

Precision Sketching & Smart Dimensions

SolidWorks for Engineers - Lesson 1

SolidWorks sketching is the base of accurate 3D modeling. A weak sketch creates weak parts. A strong sketch is clear, fully defined, and controlled by dimensions and relations.

Relations describe how sketch entities behave. Horizontal and vertical relations control direction. Tangent relations create smooth contact between curves and lines. Coincident relations connect points. Concentric relations make circles share the same center.

Smart Dimensions give exact size to geometry. A professional model should not depend on dragging shapes by eye. Dimensions make the design repeatable, editable, and ready for manufacturing.

A fully defined sketch turns black, meaning its size and position are controlled. Blue geometry is under-defined and can move unexpectedly. Before creating 3D features, make sure important sketches are fully defined so later changes do not break the model.