

Monge projection

= orthogonal projections on two mutually perpendicular planes

→ *The horizontal plane* – π

→ *The vertical (frontal) plane* – ν

→ *The folding line* – marked x_{12}

= a line of intersection of both projections' planes $x = \pi \cap \nu$

The orthogonal projection of a point A

The orthogonal projection of a point A into a projection plane is a foot of perpendicular line passing through a point A to a projection plane. This perpendicular line is called *a projecting line* of a point A .

→ *The horizontal projection (the first projection)* of a point A – marked A_1

= the orthogonal projection of a point A into a horizontal projection plane

→ *The vertical projection (the second projection)* of a point A – marked A_2

= the orthogonal projection of a point A into a vertical (frontal) projection plane

→ Projections A_1 and A_2 are called *related views* of a point A .

→ *The projector*

– a line perpendicular to the folding line

– a line connecting A_1, A_2

The orthogonal projection of a line a

The orthogonal projection of a line a into a projection plane is a line of intersection of a projection plane and **a plane** passing through a line a and perpendicular to the projection plane. This **plane** is called *a projecting plane* of a line a .

→ *The horizontal projection (the first projection)* of a line a – marked a_1

= the orthogonal projection of a line a into a horizontal projection plane

→ *The vertical projection (the second projection)* of a line a – marked a_2

= the orthogonal projection of a line a into a vertical (frontal) projection plane

→ *A trace point* = the point of intersection of a line with the projection plane

→ *The horizontal trace point* – marked P

= the point of intersection of a line with the horizontal plane

– the second projection of the horizontal trace point is always on the folding line

→ *The vertical trace point* – marked N

= the point of intersection of a line with the vertical plane

– the first projection of the vertical trace point is always on the folding line

The orthographic projection of a plane α

A trace line of a plane α = a line of intersection of a plane α with a projection plane

→ A horizontal trace – marked p

= a line of intersection of a plane α with the horizontal plane

→ A vertical trace – marked n

= a line of intersection of a plane α with the vertical plane

– The horizontal trace and the vertical trace intersects each other on a folding line.

– If a line lies in a plane, then its trace points lies on the traces of a plane: the horizontal trace point must lie on a horizontal trace line, the vertical trace point must lie on a vertical trace line.

Special lines in a plane:

→ Horizontal lines – marked $^I h$

= lines parallel to the horizontal projection plane

– the first projection is parallel to the horizontal trace

– the second projection is parallel to the folding line

→ Vertical lines – marked $^{II} h$

= lines parallel to the vertical projection plane

– the second projection is parallel to the vertical trace line

– the first projection is parallel to the folding line

→ Lines of steepest slope (steepest lines):

→ A steepest line with respect to the horizontal projection plane – marked $^I s$

= a line perpendicular to the horizontal lines

– the first projection of this line is perpendicular to the horizontal trace line (as well as to all horizontal lines)

→ A steepest line with respect to the vertical projection plane – marked $^{II} s$

= a line perpendicular to the vertical lines

– the second projection of this line is perpendicular to the vertical trace line (as well as to all vertical lines)