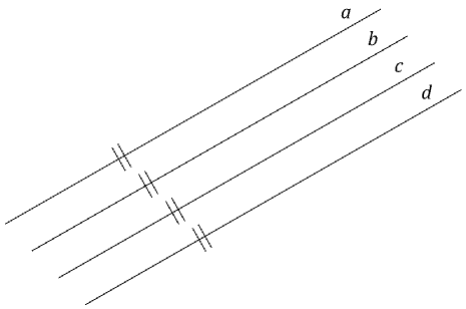
Basic geometrical definitions and constructions

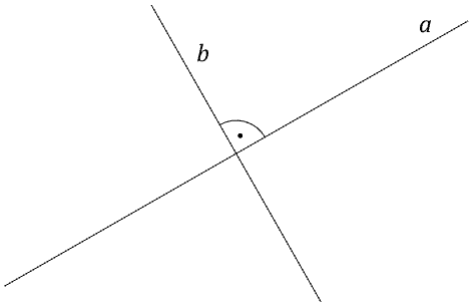
1. Parallel straight lines

Two or more lines that lie in the same plane and never intersect each other. Parallel lines are equidistant from each other and have the same slope.
Symbol: $a \parallel b$



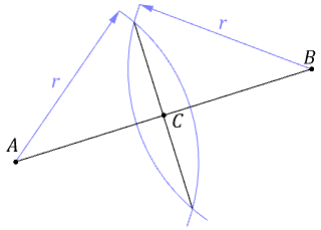
2. Perpendicular straight lines

Two distinct lines which intersect at each other at 90°.
Symbol: $a \perp b$



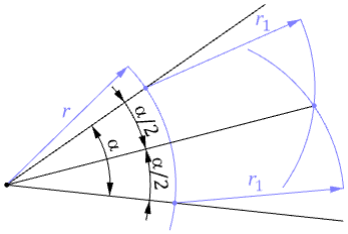
3. Centre of straight line segment

The midpoint of a straight line segment that is at the same distance or halfway between the two endpoints.
$C = \frac{\|AB\|}{2}, \| AC \| = \| BC \|$



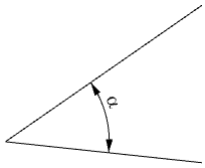
4. Angle bisector

Straight line that divides a given angle into two angles of equal measures.
r can be equal to r_1



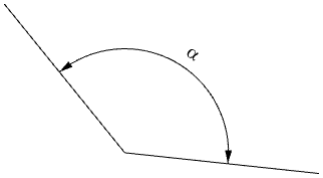
5. Acute angle

An angle less than 90°



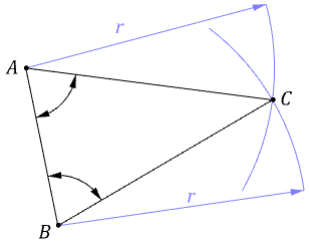
6. Obtuse angle

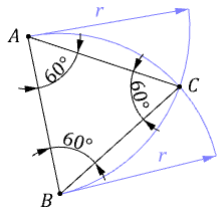
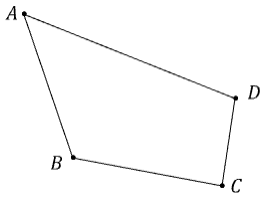
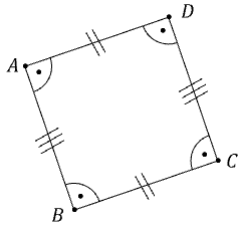
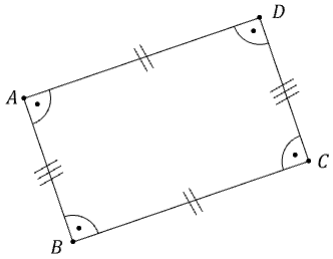
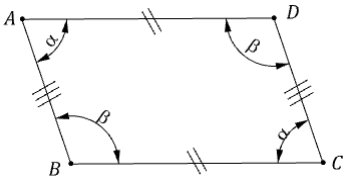
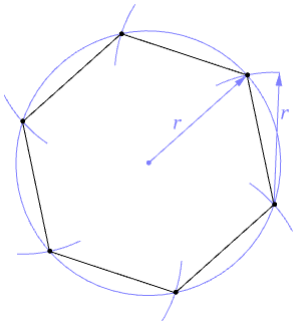
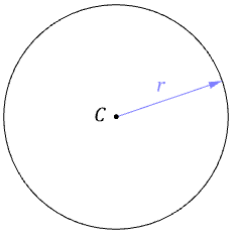
An angle greater than 90° and less than 180°

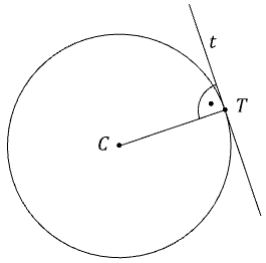
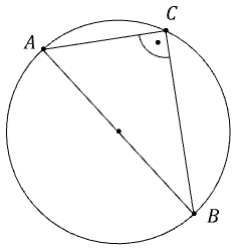
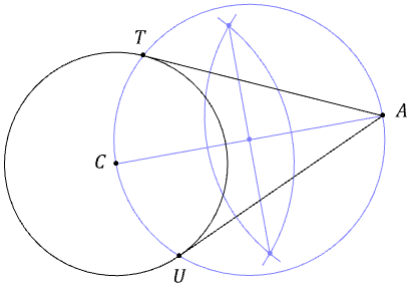
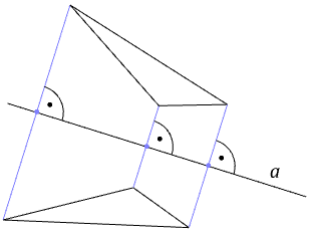
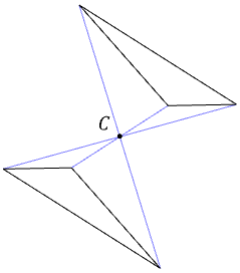
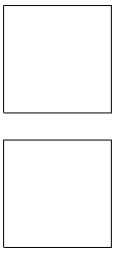


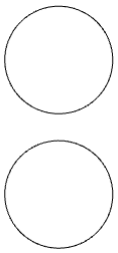
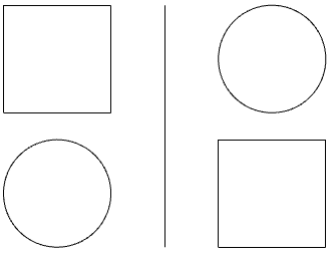
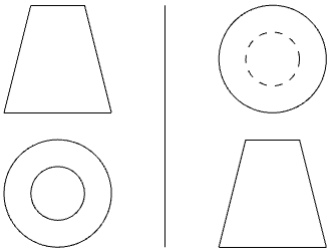
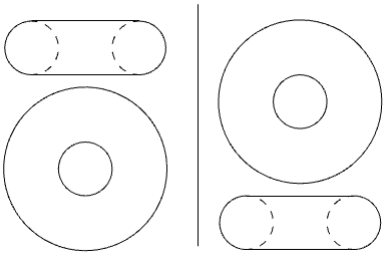
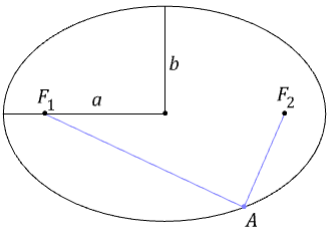
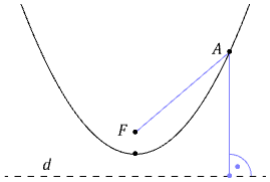
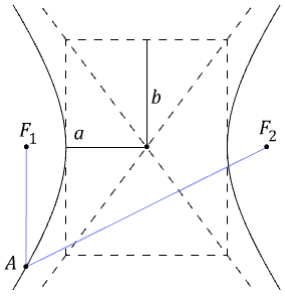
7. Isosceles triangle

A triangle that has two sides of equal length. The angles opposite to the equal sides are equal.
$r = \| AC \| = \| BC \|$



8. Equilateral triangle A triangle with all sides equal and all angles equal to 60°. $r = \| AC \| = \| BC \| = \| AB \|$	
9. Quadrilateral A four-sided polygon	
10. Square Regular quadrilateral, i.e. all sides are equal and all angles are equal to 90°.	
11. Rectangle A quadrilateral with all angles equal to 90° and opposite sides equal and parallel.	
12. Parallelogram A quadrilateral with opposite sides equal and parallel.	
13. Regular hexagon A six-sided polygon with all sides equal and all angles equal to 120°.	
14. Circle A set of points in a plane whose distance r (radius) from a fixed point S (centre) is constant.	

15. Tangent line to the circle at the point lying on the circle A line that touches the circle at exactly one point.	
16. Thales's theorem (circle) If AB is the diameter of the circle and C is a distinct point on the circle, the angle $\angle ABC$ is a right angle.	
17. Tangent line to the circle from the point lying outside the circle A line that touches the circle at exactly one point.	
18. Axial symmetry A symmetry around an axis. The axially symmetric figure can be obtained by rotating of the original figure around the axis (by 180°).	
19. Central symmetry A symmetry around a point. The centrally symmetric figure can be obtained by rotating of the original figure around the point by 180°.	
20. Top view, front view of a cube Top/front view (in Monge projection) is an orthogonal parallel projection of a cube onto a horizontal/frontal plane of projection.	

21. Top view, front view of a sphere Top/front view (in Monge projection) is an orthogonal parallel projection of a sphere onto a horizontal/frontal plane of projection.	
22. Top view, front view of a cylinder Top/front view (in Monge projection) is an orthogonal parallel projection of a cylinder onto a horizontal/frontal plane of projection.	
23. Top view, front view of a cone Top/front view (in Monge projection) is an orthogonal parallel projection of a cone onto a horizontal/frontal plane of projection.	
24. Top view, front view of a torus Top/front view (in Monge projection) is an orthogonal parallel projection of a torus onto a horizontal/frontal plane of projection.	
25. Ellipse A set of points in a plane the sum of whose distances from two fixed points F_1 and F_2 (the foci) is equal to the length of major axis of the ellipse $\| AF_1 \| + \| AF_2 \| = 2a$	
26. Parabola A set of points in a plane that are equidistant from a fixed point F (focus) and a fixed straight line d (directrix),	
27. Hyperbola A set of points in a plane the difference of whose distances from two fixed points F_1 and F_2 (the foci) is equal to the length of major axis of the ellipse $\| AF_2 \| - \| AF_1 \| = 2a$