CreateAccess

Learning Guide
Edit and Animate 3D Models with Spline

Introduction

Spline is a free 3D creation tool that allows users to create interactive 3D designs. Spline requires no coding knowledge and runs on a web browser. You can explore different materials, effects, and animations in Spline, and apply them to a 3D model you've created using a different tool.

This Guide will show you how to bring your own 3D models into Spline and add materials and animations to create interactive experiences. These skills can help you elevate and customize your website or other platforms with unique designs you've created in Spline.
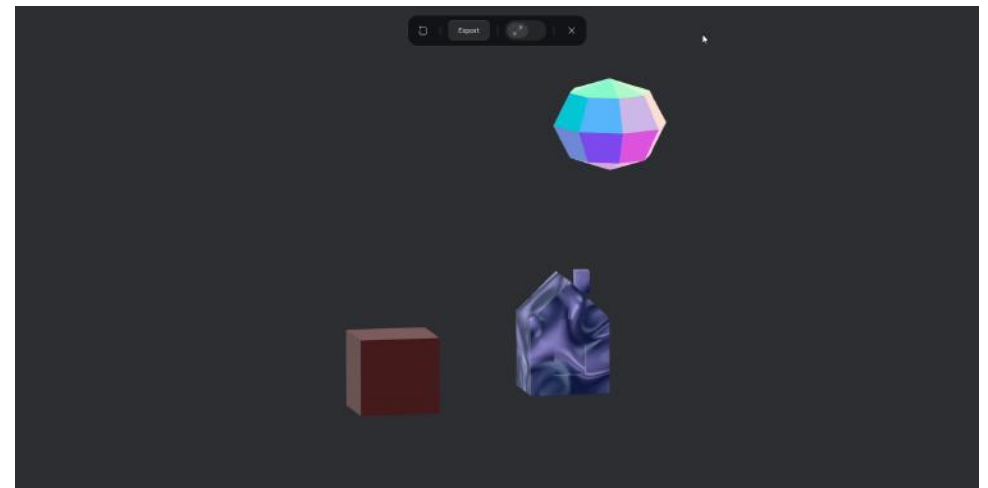

Video Learning Guide for this Lesson:
https://www.youtube.com/watch?v=UM5mMo3dpAU

Contents

Prior Knowledge Check

This Guide assumes that you already have a 3D model that you will import into Spline to which you'd like to add materials and animations. You can follow along by bringing in your own 3D model that you've created with any 3D modeling tool, or refer to the "Create 3D Models with Tinkercad" Learning Guide to learn more about creating unique 3D models using Tinkercad.

Step 1: Bring a 3D model into Spline

Preview

To be able to create an interactive 3D design in Spline, the first step is to bring in your 3D model. This section will help you start a project in Spline and import your model.
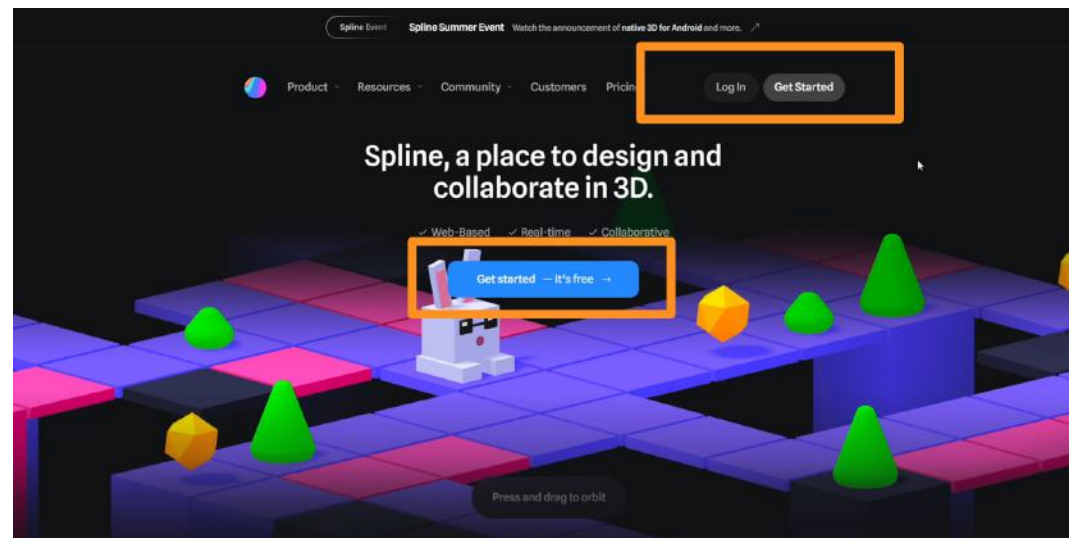
Experiment

LOG INTO SPLINE

Visit Spline on https://spline.design. Log in or create an account.

If creating an account for the first time, you will be prompted to answer some questions.

Spline might suggest upgrading to a paid plan, but you can decline the offer and use Spline for no cost.

CREATE A NEW PROJECT

Click on the **+New File** button in the top right corner or under the "Get Started" section to create a new project in Spline.

If using Spline for the first time, you will be prompted to follow a tutorial when you create your first project. Complete or skip the tutorial before following the next steps.
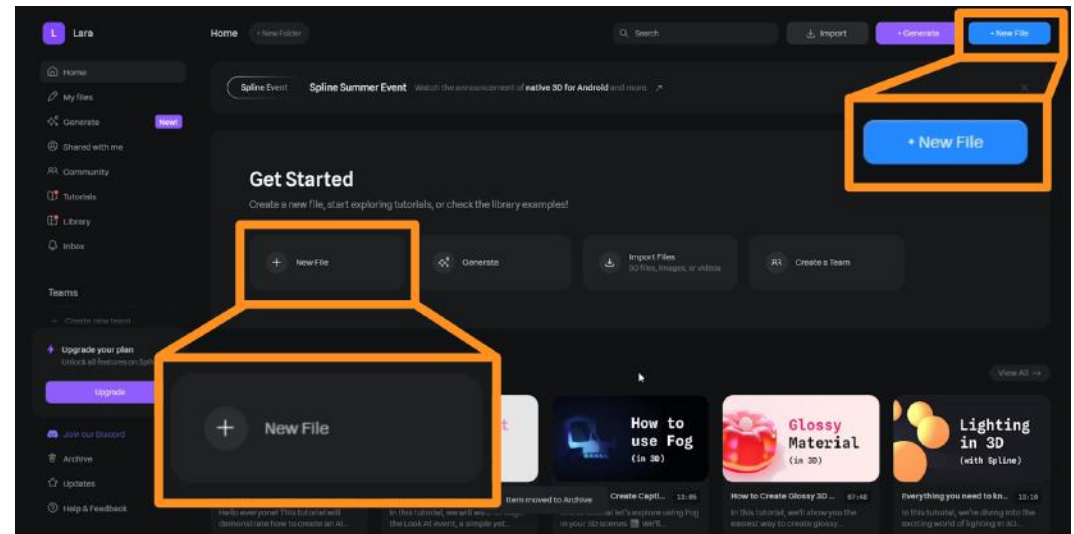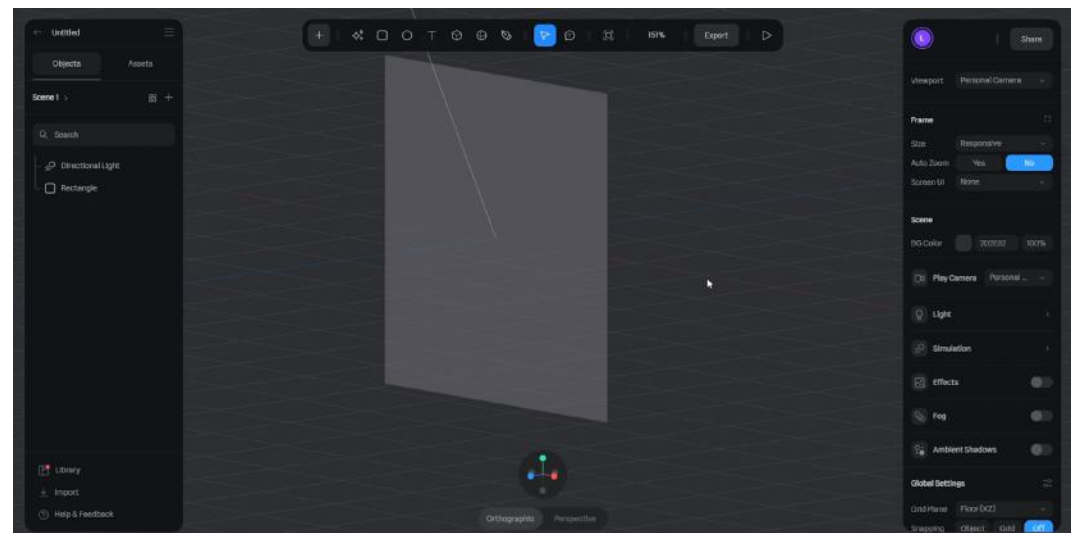
NAVIGATE THE VIEWPORT

To rotate around in the viewport in Spline, **hold ALT** and use the **Right Mouse Button**.
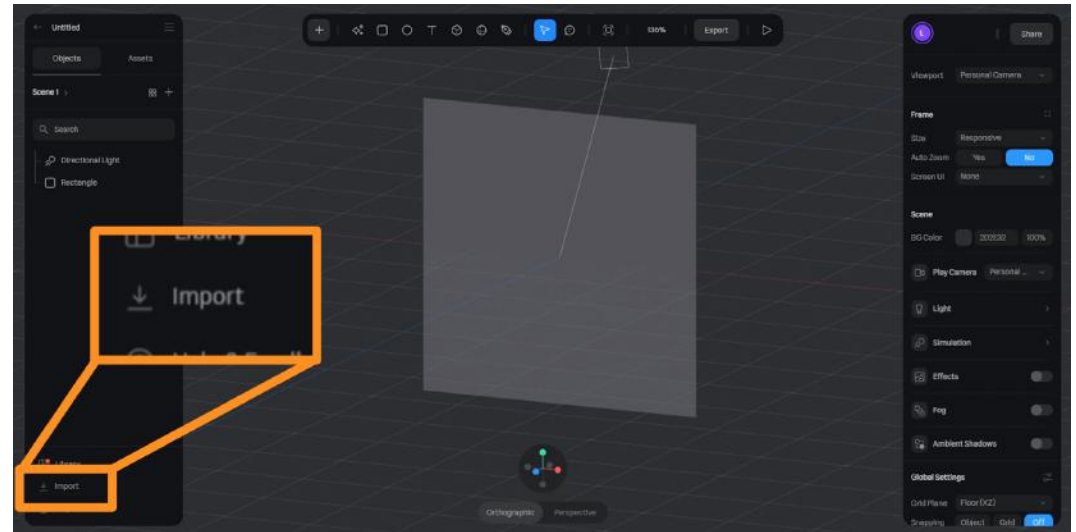
To pan, click on **Middle Mouse Button** and drag.

Zoom in or out with the **Scroll Wheel**.
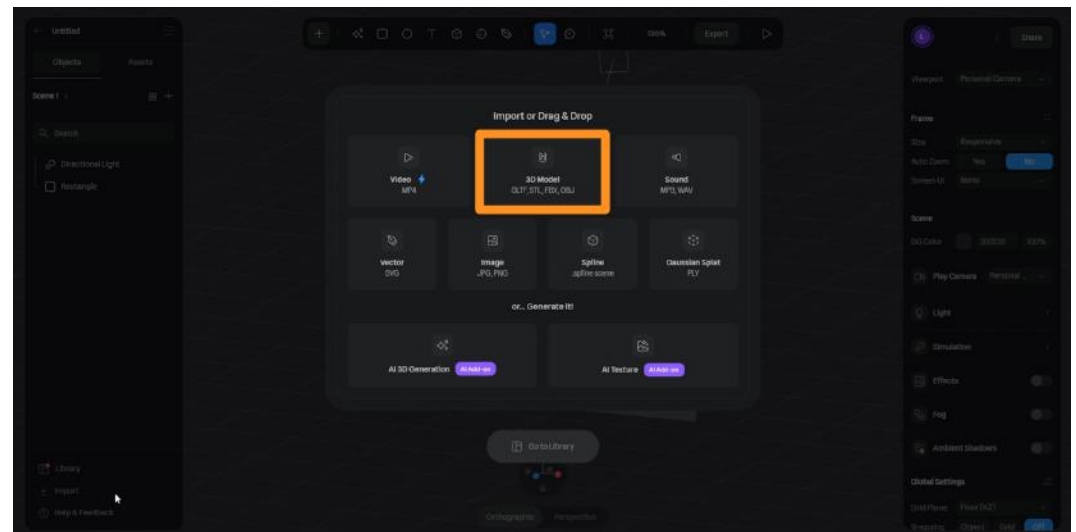
IMPORT YOUR MODEL

Click on the **Import** button on the bottom-left corner of the screen.

Choose the **3D Model** option. From the file selection window, navigate to the folder that contains the 3D model you would like to import.

If using a Tinkercad model, it is important to note that you should choose the file named "**tinker**" with the **file type .OBJ**, *not* the file named obj.

If you have any issues importing a Tinkercad model, make sure you've unzipped the downloaded file from Tinkercad.

After importing your model, select the pre-existing rectangle shape in the Spline scene and delete it by pressing the **DELETE** key.
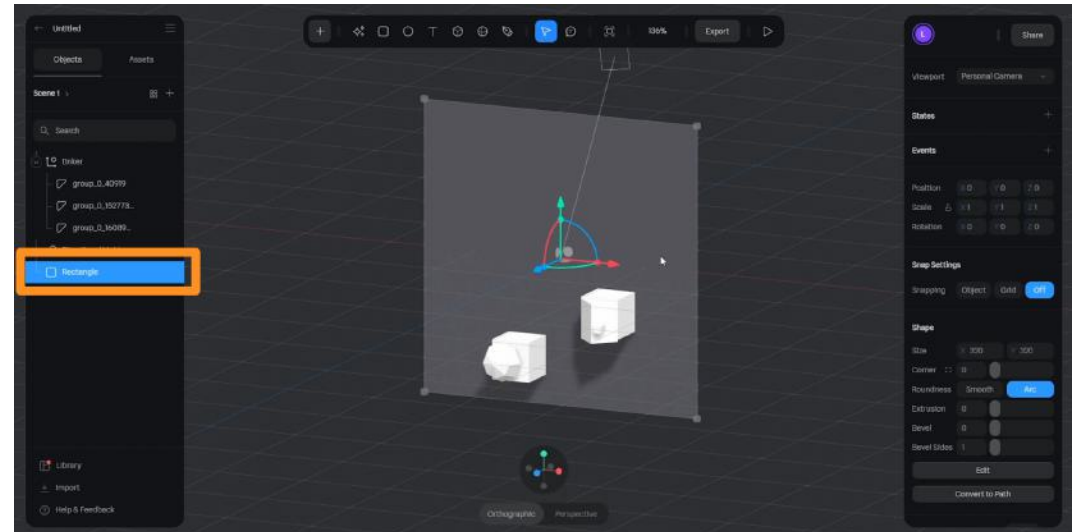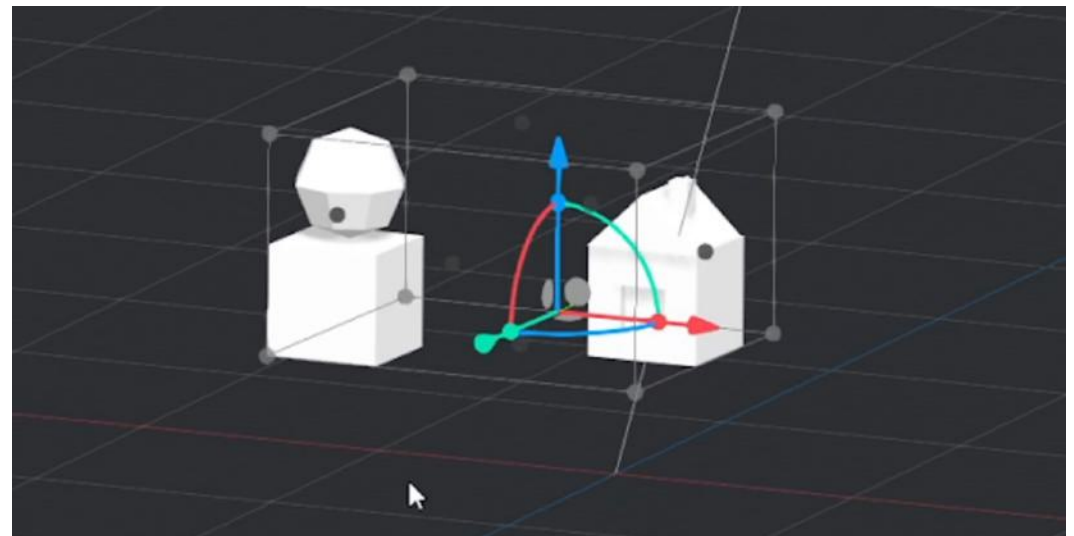
MOVE YOUR MODEL

You can see all your groups and shapes in the **Objects** menu on the left side of the viewport.

Select a shape you want to edit. You can move the shape by using the red, green, and blue colored **arrows** and rotate it by using the colored **handles**.

To scale your shape, click and drag on the small **spheres** where the arrow and handles meet.

NOTE: When importing from Tinkercad, your model will be imported into Spline under a group named "tinker" and all the shapes will be stored under this group.

Shapes that were grouped in Tinkercad will appear as a **single element** in Spline and you can only apply one material to this element. If not grouped, each shape will appear separately.
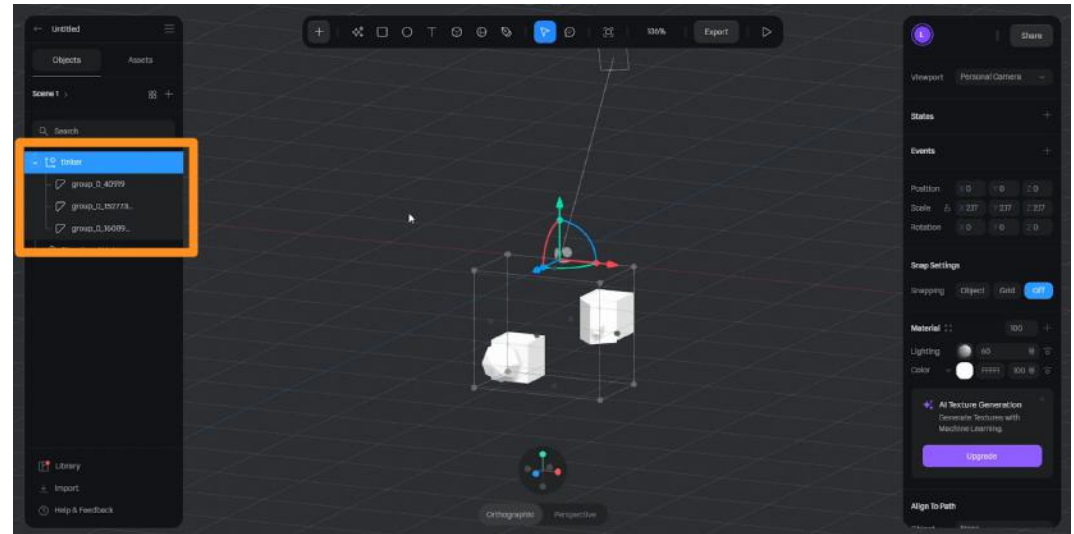
Self Check

Were you able to bring in your model successfully and move it the way you wanted?

Step 2: Edit materials

Preview

This section will show you how to use Spline's highly-customizable material setup to give a different look to each of your shapes.
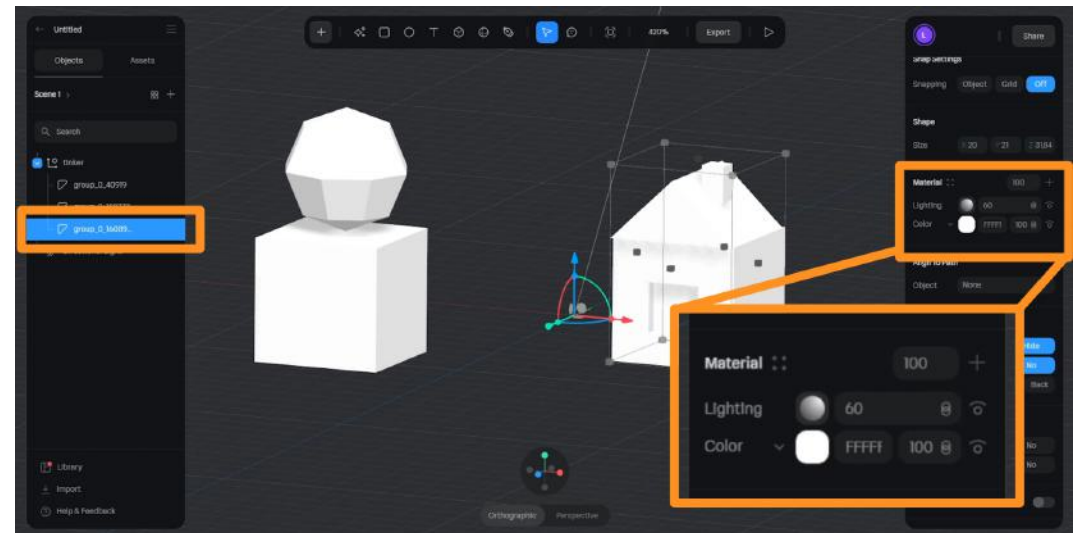
Experiment

ADD MATERIALS

Select the shape to which you want to add a material. As a reminder, shapes grouped in Tinkercad cannot be selected separately in Spline.
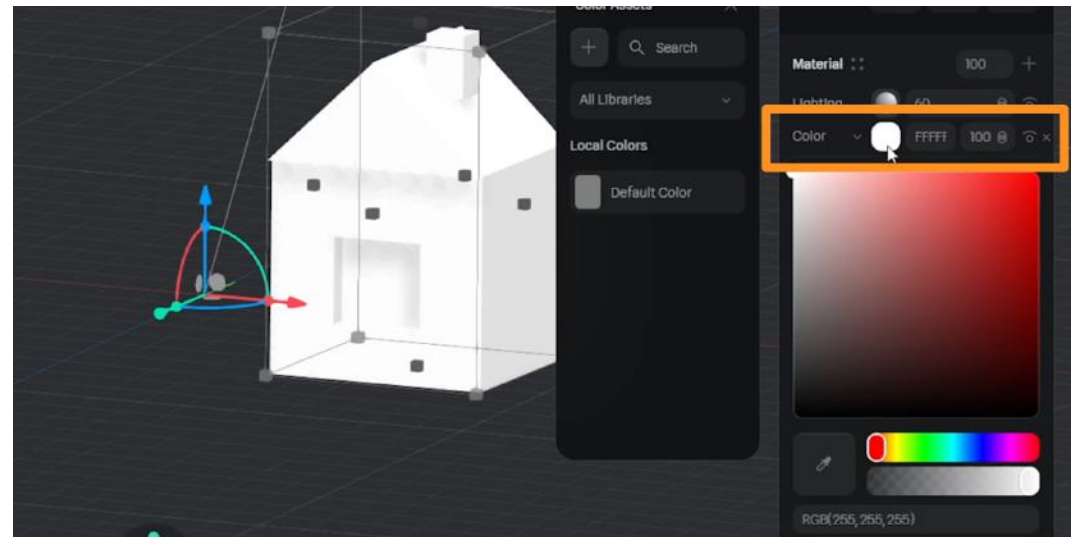
Make sure to **use the left menu panel to select your shape**, since clicking on the viewport may select multiple shapes.

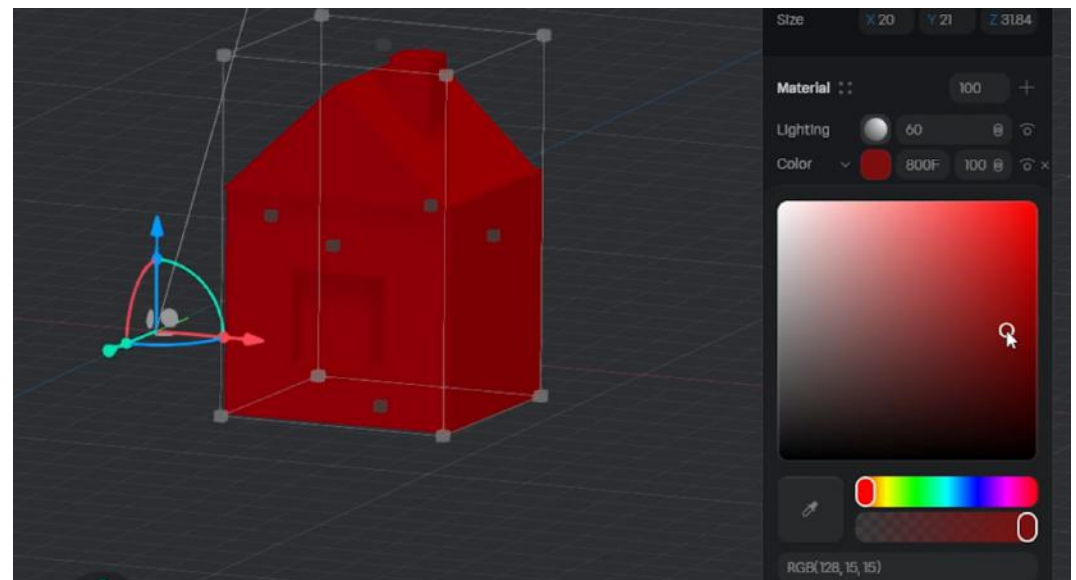On the right menu panel, go to the **Material** section.

The shape will already have a basic material applied to it with a plain, white color.

Click on the white square to change the color of your shape.

Pick the color you want for your shape from the color picker window.

ADD MATERIAL LAYERS

The Materials system in Spline works in layers, which is similar to adding multiple filters on top of each other to achieve the look you want. By using the layers system, you can create more complex materials.

For example, you can give your shape a more interesting color look instead of a solid color. To do this, first, click on the **+ icon** next to the Material section to add a new layer.
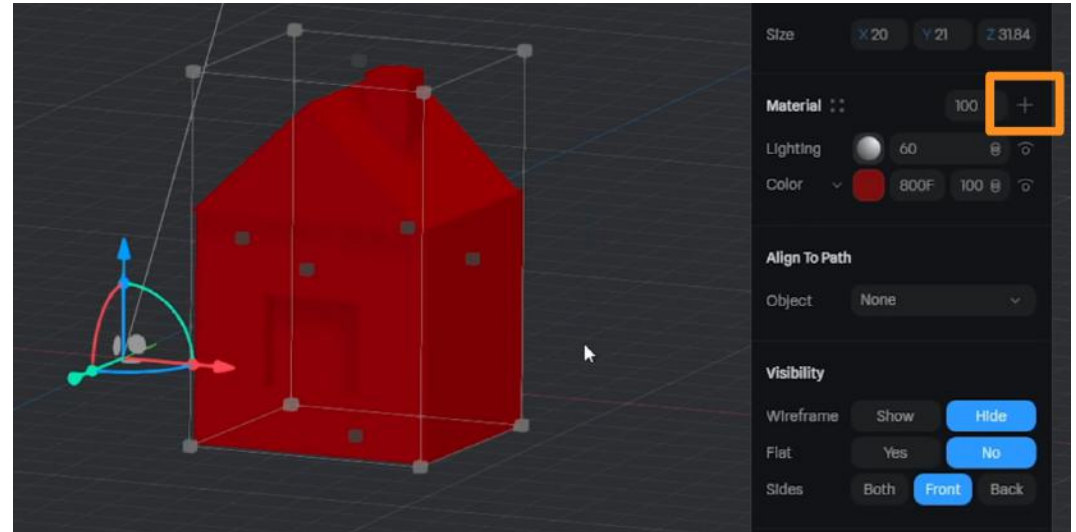
By default, Spline creates a "Color" layer, which goes on top of your previous color and overrides it. You will notice that your shape has turned solid gray, because the gray Color layer is now on top of the previous Color layer with the color you've chosen.
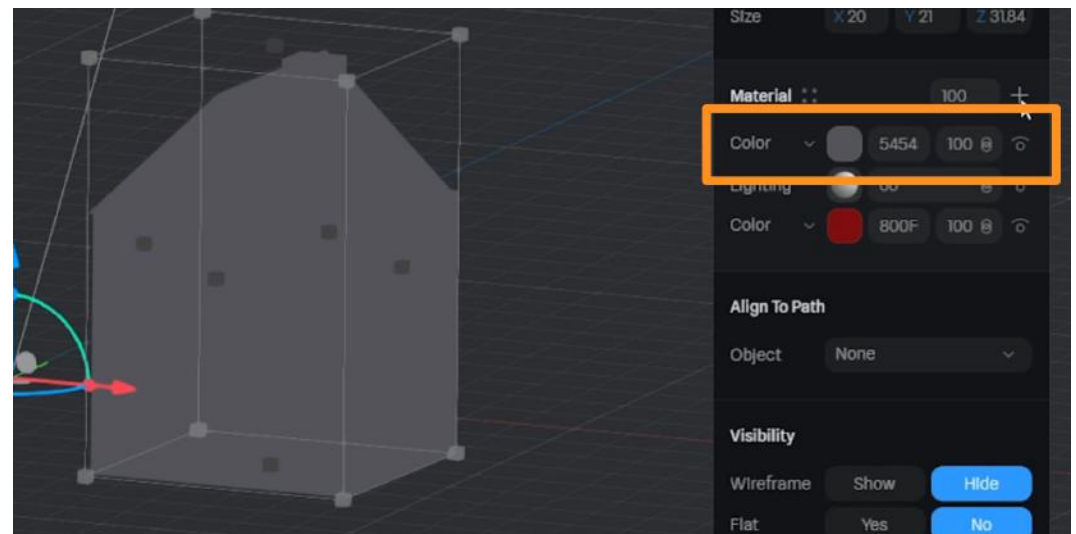
You can change this layer to a Noise layer (or any other type of layer) by clicking on the **dropdown arrow** next to the color layer you just created and selecting "Noise".
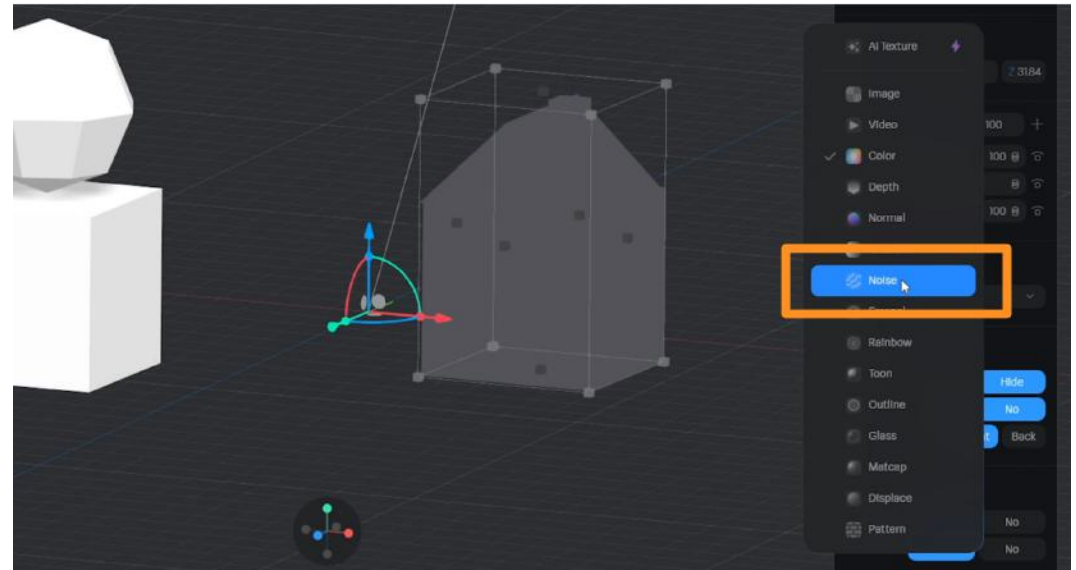

This option will create a layer that has a random noise pattern and 4 different color options. To increase the visual interest of your Noise layer, click on the square next to the Noise dropdown and edit your settings.

Change the **scale settings** until you achieve a grayscale pattern you like. Then, change the four color options as you wish to make your noise pattern more colorful.
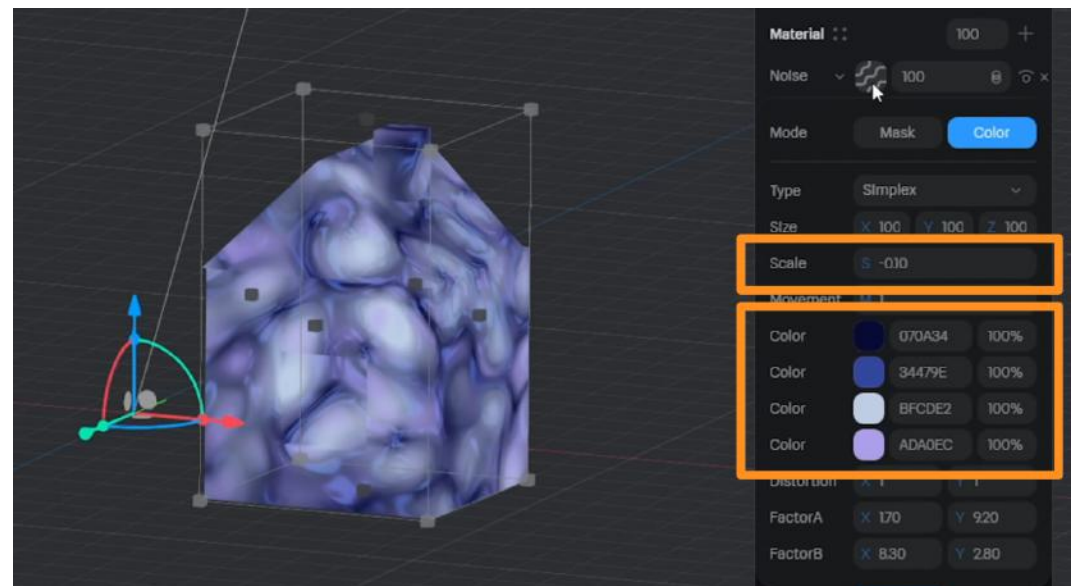
The number "100" next to a layer indicates the **opacity** of that layer. If you bring the opacity of the Noise layer to "50", you will notice that the pattern you've created becomes half-transparent and you can slightly see the original color layer underneath.

This is one of the advantages of working with layers while creating a material in Spline. You can always change the order of the layers, or adjust opacity and other settings to achieve different looks easily.
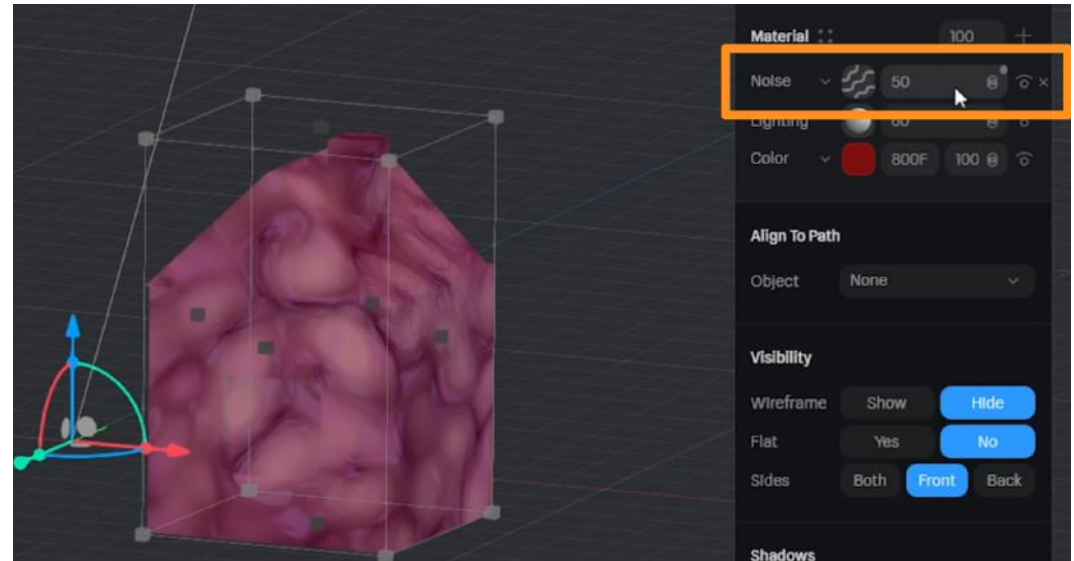
To customize your material even more, add a new layer with the **+ icon** and this time, choose "Fresnel" from the dropdown menu. This layer will add highlights to your shape based on the camera angle.

Adjust the opacity as you wish.
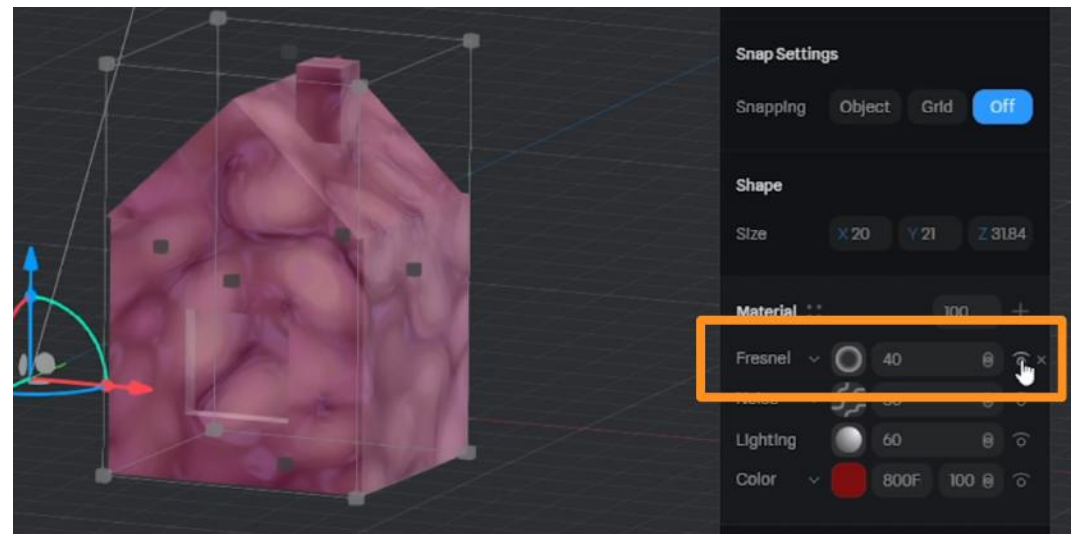
If you wish to see how your material would look without a certain layer, you can hide a layer temporarily by clicking the **eye icon** next to the layer you would like to hide.

This is very helpful when you create a material with many layers and don't remember exactly what each one does.

If you'd like to delete a layer completely, hover over the layer you want to delete and click on the small **x icon** on the right side of the layer.
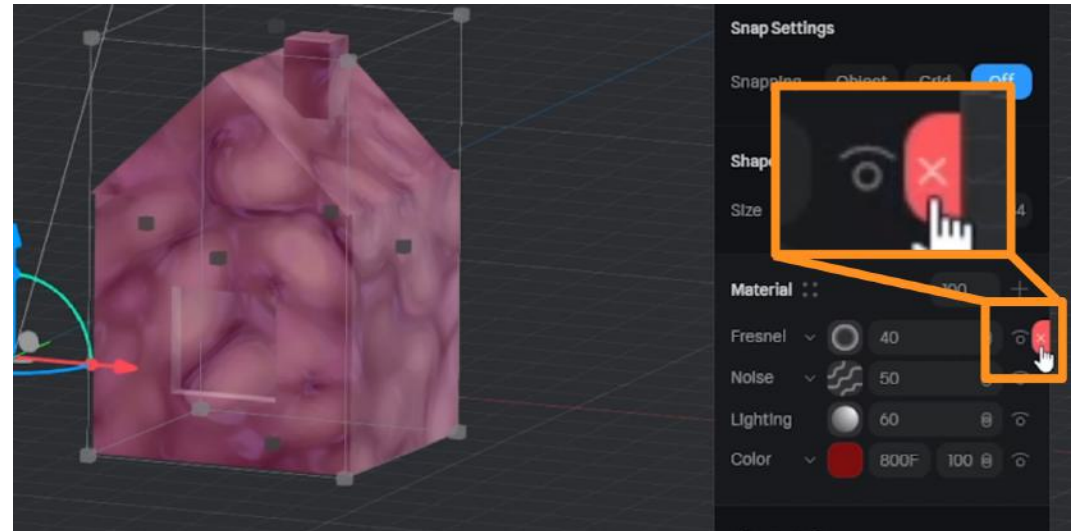
Self Check

Were you able to achieve the look you've wanted using different materials and layers?

Step 3: Animate your model

Preview

After you have your models in Spline and have applied materials to them, you can now animate as you wish. This section will explain how animation States and Events work in Spline and enable you to set up different types of animation sequences.
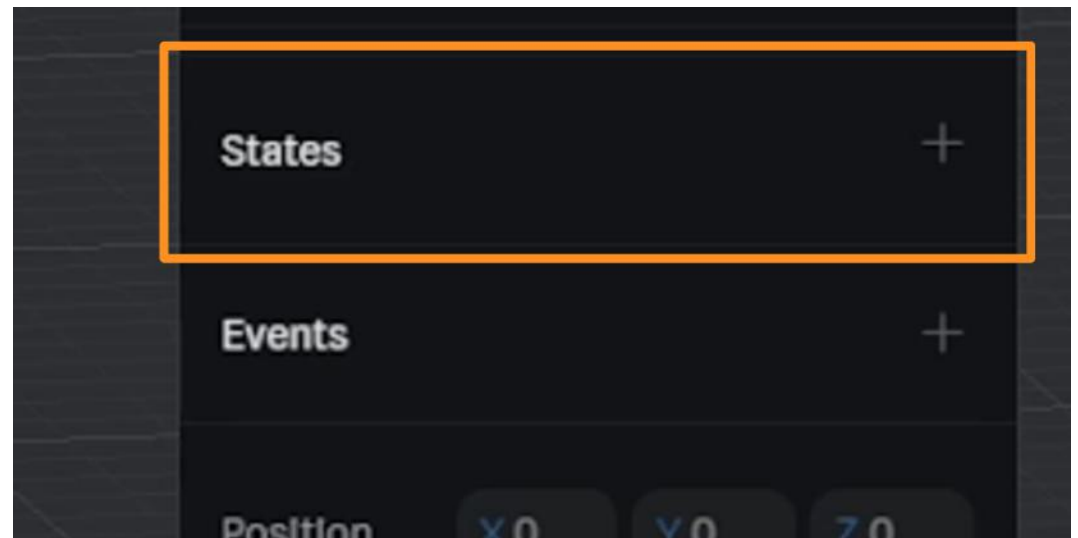
Experiment

ADD STATES

In Spline, **States** act as the defined positions during a shape's animation.

Start by selecting a shape you want to animate and go to the **States** panel on the right sidebar.

Click the **+** icon to add a new State. Two new states will appear: **Base State and State**.

Base state is the beginning position of the animation and has the position your shape was in when you had clicked on the + icon to create States.

State is the next step in the animation and you need to change your shape's location, rotation, and/or scale to create some movement.
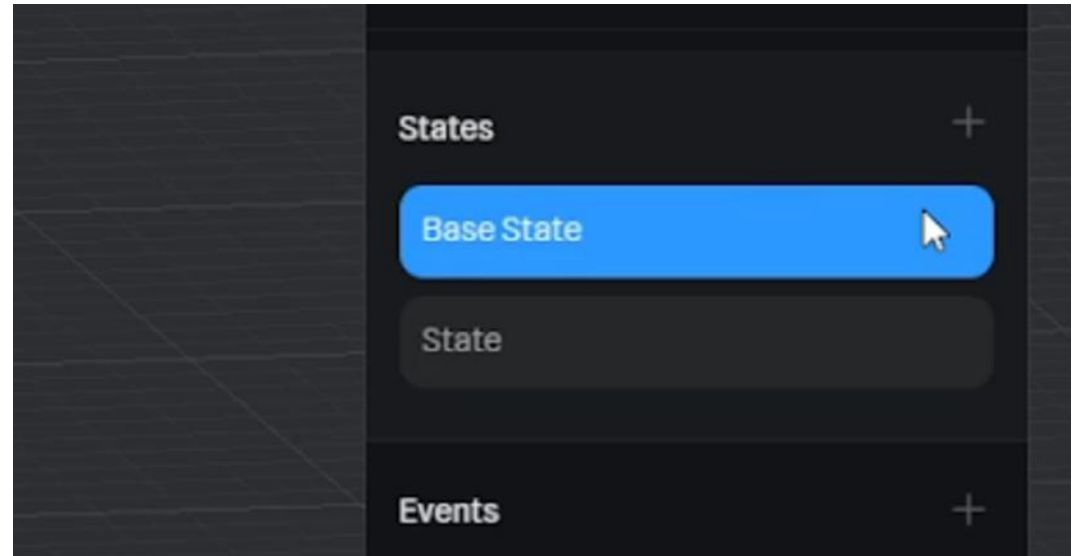
To start animating, make sure "State" is selected and change your shape's location, rotation and/or scale. For example, move your shape to a higher position.

Switching between "Base State" and "State" will show you the differences. These will be the first and second positions of your animation.
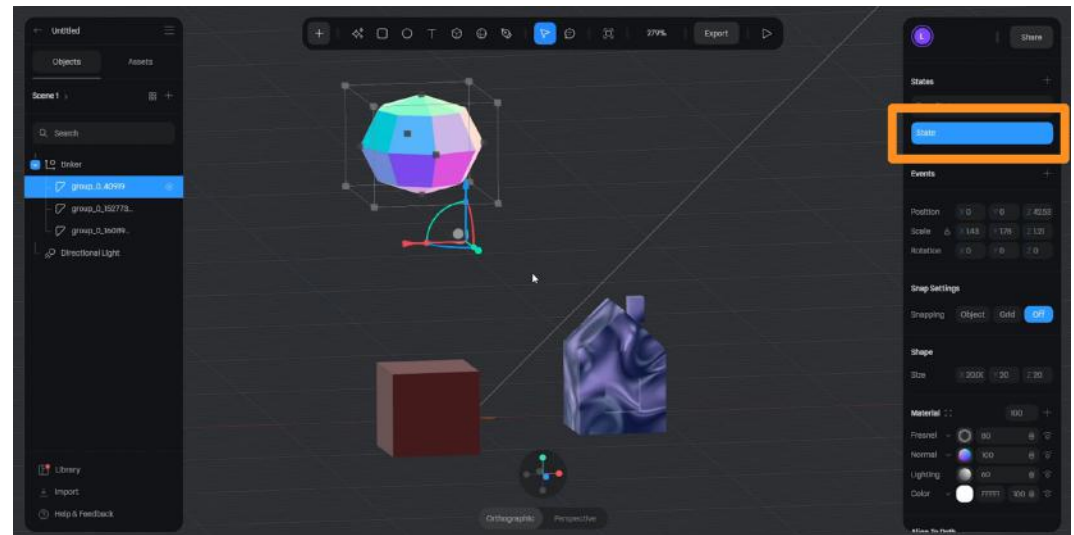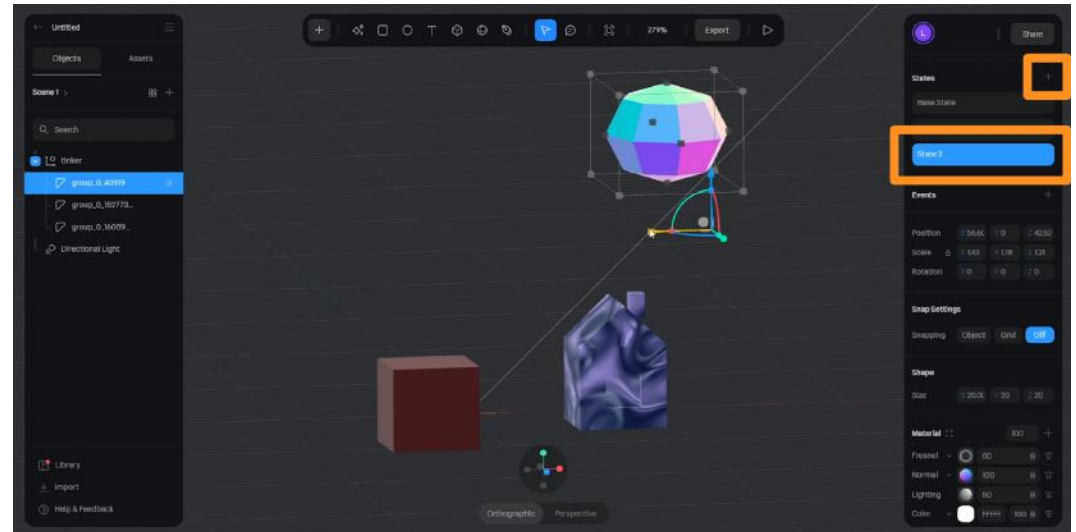
If you'd like to add more positions to your animation, click on the **+ icon** again to create a new state.

Select "State 2" and change your shape's location, rotation and/or scale like before.

By clicking through each state, you can now see the different positions saved to Base State, State, and State 2.
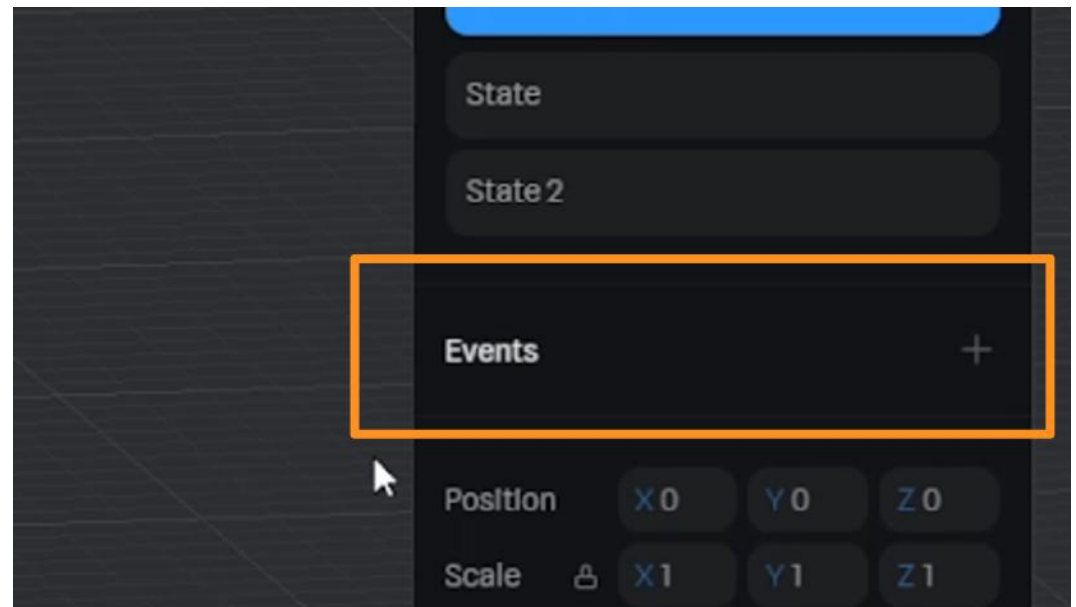
Feel free to add more states to your animation as you wish.

ADD EVENTS

Events describe how and when your animation will react to different triggers on screen, such as mouse movement, clicking, pressing buttons, etc.

To add an Event, select your animated shape, and go to the "Events" panel on the right. Click the "**+**" icon to create a new event.

A new panel will appear for the Event you've created. Under the "Actions" section, select **Transition**.

The Transition option allows you to create animations of your shapes based on the States you have created.
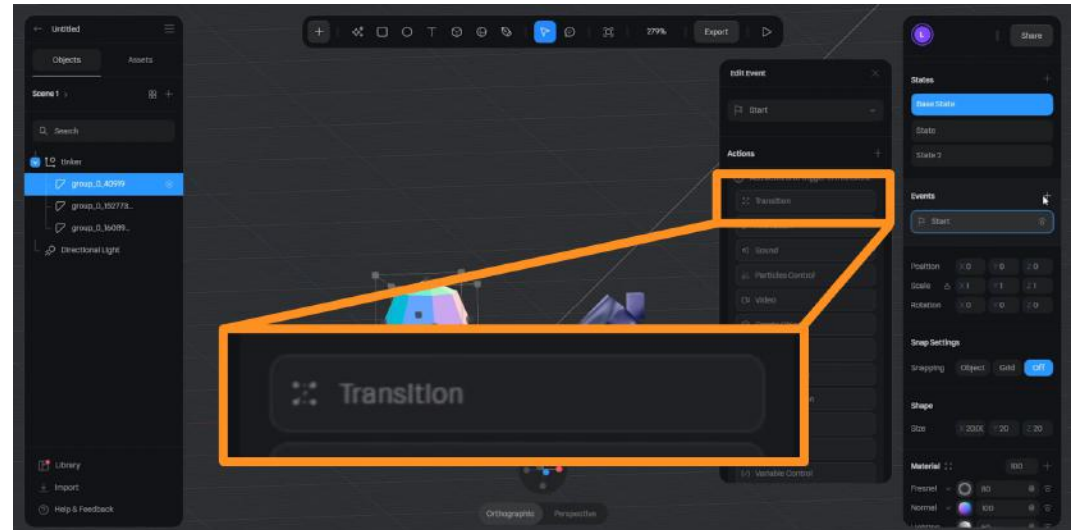

Open the Transitions tab. It will be populated by default with 2 dropdowns.

For dropdown 1, select "Base State". For dropdown 2, select "State". These are the orders of your shape's movement during animation.
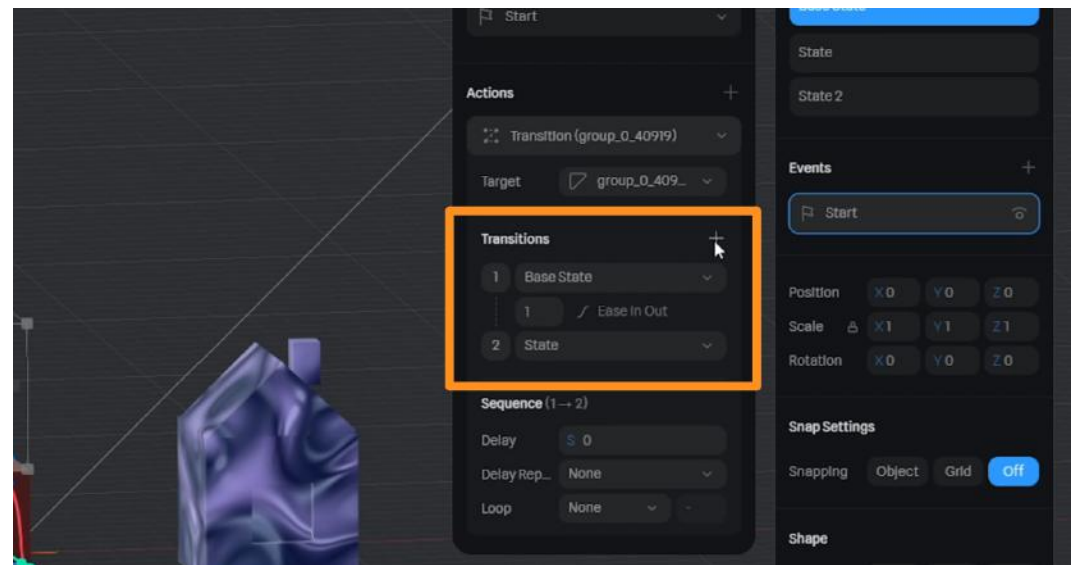
If you have more states created for your shape, add a new dropdown by clicking the **+ icon** in the Transitions section. Select "State 2" for the third dropdown.

Repeat this step as needed based on the number of states you've created. By selecting the states in a different order from the dropdowns, you can change the order of your animation if desired.
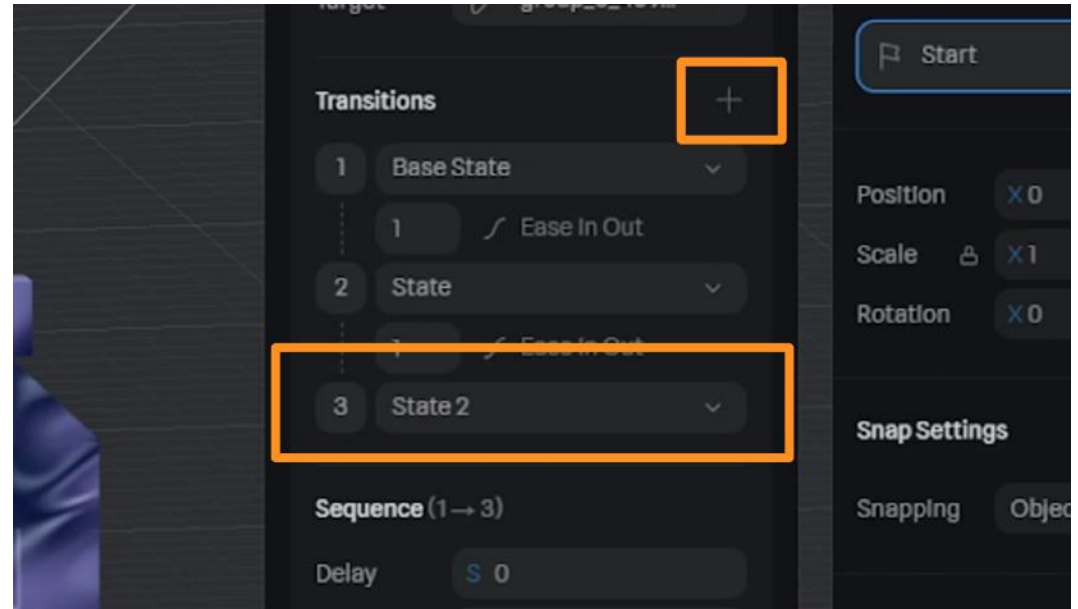
To test your animation, click on the **Play icon** in the top menu. You will see a preview of your Spline project with the animation.

Your animation will play once in the preview. You can still navigate around in the 3D space.

When done testing, click on the **X icon** to close the Play preview window.
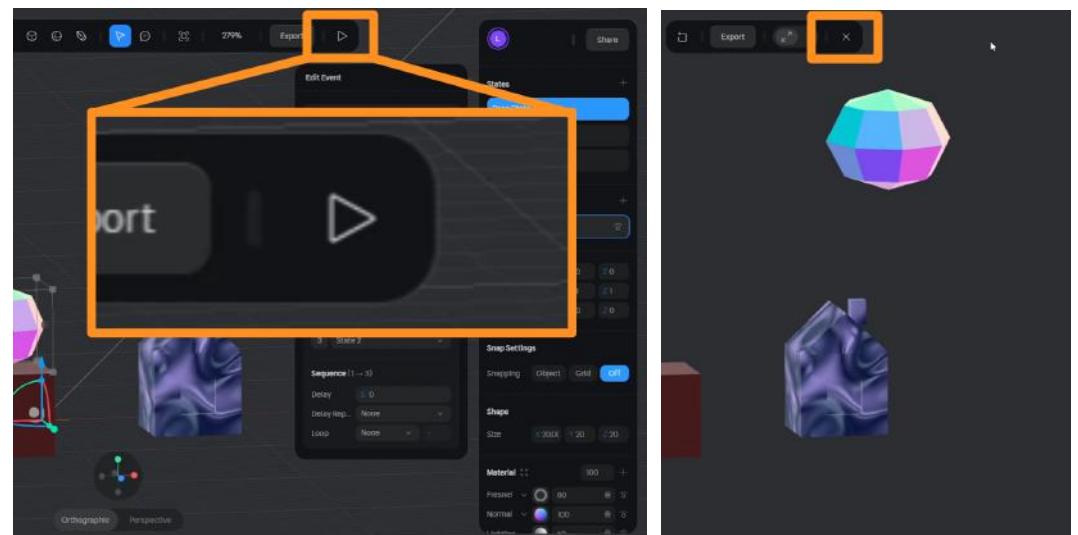
To make your animation loop, instead of playing once, head to the "Sequence" section at the bottom of the event window.
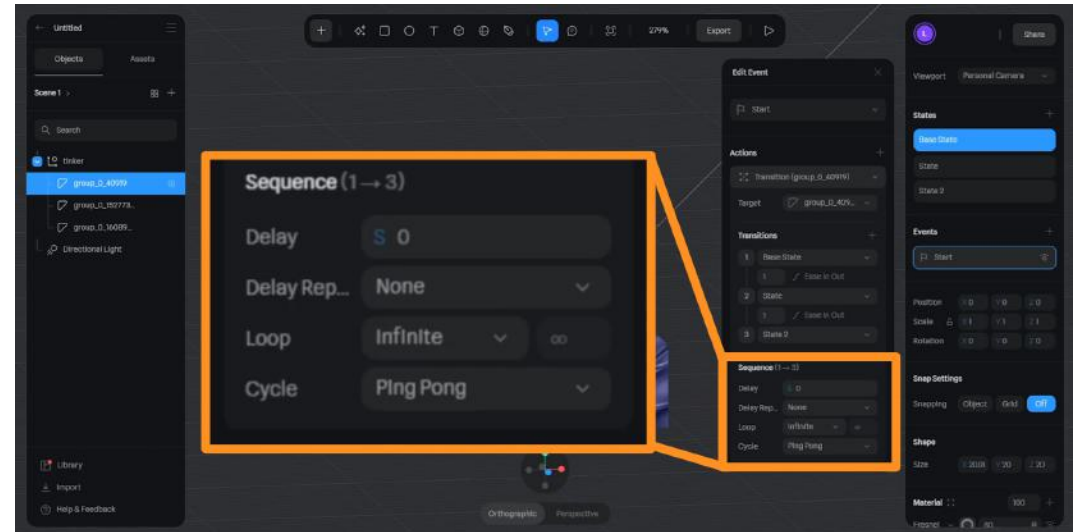
In the **Loop** dropdown, select "Count" for a definite number of loops or "Infinite" for a non-stop cycle.

In the **Cycle** dropdown, select "Ping Pong" to make your animation loop back and forth.

Use the **Play icon** again to test your looping animation.

By default, the animations you create will start as soon as the webpage loads. You can change this and make the animation play based on a specific trigger (mouse movement, keyboard press, etc).

At the top of the Events window, click on the dropdown that says "Start" and select a different trigger.
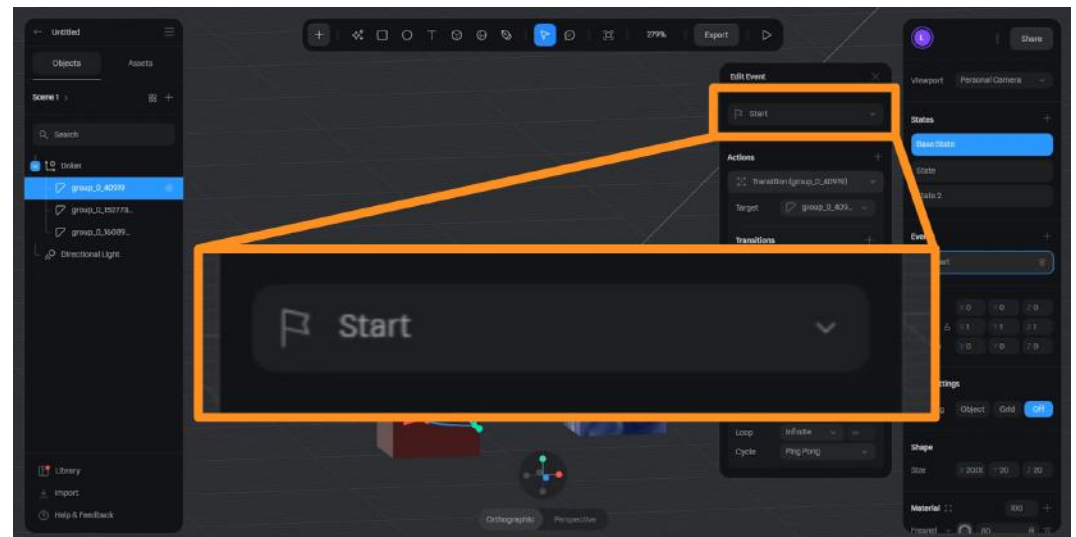
For example, **Mouse Hover** will make your animation start only when the mouse hovers over the animated shape. If the mouse does not move over your shape, the animation will not play.

Choose different triggers and test them by using the **Play icon** at the top menu. These settings will carry over if you choose to add your Spline project into a different application or website, and can help you create an interactive experience for the viewers.
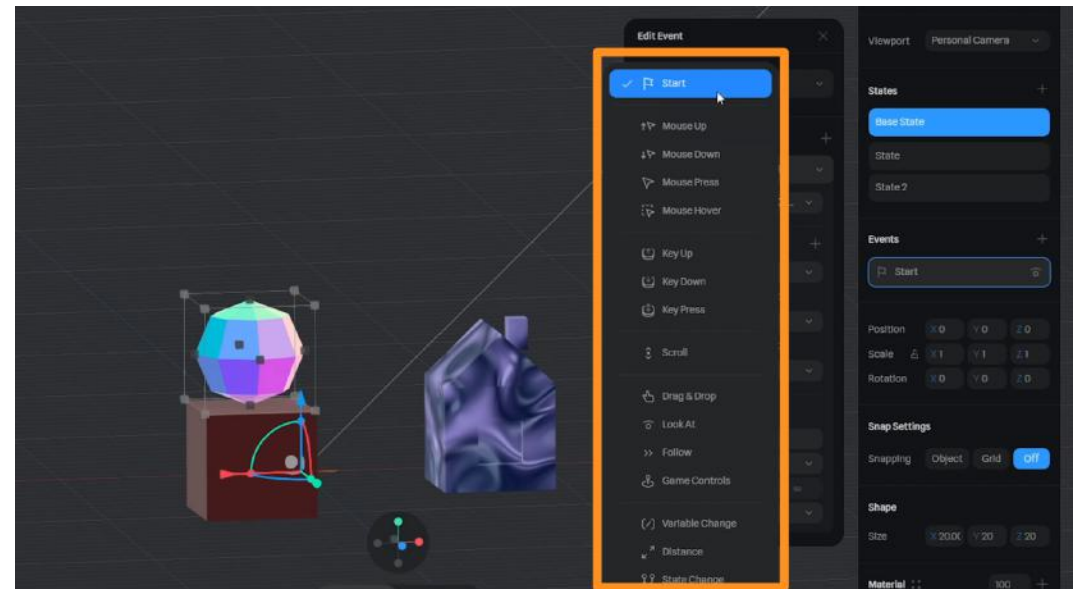
EXPORT FOR THE WEB

To be able to use your Spline project within different applications or websites, you need to export it first.

Click **Export** from the top right corner of the viewport.

Under the **Web** category, select **Viewer** to generate an embed code for your animation. With this code, you will be able to integrate the Spline project you've created into different websites or other web-based applications.

Click on **Copy Embed** to save the code to use in your website or other applications.

Self Check

Could you create the states and events that resulted in an animation you liked?

Lesson Closure

Demonstration of Learning

You now know how to bring your own models into a project in Spline and add custom materials to each object. You have a core understanding of how states and events contribute to creating animations in Spline and how to make them more interactive by adding custom triggers based on user actions.

Exploration Opportunities

Using Spline for materials and animations might come with a bit of a learning curve at the beginning. Feel free to check out the following tutorials or others to get used to the Material and Animation systems in Spline.

How to Create 3D Loop Animations in Spline (youtube.com)
Creating a 3D planet Earth with Spline (youtube.com)
How to Easily Design a Glass Cube in 3D with Spline (youtube.com)

You can use the embed code generated from Spline in a variety of other applications. If you're interested in learning how to use the embed code in a personal website of your own, check out the following lesson:

Create a Personal Website with 3D Animations Using Weebly