

The Principles of Animation

Timing: Lesson 10

Understanding the Principle of Timing

Timing is a critical part of animating that establishes physical realism and enhances storytelling and staging. This principle is achieved through both physical timing and theatrical, emotional timing.

Proper timing helps objects appear to follow the laws of physics, making your animation look more realistic and believable. For instance, in physical timing, heavy objects take longer time and greater effort to move than light objects. If a character is picking up a large, heavy suitcase versus a small purse, the suitcase will be lifted much slower than the purse.

In theatrical timing, animators use the speed of movements to enhance the emotion of a scene or character. For example, if a character looks over his left shoulder slowly, he might be noticing an object pass by or acknowledging a sound he heard. On the other hand, if the character looks over his shoulder very quickly, the audience will perceive that he is startled or shocked by something in the scene.

Related Project Files

The following related project files are located in the ASCurriculum-Lesson10.zip file that accompanies this course:

- **Tutorial 10.1 Start.anme** - Use this file as a starting point for the lesson. It contains the elements that you will use in the project.
- **Tutorial 10.1.anme** - A final version of the project that you will complete in this lesson.
- **Tutorial 10.1.mov** - A final render of the project that you will complete in this lesson.
- **Tutorial 10.1 How To.mov** - A step-by-step video tutorial of the project that you will complete in this lesson.

Tools Used

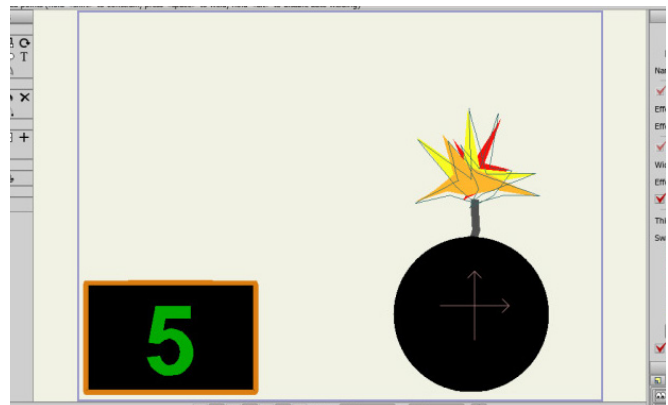
- **Select Points** tool, **Translate Points** tool, **Scale Points** tool

Tutorial 10: Overview

In this tutorial, you'll use the principle of timing to make a timer count down from 10 to 1 by displaying a different number per second. You'll also use timing to burn the wick of a bomb as the timer ticks closer to 1 and will synchronize a sound when the bomb explodes.

This tutorial will display both aspects of timing. The countdown will physically be timed to coincide with seconds, and it will create suspense and emotional timing as the audience waits for the explosion.

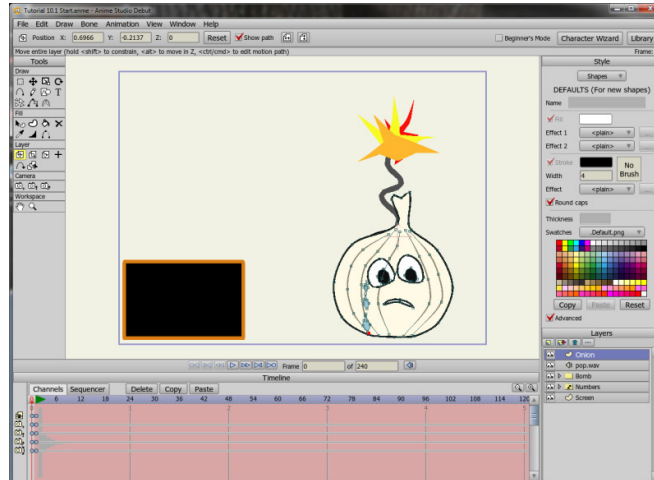
In Anime Studio, the **Timeline** and **Sequencer** are the main tools that help us accomplish this principle.



Tutorial 10: Step-by-Step

Step 1: Open the Project File

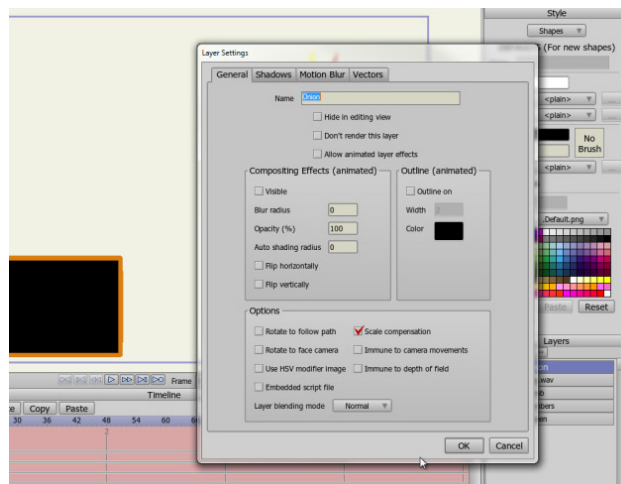
To begin, load **Tutorial 10.1 Start.anime** that accompanies these tutorials. This file consists of three items: a timer, a bomb, and an onion. There is also a sound file.



Step 2: Hide the Onion

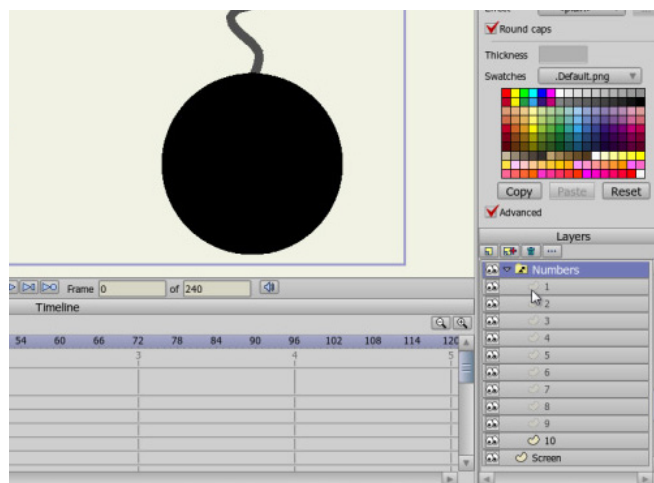
You'll hide the onion until the end of the animation. Double-click the **Onion** layer in the **Layers** window and uncheck the **Visible** option to hide it.

Save your project at this point, naming it Lesson10_YourLastName.



Step 3: Examine the Switch Layers

To integrate the principle of timing we'll animate the timer to change a number once every second. The speed of the animation is 24 frames per second, which means you'll need to change a number on the timer every 24th frame. The numbers are arranged in switch layers, similar to the eyes and mouths you've already worked on in this course.



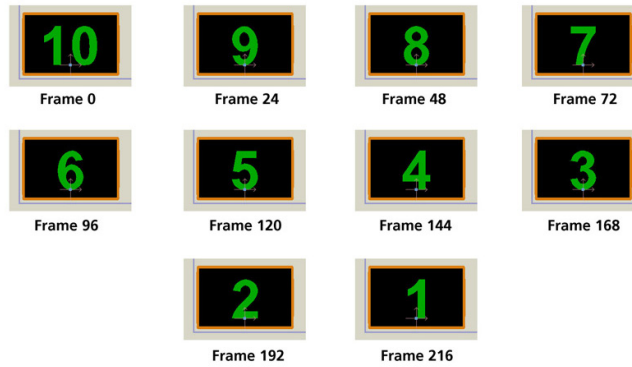
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Step 4:

Counting Down the Timer

Advance through the timeline and at every 24th frame change the numbers as follows:

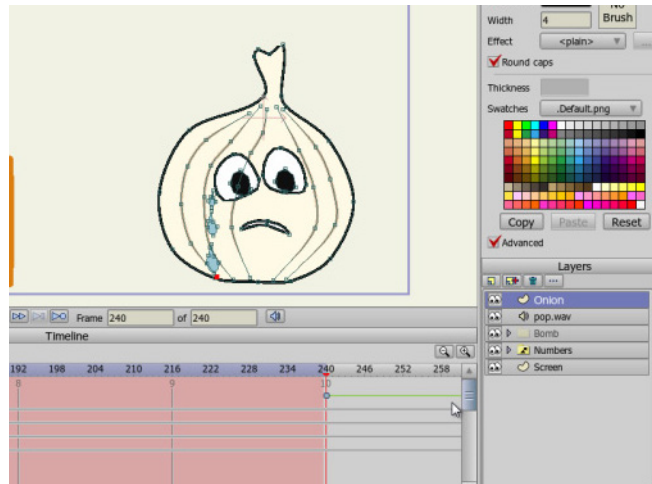
- Frame 24: Change to 9
- Frame 48: Change to 8
- Frame 72: Change to 7
- Frame 96: Change to 6
- Frame 120: Change to 5
- Frame 144: Change to 4
- Frame 168: Change to 3
- Frame 192: Change to 2
- Frame 216: Change to 1



Step 5:

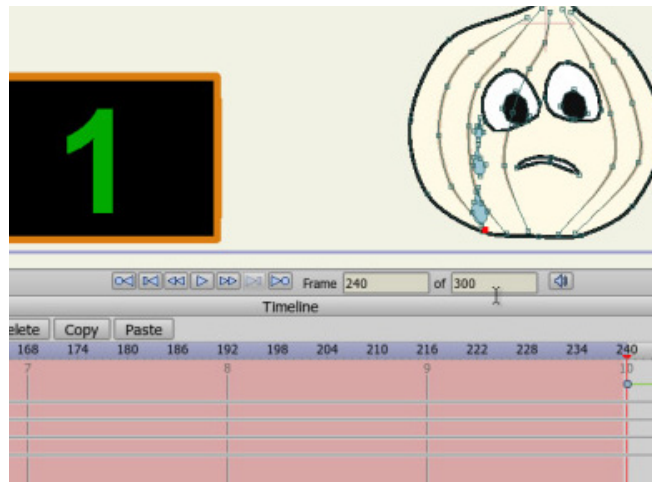
Making the Onion Appear

Now advance to **Frame 240**, where the explosion is supposed to take place. Double-click the **Bomb** layer in the **Layers** window and make the bomb invisible. Then double click the **Onion** layer and make it visible. Instead of exploding, the bomb turns into an onion. This little element of surprise will have more to do with the sound effect that happens when the bomb explodes later on in this lesson.



Step 6: Lengthening the Animation

Anime Studio creates a 240-frame project by default. You can increase or decrease this number quite easily by changing the number of frames above the timeline. There are two number boxes above the timeline. The first number designates the current frame, and the second number designates the total number of frames in the animation. Change the second number to **300**. This will add more frames at the end of the animation.



Step 7: Place the Sound in the Sequencer

You can use the **Sequencer** to slide elements forward and backward in the scene. Switch to the **Sequencer** tab in the timeline, then select the sound file (which is represented by a wave form), and slide it to the right. When you reach frame 240, you'll see where the bomb disappears and the onion appears. Position the sound right at that point. Now play the animation. When the bomb explodes, you'll hear a little pop.

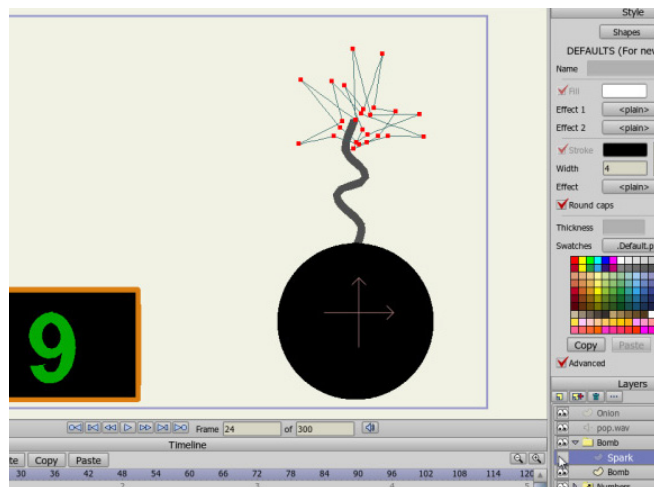


The **Sequencer** provides another view of the timeline, displaying each layer as a block of time. Keyframe changes are not displayed in the sequencer, but you can create keyframe changes in this view. The sequencer allows you to easily move a layer forward or backward in time. Move the clip toward the left to have it start sooner, or toward the right to have it start later. The green arrow in the time ruler, located at the top of the Sequencer timeline, indicates the frame at which the currently selected clip will start.

Step 8: Hide the Spark

As the timer clicks down, you want the wick of the bomb to burn down. You'll do this by selecting a couple of points on the wick and moving them down along its path. Then you'll add other points to the selection and move them down, and continue on until the wick is gone.

To begin, click the **Spark** layer in the **Layers** window and hide it temporarily by clicking the **Visibility** icon. Then select the Bomb layer.



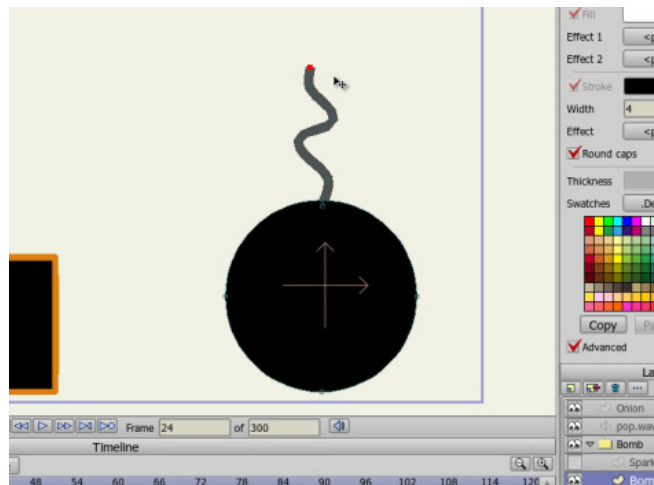
Step 9: Burning the Wick



Move to **Frame 24**. Use the **Select Points** tool to select the top points in the wick.



Then use the **Translate Points** tool to move the points down along the wick, trying to move them about 10 percent of the distance (it doesn't have to be exact).



For further information on the **Select Points** tool, refer to the Anime Studio Debut Users Manual.

For further information on the **Translate Points** tool, refer to the Anime Studio Debut Users Manual.

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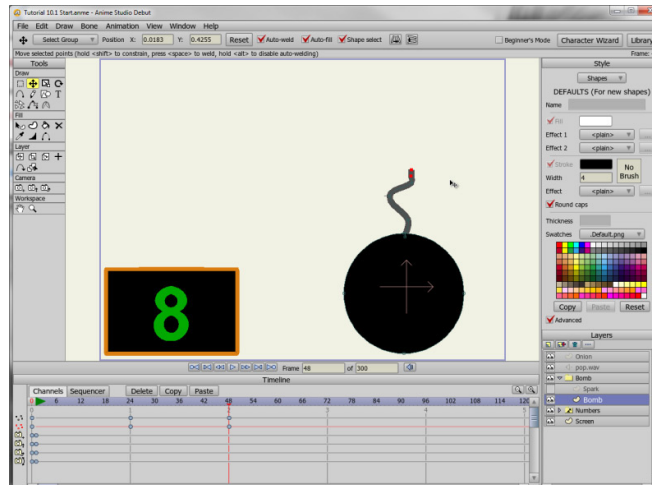
Step 10: Burning the Wick (continued)



Select **Frame 48**. Use the **Select Points** tool to reselect all of the points near the top of the wick. You'll pick up the points you already moved, along with any other points that are near the top of the wick.

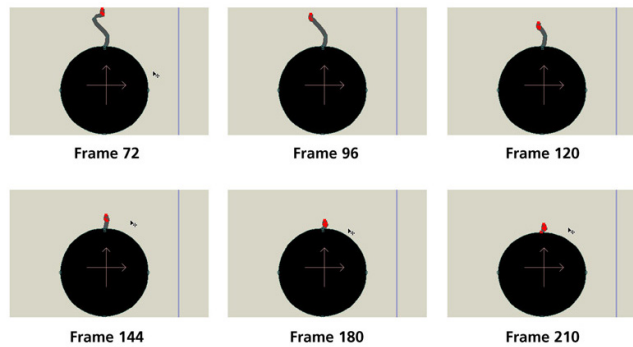


Then use the **Translate Points** tool to move all of the selected points down toward the bomb.



Step 11: Burning the Wick (continued)

Continue in this manner, alternating between the **Select Points** tool and the **Translate Points** tool until your wick is barely showing at **Frame 216**.

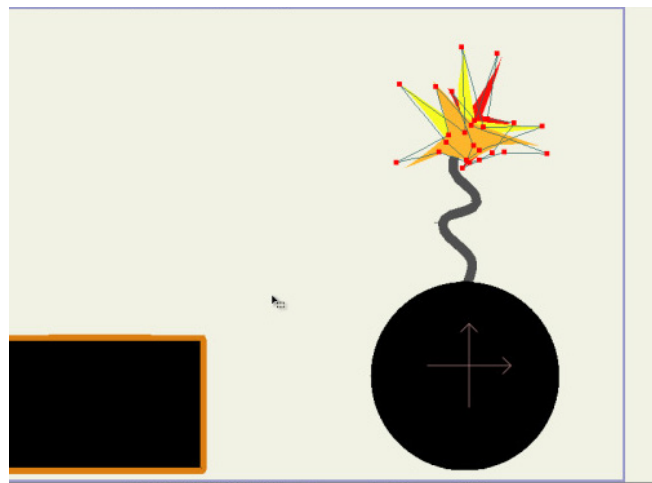


Step 12: Select the Flame Points

Now you have to make the Spark follow the wick. Move to **Frame 24**. Make the Spark visible by clicking in the **Layers** window to turn the **Visibility** icon back on. With the Spark layer selected, you'll notice that only some of the points are selected in the sparks. If you accidentally move the spark, just choose **Edit > Undo** to undo the movement.



Then choose the **Select Points** tool and make sure that you have all of the Spark points selected before you move the spark.



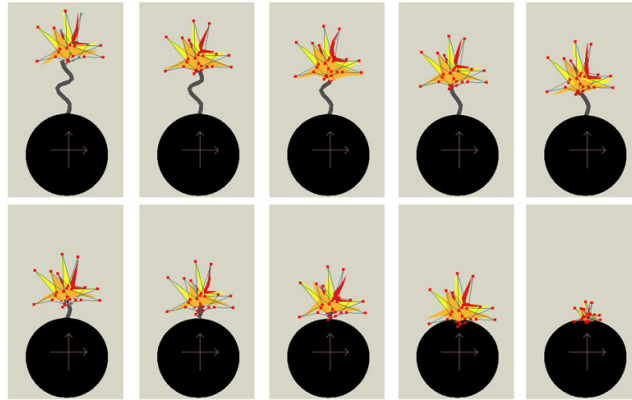
Step 13: Moving the Flame



Move to **Frame 17** and tweak the position of the spark so that it follows the position of the wick. Advance through the timeline in this manner, making sure that the spark is always positioned at the new end of the wick.



When you reach Frame 240, use the **Scale Points** tool to make the spark smaller as if it's fading away.



For further information on the **Scale Points** tool, refer to the Anime Studio Debut Users Manual.

Step 14: Preview and Save the Project

Play back the animation and watch the wick gradually burn down as the spark follows it. At the end, the bomb disappears with a pop and the onion appears. If you're satisfied with the animation, save the project and then render your animation.

