

## Interface & Navigation

### Viewport Navigation

Orbit (Rotate View)	1 + Left Mouse Button
Pan (Move View)	2 + Left Mouse Button
Zoom	3 + Left Mouse Button
Zoom All	Shift + V (Configure View)
Frame Selected	O
Perspective/Orthographic Views	V

### Key Interface Elements

Objects Manager	Hierarchy of objects in the scene.
Attributes Manager	Properties of selected objects.
Material Manager	Create, edit, and apply materials.
Timeline	Animation control and keyframing.
Tool Bar	Access to modeling, sculpting, and animation tools.
Content Browser	Access to preset assets, materials, and objects.

### Basic Shortcuts

Move Tool	E
Rotate Tool	R
Scale Tool	T
Undo	Ctrl + Z
Redo	Ctrl + Y
Save	Ctrl + S

## Modeling Essentials

### Primitive Objects

Cube	Basic box shape.
Sphere	Round shape.
Cylinder	Tubular shape.
Cone	Pointed shape.
Plane	Flat surface.
Torus	Ring shape.

### Generators

Extrude	Creates 3D objects from splines.
Lathe	Revolves a spline around an axis.
Sweep	Extrudes a profile along a spline.
Loft	Creates a surface between two or more splines.
Boolean Object	Combines or subtracts shapes using boolean operations (A+B, A-B).

### Polygon Modeling Tools

Extrude (Polygons)	Extrude selected polygons to create new geometry.
Bevel	Adds a chamfered edge to polygons.
Knife Tool	Cut polygons manually.
Bridge Tool	Connect two selections of edges or polygons with new polygons.
Subdivision Surface (SDS)	Smooths the geometry by subdividing the polygons.

## Materials & Texturing

### Material Creation

<div><div>1. <b>Create New Material:</b> In the Material Manager, click <b>Create &gt; New Material</b>.</div><div>2. <b>Edit Attributes:</b> In the Attribute Manager, adjust settings like Color, Reflectance, Transparency, and Bump.</div></div>
<b>Color Channel:</b> Defines the base color of the material.
<b>Reflectance Channel:</b> Controls the reflections and highlights.
<b>Transparency Channel:</b> Adjusts the transparency of the material.
<b>Bump/Normal Channel:</b> Adds surface detail without modifying the geometry.

### UV Mapping

UV Editor	Edit the UV coordinates of the object.
UV Projection Methods	Cubic, Cylindrical, Spherical, Flat, etc.
Automatic UV Unwrapping	Cinema 4D can automatically unwrap complex shapes.
Texture Tag	Applies a material to an object and controls the texture's placement and properties.

### Applying Materials

<div><div>1. <b>Drag and Drop:</b> Drag the material from the Material Manager onto the object in the Objects Manager or Viewport.</div><div>2. <b>Texture Tag:</b> A Texture Tag will be created on the object. Adjust the tag's properties (e.g., projection, tiling) in the Attribute Manager.</div></div>
<b>Selection Sets:</b> Apply materials only to specific polygons or selections.

# Animation & Rendering

## Keyframing

<b>Adding Keyframes</b>	Click the small circle next to the attribute in the Attribute Manager at the desired frame.
<b>Timeline Navigation</b>	Use the timeline controls or arrow keys to move between frames.
<b>Keyframe Interpolation</b>	Linear, Spline, Step. Control the transition between keyframes in the Timeline.
<b>F-Curves</b>	Fine-tune animation curves in the F-Curve Manager for precise control.

## Lighting

<b>Light Types</b>	Point, Spot, Area, Infinite.
<b>Shadow Types</b>	Hard, Soft, Area.
<b>Global Illumination (GI)</b>	Simulates realistic light bounces for natural-looking scenes.
<b>Ambient Occlusion (AO)</b>	Adds subtle shadows in crevices and corners to enhance depth.

## Rendering

<b>Render Settings</b>	Adjust resolution, output format, and render quality.
<b>Physical Render</b>	Realistic rendering engine simulating camera and lighting properties.
<b>Standard Render</b>	Faster rendering engine, suitable for stylized visuals.
<b>Output Formats</b>	PNG, JPG, TIFF, EXR, MOV, MP4.