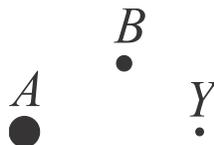


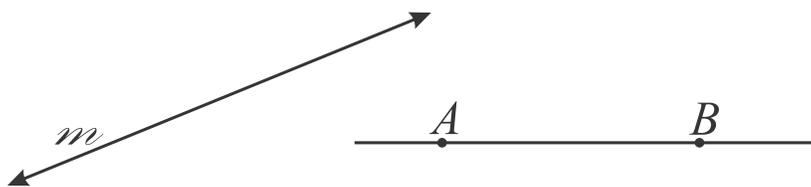
$$\frac{1\frac{5}{9} : 7 + 1\frac{5}{6}}{6\frac{1}{6} \cdot 3}$$

Point (an undefined term).



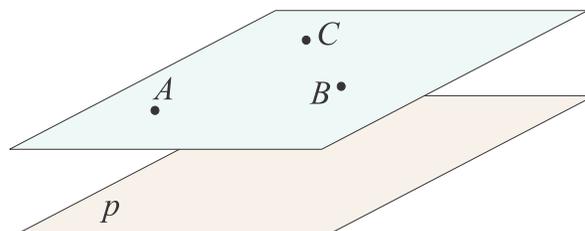
Line (an undefined term).

A line is named by a single lowercase letter, m for example, or by any two points on the line, \overleftrightarrow{AB} or AB .



Plane (an undefined term).

A plane is named by a single letter (plane p) or by three non-collinear points (plane ABC).

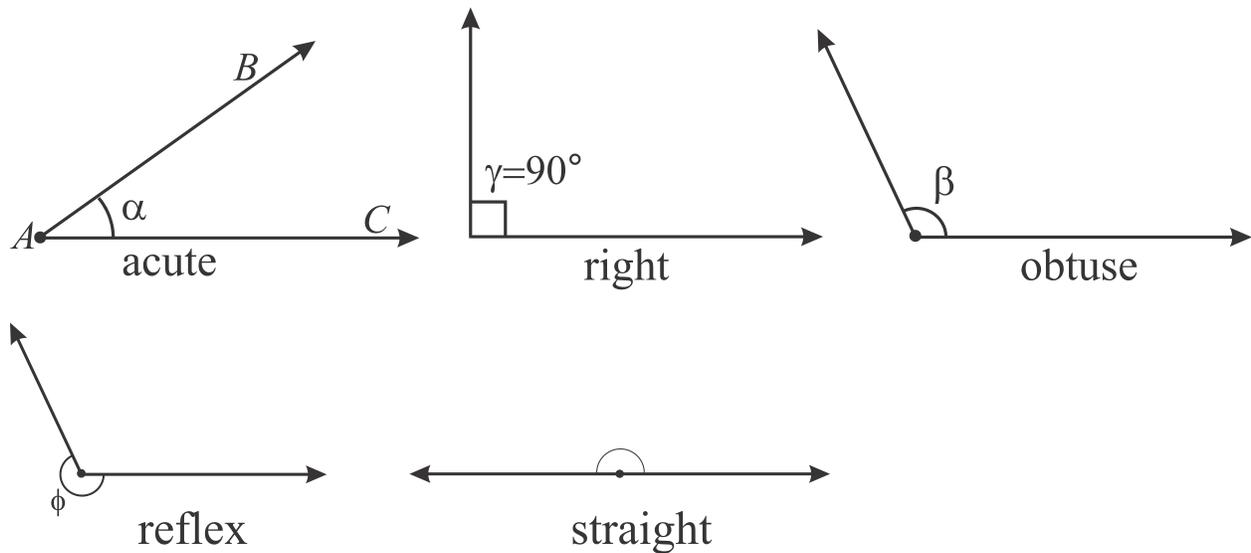


A line segment is a part of a straight line between two chosen points.
(A set of points of a straight line between two points.)
These points are called endpoints.

A ray is a part of a straight line consisting of a point (endpoint) and all points of a straight line at one side of an endpoint. Ray is named by endpoint and any other point, ray \overrightarrow{AB} or AB (where A is an endpoint)

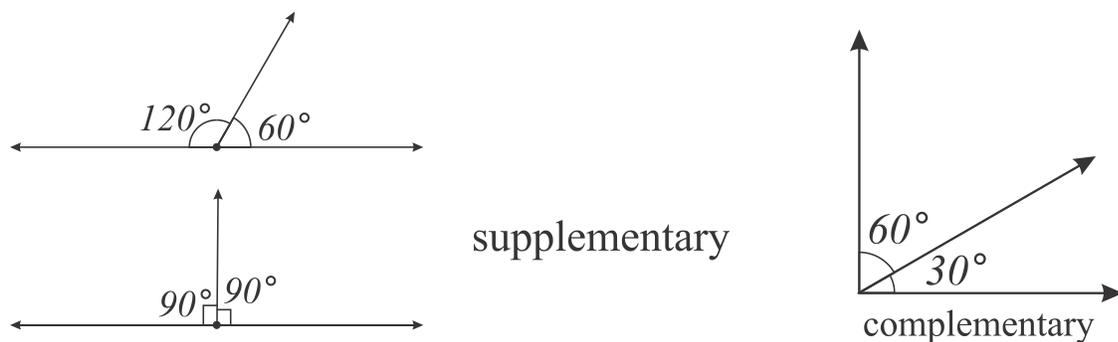
An angle is the figure formed by two **rays**, called the sides of the angle, sharing a common endpoint, called the **vertex** of the angle.

Angles notations are usually three capital letters with vertex letter in the middle or small Greek letter: $\angle ABC$, α . Measure of the angle is the amount of rotation required to move one side of the angle onto the other. As the angle increases, the name changes:



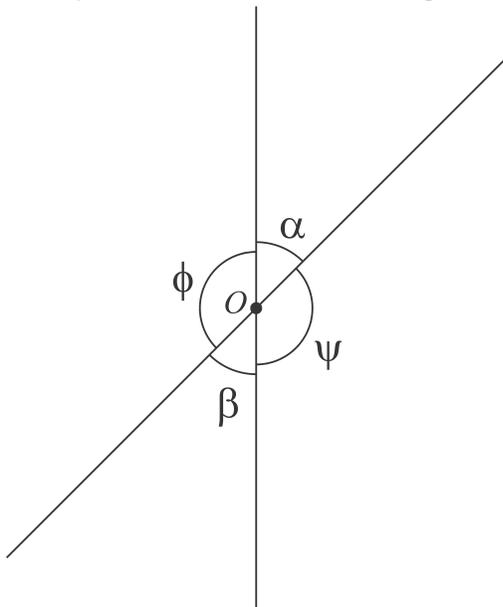
Straight angle is formed by two rays on the same straight line. Straight angle has a measure (in our angle measuring system) of 180° .

Two angles are called adjacent if they have common vertex and a common side. If two adjacent angles combined form straight angle they are called supplementary; if they form right angle then they are called complementary.



An angle which is supplementary to itself we call right angle. Lines which intersect with the right angle we call perpendicular to each other.

When two straight lines intersect at a point, four angles are formed. A pair of angles opposite each other formed by two intersecting straight lines that form an "X"-like shape, are called vertical angles, or opposite angles, or vertically opposite angles.



α and β and ϕ and ψ are 2 pairs of vertical angles.

Vertical angles theorem:

Vertical angles are equal.

In mathematics, a **theorem** is a statement that has been proven on the basis of previously established statements.

According to a historical legend, when Thales visited Egypt, he observed that whenever the Egyptians drew two intersecting lines, they would

measure the vertical angles to make sure that they were equal. Thales concluded that one could prove that vertical angles are always equal and there is no need to measure them every time.

Proof:

$\angle\phi + \angle\alpha = 180^\circ$ because they are supplementary by construction.

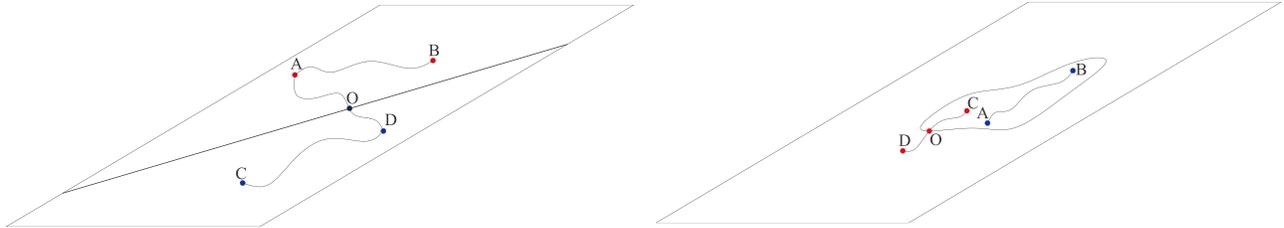
$\angle\phi + \angle\beta = 180^\circ$ because they are supplementary also by construction.

$\Rightarrow \angle\alpha = \angle\beta$, therefore, we proved that if 2 angles are vertical angles then they are equal. Can we tell that invers is also the truth? Can we tell that if 2 angles are equal than they are vertical angels?

There are two possibilities of mutual position of a line and a point on the plane: the point lies on the line or the point doesn't lie on the straight line. If 2 lines have 2 common points these lines coincide. Two straight line can intersect (then they have one common point) or they can be parallel.

Parallel lines are lines in a plane which do not meet; that is, two lines in a plane that do not intersect or touch each other at any point are said to be parallel.

Each straight line divides a plane into two domains. In these domains any two points on one side of the line may be connected without crossing the line itself and any two points on the two different sides of the line can't be connected without crossing the line.



Enclosed area on a plane is the area limited by a closed curved line (or chain of line segments) any 2 points of which can be connected without crossing the curved line (or series of line segments) and any point inside of the limit can't be connected with any point outside of the limit without crossing the curved line (or chain of line segments).

How many parts (domains) two line can divide a plane? Two rays?