Blender Cheatsheet: 3D Design & Illustration

A concise reference for Blender users, covering essential tools, shortcuts, and techniques for 3D modeling, sculpting, texturing, and digital illustration.

Core Operations & Navigation

Basic Navigation

Orbit View	Middle Mouse Button (MMB) Drag
Pan View	Shift + MMB Drag
Zoom View	Mouse Wheel Scroll or Ctrl + MMB Drag
View Selected	Numpad Period (.)
Perspective/Orthographic Toggle	Numpad 5
Front View	Numpad 1
Right View	Numpad 3
Top View	Numpad 7
Camera View	Numpad 0

Object Manipulation

Grab/Move	G (then X, Y, or Z to constrain axis)
Rotate	R (then X, Y, or Z to constrain axis)
Scale	S (then X, Y, or Z to constrain axis)
Duplicate	Shift + D
Delete	X or Delete Key
Join Objects	Ctrl + J (Select multiple objects first)
Separate Objects	P (In Edit Mode, separate by selection, material, or loose parts)
Apply Transformations	Ctrl + A (Apply location, rotation, scale, etc.)

Modes

Object Mode	Default mode for object manipulation.
Edit Mode	Modify object geometry (vertices, edges, faces). Tab key to toggle.
Sculpt Mode	For sculpting organic shapes. Tab key to toggle.
Vertex Paint Mode	Paint colors directly onto the object's vertices.
Weight Paint Mode	Assign weights to vertices for rigging and animation.
Texture Paint Mode	Paint textures directly onto the object's surface.

Modeling Essentials

Mesh Editing

Extrude	E (Creates new geometry by extending selected faces/edges/vertices)
Inset	I (Creates new faces inside selected faces)
Bevel	Ctrl + B (Rounds edges/corners)
Loop Cut and Slide	Ctrl + R (Adds a loop of edges around the object)
Subdivide	W -> Subdivide (Divides selected faces into smaller faces)
Merge Vertices	Alt + M (Merges selected vertices into one)
Knife Tool	K (Cut custom edges and faces)
Bridge Edge Loops	Select two edge loops, then W -> Bridge Edge Loops (Connects two edge loops with new faces)

Modifiers

Modifiers are non-destructive operations that can be applied to objects. Access them via the Modifiers tab in the Properties panel.

Subdivision Surface: Increases the smoothness of an object by subdividing its faces.
Example: Add detail without manually adding geometry.

Bevel: Adds beveled edges to an object.
Example: Soften sharp corners and create a more realistic look.

Boolean: Performs boolean operations (union, difference, intersection) between two objects.
Example: Create complex shapes by combining simpler ones.

Mirror: Creates a mirrored copy of an object.
Example: Model symmetrical objects more easily.

Array: Creates multiple copies of an object along an axis.
Example: Generate repeating patterns.

Solidify: Adds thickness to a surface.
Example: Create walls from a plane.

Materials & Texturing

Material Basics

Creating a New Material	Go to the Material tab in the Properties panel, click 'New'.
Principled BSDF Shader	A versatile shader that simulates a wide range of materials. Adjust parameters like Base Color, Roughness, and Metallic.
Adding Textures	Use the Shader Editor to add Texture nodes (e.g., Image Texture, Noise Texture) and connect them to the Principled BSDF.
UV Unwrapping	Essential for applying 2D textures to 3D models. Select faces in Edit Mode, then use UV -> Unwrap.
Smart UV Project	A quick way to unwrap simple objects. UV -> Smart UV Project.
Seams	Mark edges as seams (Ctrl + E -> Mark Seam) to guide the unwrapping process.

Texture Painting

Texture painting allows you to directly paint textures onto your model. Switch to Texture Paint mode.

Brush Settings	Adjust brush size, strength, and color in the Tool panel.
Texture Slots	Create texture slots in the Material tab to define which textures you'll be painting on.
Clone Brush	Samples texture from one area and paints it onto another. Useful for removing seams or imperfections.
Fill Tool	Fills selected areas with a specified color.

Rendering & Lighting

Render Engines

Eevee: A real-time render engine, good for quick previews and stylized visuals.
Path: Render Properties tab -> Engine -> Eevee

Cycles: A physically-based path tracer, providing realistic and accurate renders.
Path: Render Properties tab -> Engine -> Cycles

Lighting

Point Light	Emits light in all directions from a single point.
Sun Light	Emits parallel light rays, simulating sunlight.
Spot Light	Emits a cone of light from a single point.
Area Light	Emits light from a rectangular or square area, creating softer shadows.
HDRI Lighting	Use a High Dynamic Range Image (HDRI) to illuminate your scene with realistic environmental lighting. **Steps:** World Properties -> Color -> Environment Texture -> Open HDRI

Rendering Settings

Render Image	F12 (Renders the current frame)
Render Animation	Ctrl + F12 (Renders the entire animation)
Output Properties	Set the render resolution, frame rate, and output file format in the Output Properties tab.
Samples (Cycles)	Increase the number of samples to reduce noise in Cycles renders. Higher samples = longer render times.
Denoising	Use denoising to reduce noise in renders. Available in both Eevee and Cycles. **Path:** Render Properties -> Denoising