with perpendicular sides



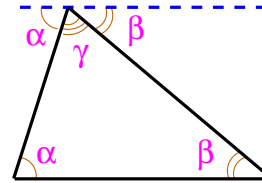
PROBLEMS

1. Two parallel lines are intersected by a transversal line. The angle between the first and the third lines is equal to 100° . Find the obtuse angle between its bisector and the second line.
2. Two angles have parallel sides. One of them is 90° greater than another one. Find the angles.
3. Sides of an angle α are perpendicular to sides of angle β . The angle α is 4 times smaller than the angle β . Find α and β .

Congruent (equal) triangles

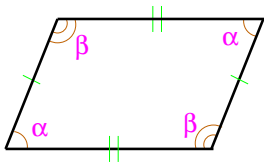


Theorem. *The sum of the angles of a triangle equals 180° .*
 $\alpha + \beta + \gamma = 180^\circ$.



PROBLEMS

4. In a triangle, one angle equals 115° , while another one equals 45° . Find the third angle.
5. Find the angles α, β, γ of a triangle if $\alpha : \beta : \gamma = 1 : 2 : 3$.
6. The first angle of a triangle is half of the second one. The third angle is 60° more than the first one. Find the angles.
7. Find the sum of the angles of a quadrilateral, pentagon, hexagon, n -gon.

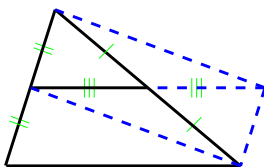
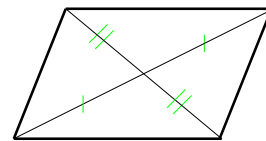


A parallelogram is a quadrilateral whose opposite sides are parallel.

$\alpha + \beta = 180^\circ$

PROBLEMS

8. Prove that the opposite angles of a parallelogram are equal.
9. Prove that if the opposite angles of a quadrilateral are equal then the quadrilateral is a parallelogram.
10. Prove that the sum of adjacent angles of a parallelogram equals 180° .
11. Prove that if the sum of adjacent angles of a quadrilateral is equal to 180° then the quadrilateral is a parallelogram.
12. Prove that the opposite sides of a parallelogram are equal.
13. Prove that if the opposite sides of a quadrilateral are equal then the quadrilateral is a parallelogram.
14. Prove that if two opposite sides of a quadrilateral are equal and parallel then the quadrilateral is a parallelogram.
15. Prove that a quadrilateral is a parallelogram if and only if its diagonals bisect each other.



Theorem. *The mid-segment of a triangle is parallel to its base and is equal to half of it.*