

4

Animating in Flash

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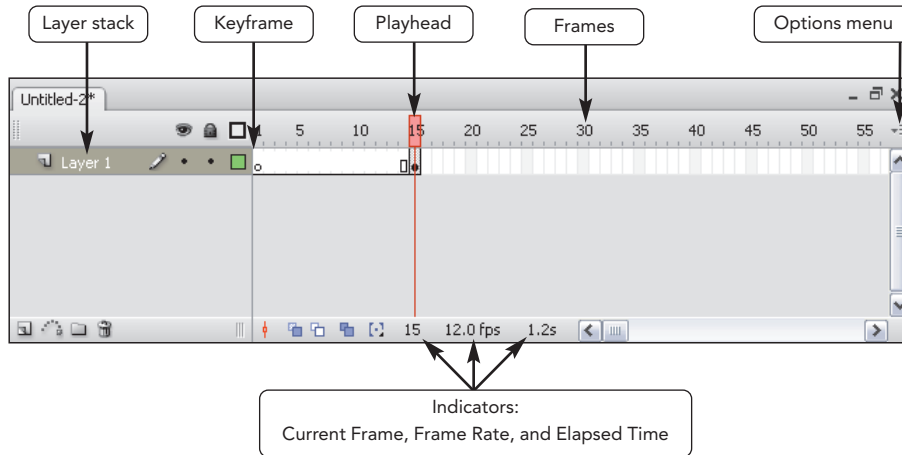
Flash has a reputation as a powerful and robust animation tool. If you know other animation tools, such as Adobe After Effects or Adobe Director, you might be looking for similarities. It's actually easier to learn the animation capabilities of Adobe Flash CS3 Professional if you don't know other animation programs, because you'll have no preconceived notions of how you think it might work.

This chapter introduces you to the **Timeline**, which plays a significant role in producing animations. The **Timeline** lets you work with keyframes, blank keyframes, frame-by-frame animation, and onion skinning. If these are new terms to you, they won't be for long. This chapter also covers setting the frame rate (and how it affects playback speeds). By the end of this chapter, things should really get moving for you, all puns intended!

Understanding the Timeline

Understanding and working with the **Timeline** is essential to creating animations in Flash CS3. The illustration shown here identifies the elements of the **Timeline** you'll be working with in this chapter.

The following chart describes the **Timeline** features:



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Timeline Features	
Feature	Description
Frame	Represents a unit of time in an animation. Just like film, Flash CS3 divides lengths of time into frames. Frames with no content are represented by white squares. Frames with content are shaded. Frames carry the content of the previous keyframe. The frame rate determines how much time each frame takes up. For example, if your movie's frame rate is 12 fps (frame per second), one frame will take up 1/12 of 1 second. If an object is on the Stage for 24 frames, it will appear visible for 2 seconds in the movie. You'll learn more about frame rates later in this chapter.
Keyframe	Defines a moment on the Timeline when content is inserted or actions or animation changes occur. A keyframe with content is represented by a solid dot; a blank keyframe is represented by an empty dot. See the Working with Frames and Keyframes chart following Exercise 1 for more information on keyframes.
Playhead	Indicates the currently selected keyframe. Drag (or scrub) the playhead, which is the red rectangle with the long red line, back and forth on the Timeline to quickly preview your animation.

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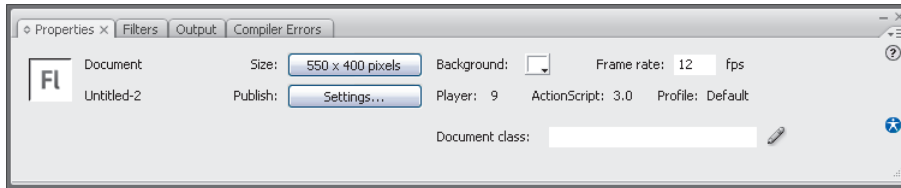
Timeline Features *continued*

Feature	Description
Options menu	Gives you several options for changing the size and therefore the number of frames visible at one time on the Timeline . The default view, Normal, displays the frames at an appropriate size for most projects. However, when you start creating longer animations, you will need to set the Frame view to Small or Tiny so you can see more frames at one time. You can also use the Placement options to dictate whether the Timeline appears above, below, left, or right of the document.
Layer stack	Organizes the elements of an animation and controls the order in which they stack on top of each other. In Flash, you can animate layers independently. Each layer has options for hiding or showing the layer, locking it, and displaying its contents as outlines. Immediately below the layer stack are buttons to insert a new layer, add a layer folder, and delete a layer. You'll learn more about layers in Chapter 5, "Shape Tweening."
Current Frame	Displays the current position of the playhead and the frame number of the currently selected frame.
Frame Rate	Displays the number of frames per second at which the movie attempts to play on the user's browser or computer. Double-clicking the frame rate value is a quick way to access the Document Properties dialog box.
Elapsed Time	Displays the time elapsed (at the selected frame rate) from Frame 1 to the current playhead location.

1 Setting Document Properties

The document properties are general specifications—such as **Stage** dimensions, background color, and frame rate—that affect your entire project. When you start a new project in Flash CS3, you should set the document properties. This exercise shows you how.

- 1 Copy the **chap_04** folder from the **Flash HOT CD-ROM** to your desktop. Open a new file by choosing **File > New > Flash File (ActionScript 3.0)**. Choose **File > Save**.



- 2 In the **Save** dialog box, name the file **movie.fl**, and save it in the **chap_04** folder. Make sure the **Property inspector** is visible. If it's not, choose **Window > Properties > Properties**.

Notice the following default document properties: the default Stage dimensions are 550 x 400 pixels, the default movie background is white, and the default frame rate is 12 frames per second. You'll learn how to change each setting in the following steps. Document class is empty by default; you'll learn more about this document property in Chapter 12, "ActionScript Basics."

- 3 In the **Property inspector**, type **24** in the **Frame rate** field.

For every second of your animation, 24 frames will play. You'll learn more about frame rates in the next exercise.

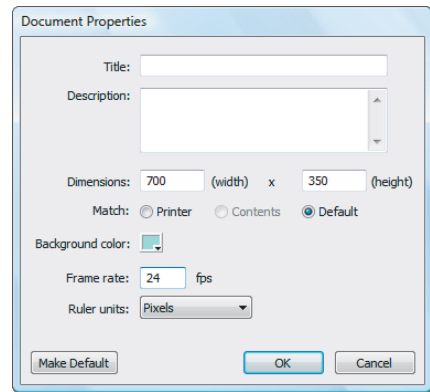
- 4 In the **Property inspector**, click the **Background** color box to display the default color palette. Select a light blue to change the background color of your movie.

- 5 In the **Property inspector**, click the **Size** button to open the **Document Properties** dialog box.

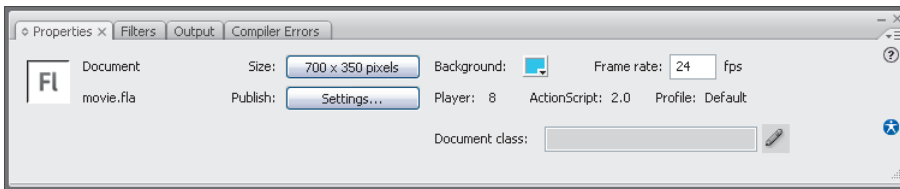
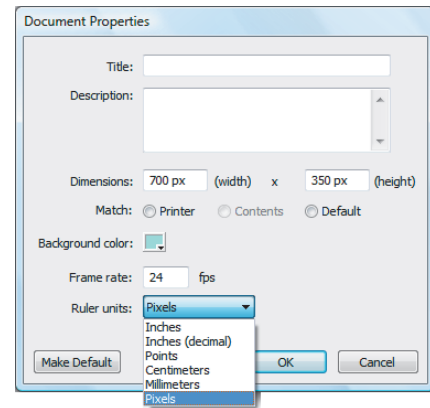
In the Document Properties dialog box, you can enter a title and brief description of your movie, as well as set frame rate preferences, movie dimensions, background color, and rule measurements for your entire movie.

6 Type **700** in the **width** field and **350** in the **height** field.

These fields control the absolute pixel dimensions of the Stage. You will learn other ways to control the size of your movie in Chapter 17, “Publishing and Exporting.”



7 Click the **Ruler units** pop-up menu, which contains several ways to display the ruler units on your **Stage**. Leave this option set to the default—**Pixels**.



8 Click **OK** to close the **Document Properties** dialog box.

Notice the values in the Property inspector—the dimensions, background color, and frame rate have changed to reflect the settings you specified in the Document Properties dialog box.

You can quickly use the Property inspector at any point to change the movie’s background color or frame rate. In addition, you can use the Size button to access the Document Properties dialog box, where you can change the Stage dimensions and ruler units. However, avoid changing dimensions once you have started adding content to your Stage. Changing Stage dimensions at this point offsets the position of your artwork, which can be difficult to fix.

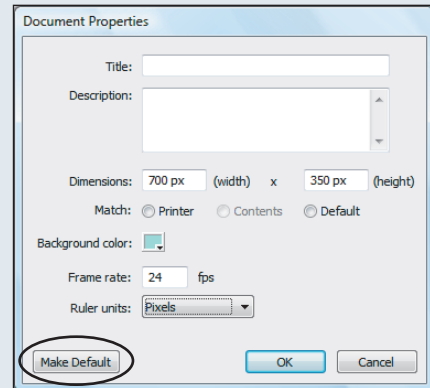
9 Save your changes, and leave **movie.fla** open for the next exercise.

TIP:



Changing the Default Document Properties

When you create a new movie, the default **Stage** size is 550 x 400 pixels with a white background and a frame rate of 12 fps. These settings may not be appropriate for most of your projects. But there's good news—you can quickly redefine the default settings so they better fit your needs. Simply change the document properties to match the settings you need, and click the **Make Default** button (as shown in the illustration here). The next time you create a new movie, it will already have all the properties you specified. Pretty cool!



Understanding Keyframes and Frames

Before you start creating animations, you need a better understanding of two terms—frames and keyframes. As mentioned previously, in Flash CS3, the **Timeline** represents the passing of time, with each slot on the **Timeline** representing an individual **frame**. **Keyframes** are a special type of frame that represent a change in the content of your movie.

When you open a new document, Flash always inserts a blank keyframe at **Frame 1**. If you add artwork to **Frame 1** and insert 20 new regular frames, the image on **Frame 1** will persist until the last frame (**Frame 21**). To change the appearance of an animation, you must add new keyframes. If you want to change your artwork on **Frame 2**,

you first insert a new keyframe on **Frame 2** and then make the change on the **Stage**. Again, a keyframe will indicate a change in content between two frames.

If you've never worked with animation before, these concepts may seem foreign to you. Not to worry, you'll have lots of opportunities to work with frames and keyframes in this chapter.

Before you start the rest of the hands-on exercises, you need to identify and create frames and keyframes on the **Timeline**. The following chart describes each in more detail, including keyboard shortcuts where available:

Frames and Keyframes

Feature	Description
Frame	Although the Timeline in Flash CS3 has <i>slots</i> for frames, you have to define them as frames or keyframes in order for the content to exist at that point in the movie. Different layers can have different numbers of frames. For example, Layer 1 could have ten frames while Layer 2 has only one. There cannot be gaps between frames; when you insert a frame, all of the previous slots are also defined as frames. If you insert frames between keyframes, you will lengthen the time of your animation without affecting the contents. To insert frames, select any slot(s) or existing frame(s) on the Timeline and press F5 , or choose Insert > Timeline > Frame .
Keyframe	A keyframe indicates a change in content or motion between frames. A keyframe containing artwork is represented by a solid black circle. By default, when you add a new keyframe in Flash CS3, the content (except for actions and sounds) is copied from the previous keyframe. Adding a keyframe will not, by itself, change the artwork. To insert a new keyframe, select any slot or frame on the Timeline to select it, and then press F6 or choose Insert > Timeline > Keyframe . (Note: A keyframe will be added if you have artwork in a previous frame or keyframe. If the previous frame is blank, pressing F6 will add only a blank keyframe.)
Blank keyframe	A blank keyframe is a keyframe without any artwork. By default, when you create a new document, the Timeline contains one blank keyframe, which you can identify by the empty circle icon. (As soon as you create or place artwork on the Stage , it becomes a regular keyframe, and the empty circle icon changes to a solid black circle.) A blank keyframe can contain actions and sounds. You will learn more about sound in Chapter 14, “ <i>Sound</i> ,” and more about actions in Chapter 12, “ <i>ActionScript Basics</i> .” Inserting a blank keyframe on the Timeline will remove any content, including actions and sounds, in that layer from the Stage at that point. To insert a blank keyframe, select any slot or frame on the Timeline , and then press F7 or choose Insert > Timeline > Blank Keyframe .
Clearing frames	Clearing a frame removes the contents of the frame but leaves the frame itself. This process will not reduce the number of frames in a layer. To clear a frame or frames, select the frame(s), and then press Alt+Backspace (Windows) or Opt+Delete (Mac) or choose Edit > Timeline > Clear Frames .
Clearing keyframes	If you clear a keyframe, this process will simply convert a keyframe to a regular frame. Choose Edit > Timeline > Clear Frames , or press Shift+F6 . You can also clear a keyframe by right-clicking (Windows) or Ctrl-clicking (Mac) a frame and choosing Clear Keyframe from the contextual menu.
Removing frames	If you need to delete frames, keyframes, or blank keyframes, select the frames on the Timeline , and then press Shift+F5 or choose Edit > Timeline > Remove Frames . You can also remove frames by right-clicking (Windows) or Ctrl-clicking (Mac) a frame and choosing Remove Frames from the contextual menu.

Creating Frame-by-Frame Animations with Keyframes

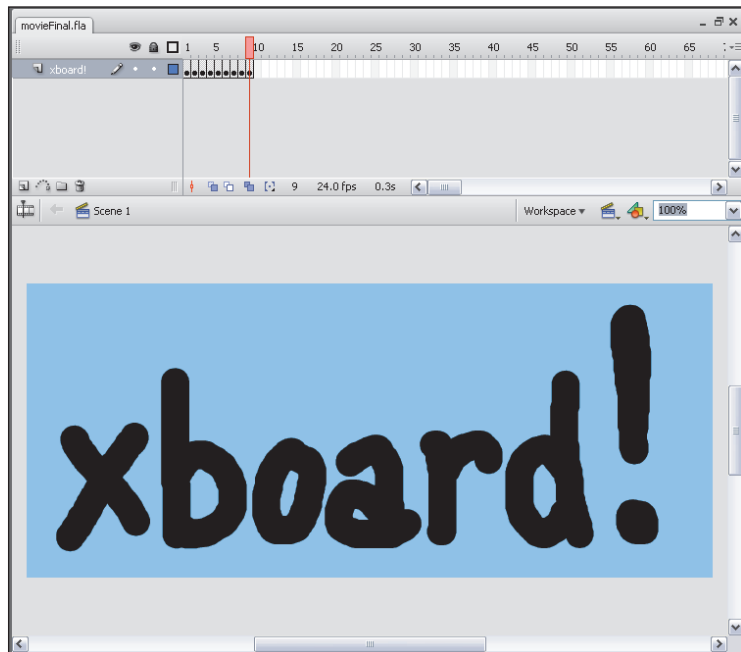
A common animation technique is to make a word appear as though it is being written before your eyes. You can achieve this effect easily using keyframes. When you insert a keyframe, Flash CS3 copies the content of the previous keyframe to the newly created keyframe, which you can then change to create an animation. In this exercise, you'll learn how to make the word *xboard!* animate on the **Stage** using frame-by-frame animation.

- 1 Open **movieFinal.fla** from the **chap_04** folder.

The easiest way to understand animations is to look at a finished example, such as the one in **movieFinal.fla**.

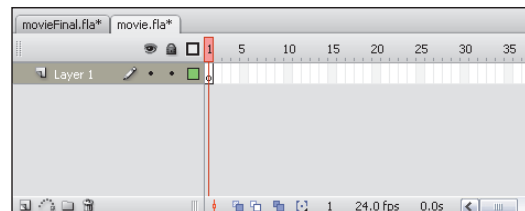
- 2 Press **Enter** (Windows) or **Return** (Mac) to preview the animation on the **Stage**.

Notice the animation creates the word *xboard!* magically before your eyes! Although it may seem complicated, you'll see how easy it is to create a frame-by-frame animation with keyframes in this exercise.



- 3 Close **movieFinal.fla**. If you completed Exercise 1, **movie.fla** should still be open. If it's not, complete Exercise 1, and then return to this exercise.

Notice **movie.fla** contains a single layer with a single blank keyframe. This is the minimum you need to start drawing. This also happens to be the way all new documents appear by default in Flash.



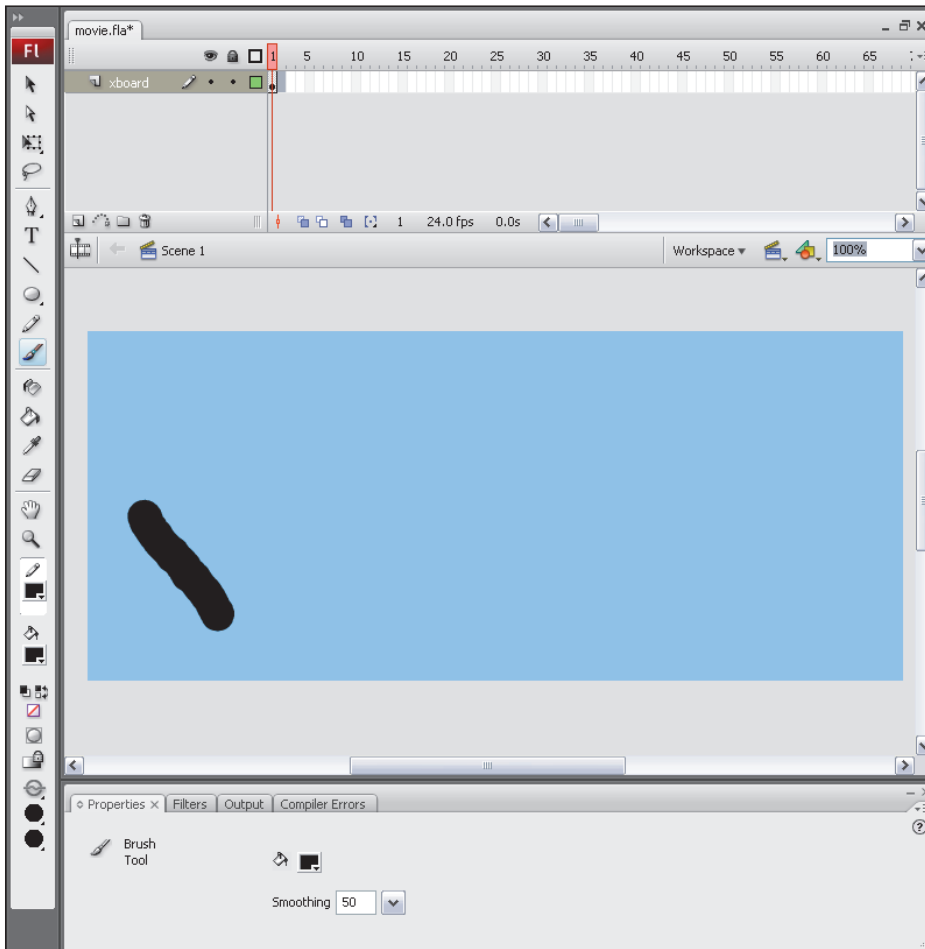
- 4** On the **Timeline**, double-click the **Layer 1** name. When the bounding box appears, rename the layer **xboard!**, and press **Enter** (Windows) or **Return** (Mac).

Naming layers keeps them recognizable and organized.

- 5** Select the **Brush** tool in the **Tools** panel. From the **Color** and **Options** sections of the **Tools** panel, select any brush size, shape, and color (other than white—you'll see why in Step 11).

The Brush tool paints only fills, not strokes, so you want to change the color in the Fill Color well.

In the next few steps, you'll write the word *xboard!* one letter at a time in a series of keyframes.



- 6** With the **Brush** tool selected in the **Tools** panel and with **Frame 1** selected on the **Timeline**, draw the first part of the letter **x** on the left side on the **Stage**, as shown in the illustration here.

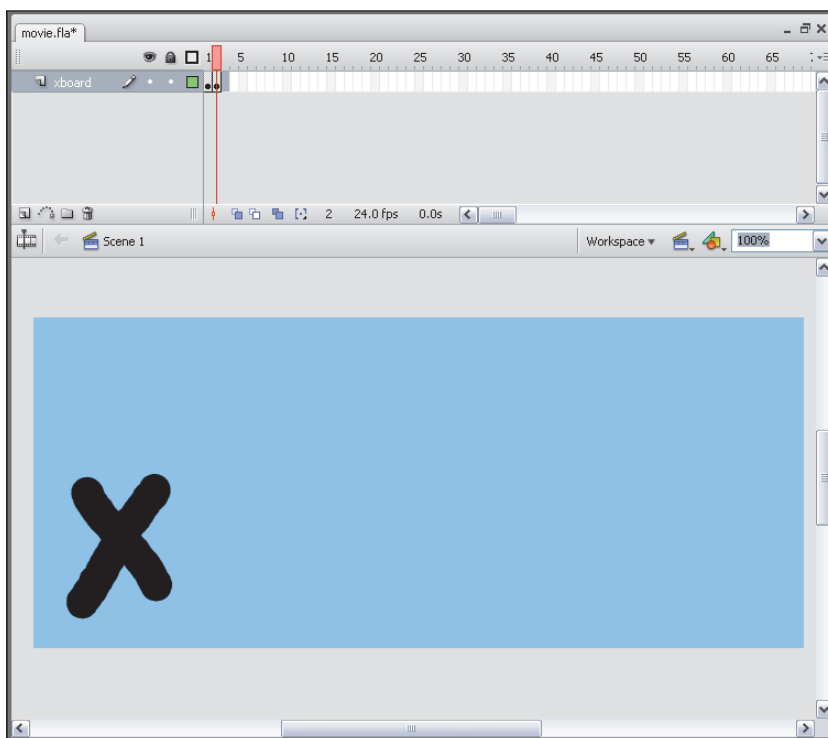
Notice Frame 1 now contains a small black dot, indicating it contains artwork. Frame 1 is now referred to as a *keyframe*, rather than a blank keyframe, because it is no longer empty.

To make a change on the Timeline, you must place a keyframe where you want the change to occur. Adding a new keyframe will copy all the content from the previous keyframe to the new keyframe. Now that you have filled in the first keyframe of Layer 1, you'll add another keyframe at Frame 2 so you can draw the second frame of your animation.

7 On the **Timeline**, click **Frame 2** to select it, and choose **Insert > Timeline > Keyframe** or press **F6**.

This adds a new keyframe at Frame 2. Notice the contents of Frame 1 are the same as the contents of Frame 2. You'll add artwork to Frame 2 in the next step.

Tip: In Windows, remember the F6 keyboard shortcut, because you will be using it often to insert keyframes.



8 With the **Brush** tool still selected and with **Frame 2** selected on the **Timeline**, draw the second part of the x on the new keyframe.

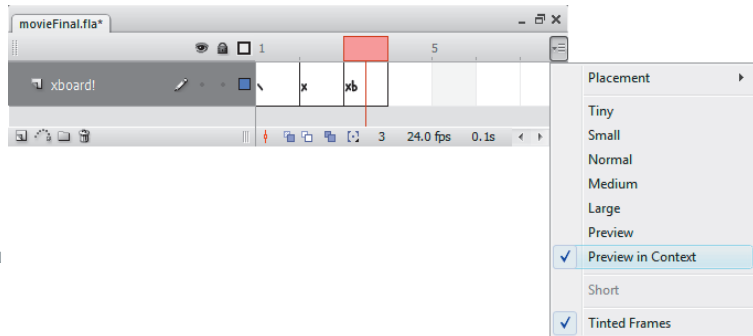
9 Choose **Insert > Timeline > Keyframe** to add a new keyframe to the **Timeline** on **Frame 3**.

Notice Frame 3 has the same contents as Frame 2.

10 With the **Brush** tool still selected and with **Frame 3** selected on the **Timeline**, draw a *b* on the **Stage**. Drag (scrub) the **playhead** back and forth on the **Timeline** to quickly preview the animation. You'll see the *x* and *b* being drawn directly on the **Stage**.

11 Choose **Preview in Context** from the **Options** menu to display a thumbnail preview of the contents of each keyframe.

Viewing the **Timeline** with black dots representing keyframes with artwork might seem somewhat abstract to you. The **Options** menu has several options for displaying the contents of your individual frames on the **Timeline**.



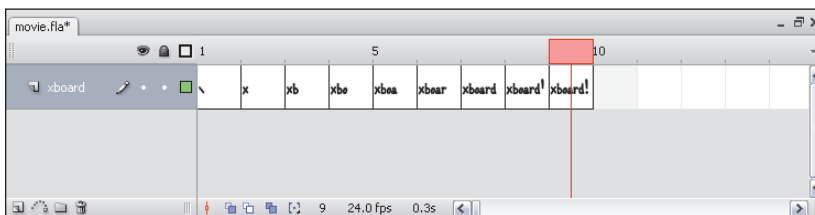
You'll find the **Preview in Context** view helpful when creating frame-by-frame animations.

Note: Do you remember when you chose a color for the brush in Step 5, and you were asked to choose any color other than white? Now you can see why. If you had chosen white for the brush color, you would not see the artwork in the **Preview in Context** view because the **Timeline** frames are also white.

12 With **Frame 3** selected on the **Timeline**, choose **Insert > Timeline > Keyframe** to insert another keyframe on **Frame 4**.

13 With the **Brush** tool still selected, draw an *o* on the **Stage**. As you draw, you'll see the contents of **Frame 4** appear on the **Timeline** preview.

As you continue to draw the word *xboard!*, you don't have to draw the whole letter in each keyframe. Instead, you can draw part of the letter (just as you did with the *x*) in one keyframe, choose **Insert > Timeline > Keyframe** to insert the next keyframe, and draw the remaining parts of the letter in that keyframe to create a more realistic animation.



14 Using the techniques you learned in this exercise, use the **Brush** tool, and add new keyframes to finish drawing the word *xboard!*. When you are done, your **Timeline** should look like the one shown in the illustration here.

15 Scrub the playhead across the **Timeline** to preview the animation on the **Stage**.

16 Press **Enter** (Windows) or **Return** (Mac) to play the animation once.

Unlike scrubbing the playhead, when you press **Enter** (Windows) or **Return** (Mac) to preview the animation on the **Stage**, you see an accurate preview of the frame rate for the animation, which you set to 24 fps in Exercise 1.

17 Choose **Control > Loop Playback** and press **Enter** (Windows) or **Return** (Mac) to repeat the animation continuously. Looping repeats the animation until you choose to stop it.

Notice how fast the animation plays. Next, you'll learn how to slow down the animation by adjusting the frame rate, which defines how many frames your animation plays per second. Because of varying processor speeds, you have no guarantee your movie will always play back at the specified frame rate on every computer. Keep this in mind when you're designing and testing animations. If possible, always test your movies on a variety of computers with varying processor speeds so you can get an accurate idea of the range of results your viewers will see.

18 Press **Enter** (Windows) or **Return** (Mac) to stop the animation.

19 Choose **Normal** in the **Options** menu to change the **Timeline** to **Normal** view so you see keyframes on the **Timeline** instead of a preview of the artwork.

20 Make sure the **Property inspector** is visible. If it's not, choose **Window > Properties > Properties**.

21 Click the **Stage** to show the document properties in the **Property inspector**. In the **Frame rate** field, decrease the frame rate to **12**. As you learned in Exercise 1, 12 fps is the default frame rate when you create a new movie in Flash CS3.

22 Press **Enter** (Windows) or **Return** (Mac).

Notice the animation plays slower. The movie is taking twice as long to play the same number of frames. The lower the frame rate, the slower the animation plays (and vice versa). Go ahead and experiment with other frame rates. When you're finished experimenting, return the frame rate to its default setting of 12 frames per second so you're ready for the next exercise.

23 Save your **movie.fla** file by choosing **File > Save**. Close the file.

What Is the Frame Rate?

The **frame rate** determines the number of frames your movie plays per second. This rate corresponds directly to the length of time your animation takes to play.

Here's how to use the frame rate to calculate the playback time of your animation: Start with the total number of frames on the **Timeline** and divide it by the frame rate; the result is the number of seconds it will take to view your movie.

For example, if your **Timeline** has 36 frames and your frame rate is set to 12 fps, your animation will be 3 seconds. The following chart gives examples of how the frame rate affects the duration of the animation. Next, you will learn how to create more than one animation in the same movie and have them play at different speeds.

Frame Rate				
Number of Frames	÷	Frame Rate	=	Duration
24 frames	÷	12 fps	=	2 seconds
36 frames	÷	12 fps	=	3 seconds
48 frames	÷	24 fps	=	2 seconds

Recommended Frame Rates

When you set a frame rate in Flash CS3, you're setting the maximum frame rate for your movie, or how quickly the movie "tries" to play. The actual playback frame rate depends on several factors, including the download speed and processor speed of the computer used to view the movie. If the frame rate is set higher than the computer can display, the movie will play as fast as the computer's processor will allow. If you set the frame rate to 200 (which is really high), the average computer will not be able to display the movie at this rate. Also, frames with more objects,

colors, or transparency than others take more time for the computer to render. Thus, the actual frame rate can vary during playback because of the rendering requirements from one frame to another.

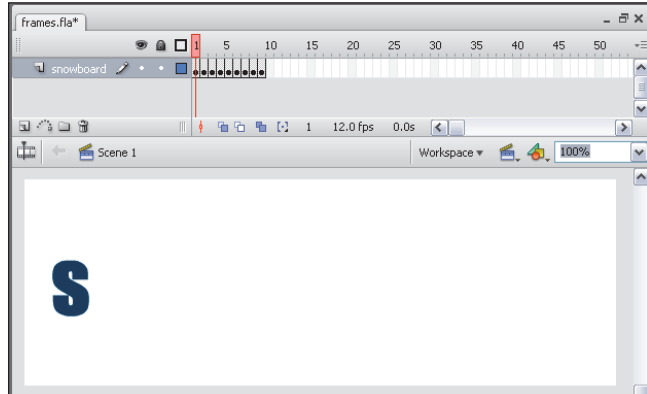
Based on these factors, use a frame rate of at least 12 fps and not more than 25 fps so the average computer can display your movie as you intended. A frame rate of 15 to 20 fps, which is similar to the 24 fps used in motion pictures, works well most of the time.

3 Inserting and Deleting Frames

As you learn to create animations, you'll want to adjust the speed of your animations. In the previous exercise, you learned how to adjust the frame rate to increase and decrease the speed of an animation. But what do you do if you want only certain sections of your movie to play faster or slower than other sections? In this exercise, you will learn how to insert and remove frames on the **Timeline** so different sections of an animation play at different speeds, even though they all share the same frame rate.

- 1 Open **frames.fla** from the **chap_04** folder.

As you can see, the file contains one layer with a simple frame-by-frame animation using text. You'll get a chance to work with text in Chapter 13, "Working with Text."

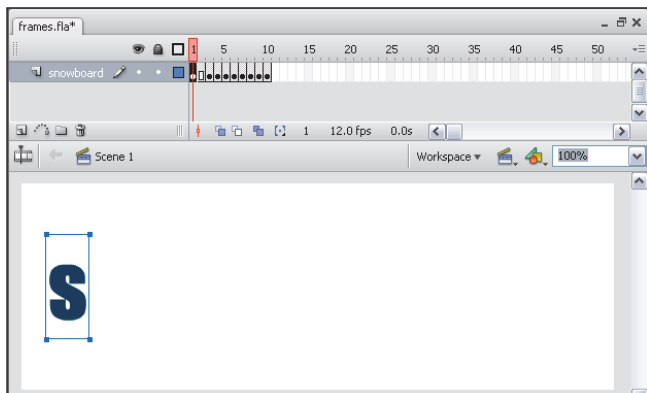


- 2 Press **Enter** (Windows) or **Return** (Mac) to preview the animation on the **Stage**.

As you can see, the animation plays so fast you almost lose the effect of the text appearing one letter at a time. Adjusting the frame rate to slow down this animation will affect the entire movie, which could be problematic because you may want other sections of your movie to play at a different speed. For example, in this project you may want the word *snow* to appear slowly and the word *board* to appear quickly. You can solve this problem easily by inserting duplicate frames at strategic points to lengthen parts of the animation.

- 3 On the **Timeline**, click **Frame 1** to select it. Choose **Insert > Timeline > Frame** (or press **F5**), which duplicates the contents of **Frame 1** and extends the **Timeline** by one frame.

When you add a new frame, Flash CS3 creates a duplicate of the previous frame. You aren't going to change this content; if you wanted to change the duplicate content, a keyframe would have been a better choice.



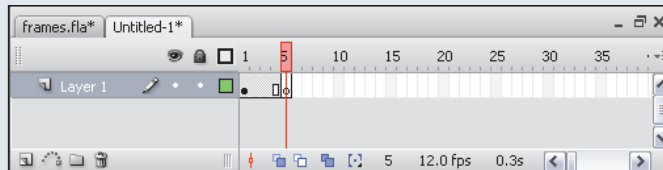
- 4** With **Frame 1** still selected on the **Timeline**, choose **Insert > Timeline > Frame** to insert another frame. Each time you choose **Insert > Timeline > Frame** or press **F5**, you will insert one frame to extend the **Timeline**.

TIP:



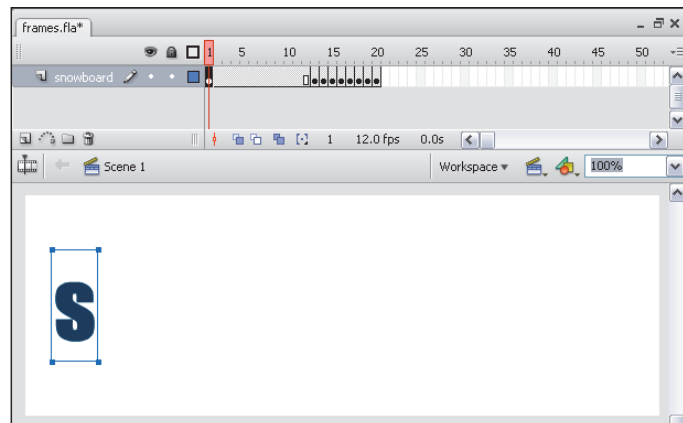
What Do Those Dots Mean?

As you start adding content to your project, you'll notice different icons on the **Timeline**. The black dots indicate keyframes with content. The light gray frames without icons indicate frames (no change in content). For example, as shown in the illustration here, **Frame 2**, **Frame 3**, and **Frame 4** have the same content as **Keyframe 1**. The white rectangle indicates the last frame in a frame range, which means the next frame will be either a blank keyframe (empty) or a keyframe (with content). In this example, the empty circle icon indicates a blank keyframe.



- 5** With **Frame 1** still selected on the **Timeline**, choose **Insert > Timeline > Frame**, or press **F5** nine more times (giving you a total of eleven additional frames between the first two keyframes).

By adding more frames, you are extending the distance between the first two keyframes on the **Timeline**. The additional frames slow down the speed of the animation because the content of **Keyframe 1** will display for a longer period of time.



- 6** Press **Enter** (Windows) or **Return** (Mac) to preview the animation on the **Stage**.

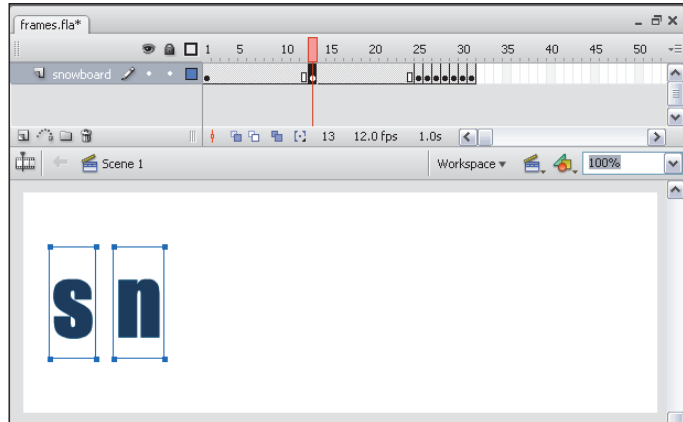
Notice the significant delay between the letters *s* and *n*—about one second—because 12 frames divided by 12 fps equals 1 second. Even though you changed the delay between the letters *s* and *n*, you didn't affect the speed of the rest of the animation. As you can see, this is a great trick to use when you want to play different sections of an animation at different speeds.

- 7** On the **Timeline**, click **Frame 13** to select it.

Frame 13 is the new location of the second keyframe. It was originally on Frame 2 before you added more frames in Steps 3, 4, and 5.

- 8** Choose **Insert > Timeline > Frame** or press **F5** 11 times to insert 11 frames on the **Timeline**.

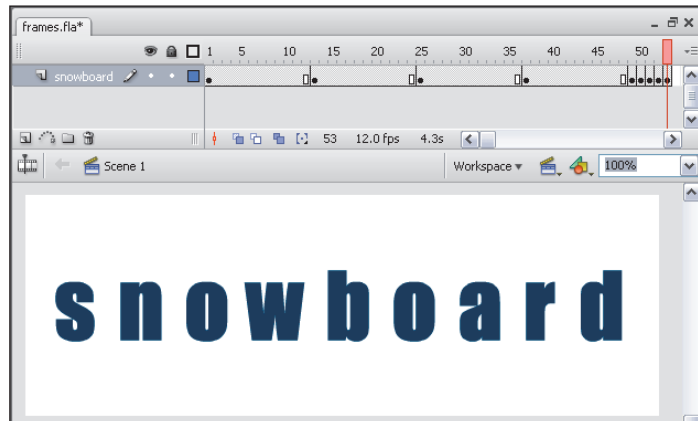
Each added frame contains the same content as Frame 13, creating another pause between the letters *n* and *o*.



- 9** Using the techniques you learned in Steps 7 and 8, add frames between the letters *o* and *w* and between the letters *w* and *b*.

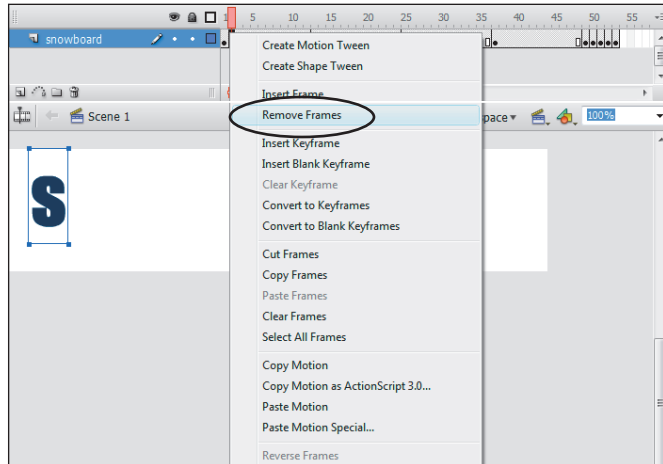
- 10** Press **Enter** (Windows) or **Return** (Mac) to preview the animation on the **Stage**.

Notice how much slower the word *snow* animates compared to the word *board*. As you can see from this exercise, you can control the timing of an animation without having to adjust the frame rate of the entire movie. Inserting frames slows down specific sections in the animation. The inverse is also true—you can speed up an animation by deleting frames. You'll learn how in the next few steps.



11 On the **Timeline**, click **Frame 2** to select it. **Right-click** (Windows) or **Ctrl-click** (Mac), and choose **Remove Frames** from the contextual menu or use the shortcut key **Shift+F5** to remove the currently selected frame.

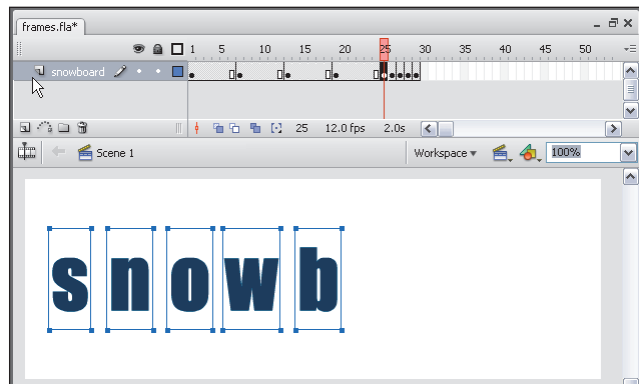
As you can see, you shortened the **Timeline** by one frame and decreased the amount of time between the letters *s* and *n* in your animation.



12 Click **Frame 7** and drag through **Frame 11** to multiple-select the frames.

13 With **Frame 7** through **Frame 11** selected, choose **Edit > Timeline > Remove Frames** (or use the shortcut key **Shift+F5**) to remove the selected frames and shorten your **Timeline** by five frames.

14 Using the techniques you learned in Steps 11, 12, and 13, reduce the number of frames so there are only five frames between the *s*, *n*, *o*, and *w* keyframes.



15 Press **Enter** (Windows) or **Return** (Mac) to preview your animation on the **Stage**.

As you can see, the word *snow* now plays faster than it did in Step 10 but still slower than the letters in the word *board*. The animation plays at two speeds because you have more frames between the keyframes in the word *snow* but fewer frames between the keyframes for the word *board*. Adding frames is a great technique for speeding up or slowing down the timing of animations without changing the frame rate of the entire movie.

16 Close **frames fla**. You don't need to save your changes.

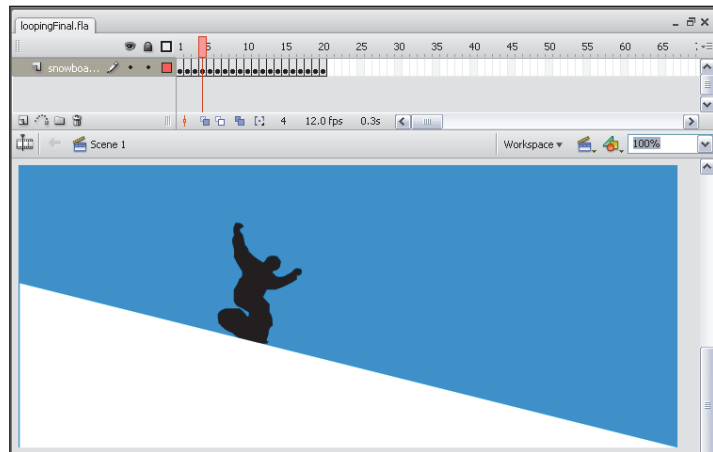
4 Copying and Reversing Frames

Creating a looping animation (one that repeats indefinitely) can be a lot of work if you have to draw each frame over and over. In Flash CS3, you can copy, paste, and reverse a sequence of frames to create a looping animation. You will learn how in this exercise.

1 Open **loopingFinal.fla** from the **chap_04** folder.

2 Choose **Control > Loop Playback** to set the playback option to loop, which means it repeats indefinitely. Press **Enter** (Windows) or **Return** (Mac) to preview the animation on the **Stage**.

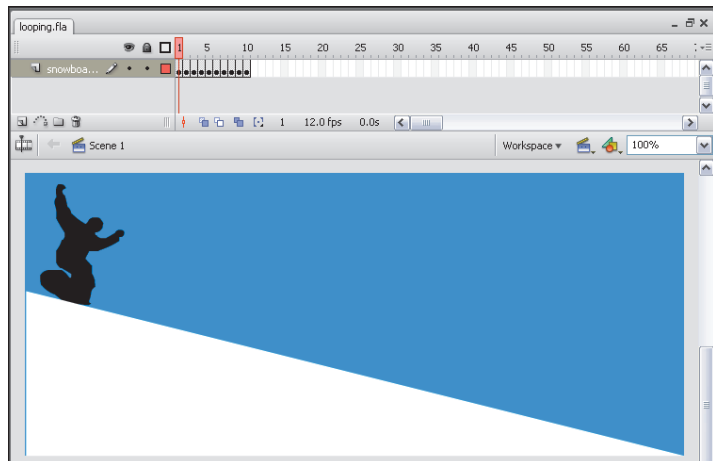
This is the completed version of the animation you'll create in this exercise. As you can see, the snowboarder cruises down and up the mountain slope over and over. You will create this same animation technique without having to draw all the frames again.



3 Choose **Control > Loop Playback** to stop the animation from looping. Press **Enter** (Windows) or **Return** (Mac) to stop previewing the animation on the **Stage**. Close **loopingFinal.fla**.

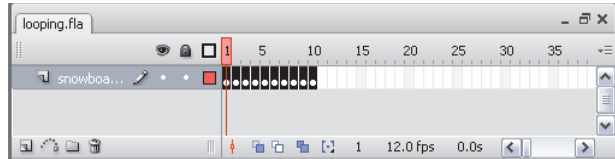
4 Open **looping.fla** from the **chap_04** folder.

The file contains a single layer named **snowboarding**, which contains a sequence of 10 keyframes. In each keyframe, the boarder is a little further down the slope, creating the illusion that the boarder is moving down the slope when the sequence plays back.



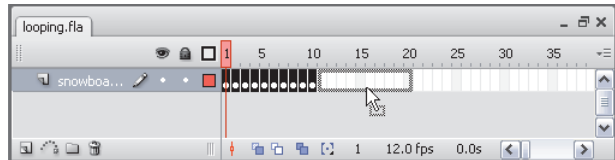
5 On the **Timeline**, click the **snowboarding** layer to select all the frames.

Selecting a layer on the Timeline is an easy way to multiple-select the frames on a layer. Next, you'll make a copy of the selected frames.



6 Position your cursor over the selected frames. Click and drag the frames to the right on the **Timeline**. Don't release the mouse just yet!

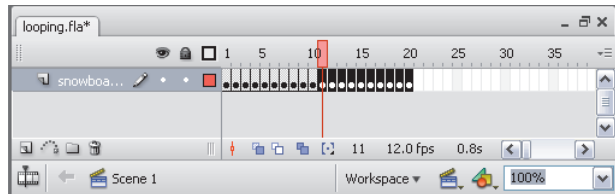
As you click and drag the frames, a light gray outline indicates the selected frames and where they'll be moved when you release the mouse.



7 Without releasing the mouse, hold down the **Alt** key (Windows) or the **Opt** key (Mac).

Notice the small plus sign appears to the right of the cursor indicating you will duplicate (or copy), not move (or cut), the frames when you release the mouse.

8 Release the mouse to create a copy of the selected frames on **Frame 11** through **Frame 20**.



9 Press **Enter** (Windows) or **Return** (Mac) to preview the movie on the **Stage**.

Notice the animation does not look correct. The snowboarder reaches the bottom of the slope and jumps back up to the top, which is not the same as the single fluid motion you saw in the finished animation. In traditional animation, you'd have to redraw all the frames in reverse order to achieve this effect. Fortunately in Flash CS3, you can save yourself that manual process and simply duplicate and reverse the existing frames in the animation. You'll learn how in the next steps.

10 Click **Frame 11**, and then **Shift-click Frame 20** to select **Frame 11** through **Frame 20**. Choose **Modify > Timeline > Reverse Frames**.

You won't see a change on the Timeline, but you will notice the change on the Stage when you test the movie.

11 Press **Enter** (Windows) or **Return** (Mac) to preview your animation on the **Stage**. As you can see, the snowboarder races down the hill and goes back up the hill, as if you were rewinding the film to view an instant replay. Nice! If you choose **Control > Loop Playback**, you can watch the animation preview loop endlessly.

12 Close **looping fla**. You don't need to save your changes.

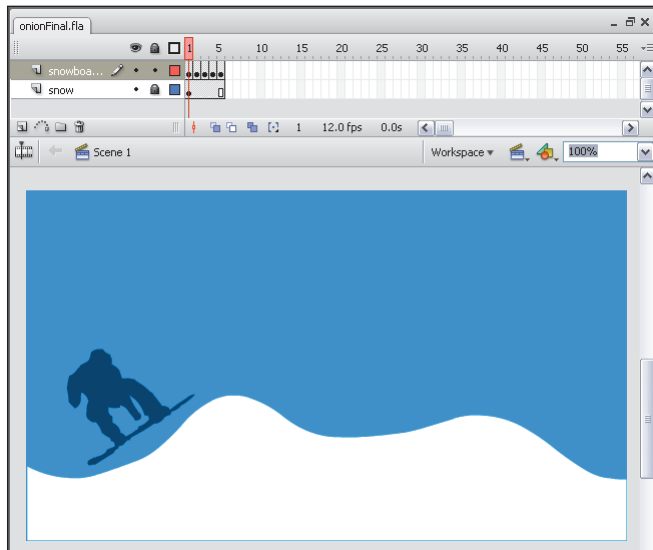
5 | Using Onion Skinning

Now that you have created a couple of frame-by-frame animations, it's a good time to learn a few new tricks. First, you'll learn how to use the onion skinning feature, which lets you to see a ghost image of the previous frame so you can see where you want to place the artwork in relation to the previous frames. You will also learn to use the **Free Transform** tool, which allows you to scale, rotate, skew, and distort your artwork.

1 Open **onionFinal.fla** file from the **chap_04** folder.

2 Choose **Control > Loop Playback** to set the playback option to loop, which means it will repeat indefinitely. Press **Enter** (Windows) or **Return** (Mac) to preview the animation on the **Stage**.

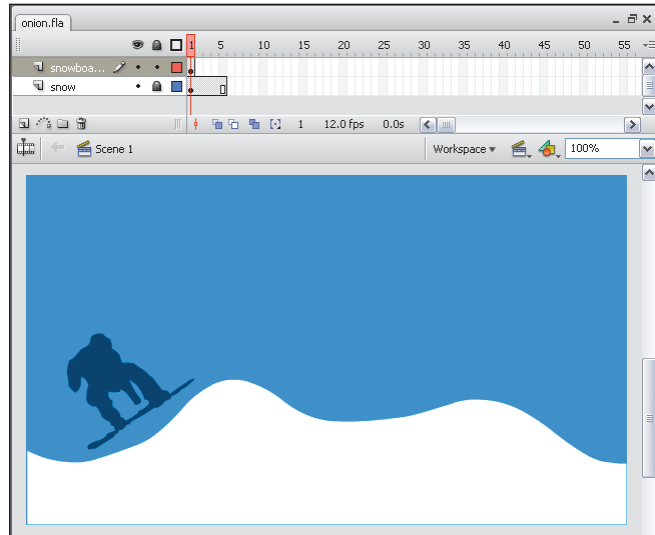
This is the completed version of the animation you'll create in this exercise. In this animation, you'll see the snowboarder catching some air! You will create this same animation technique without having to draw all the frames again.



3 Choose **Control > Loop Playback** to stop the looping. Press **Enter** (Windows) or **Return** (Mac) to stop previewing the animation on the **Stage**. When you're finished viewing the animation, close **onionFinal.fla**.

4 Open **onion.fla** from the **chap_04** folder.

This file contains one keyframe with the snowboarder beginning his jump on the top layer and one keyframe with the snow on the bottom layer. The snow layer has been locked so that you don't accidentally select something on it. You will be modifying the artwork and creating the frame-by-frame animation on the snowboarder layer in the next few steps.

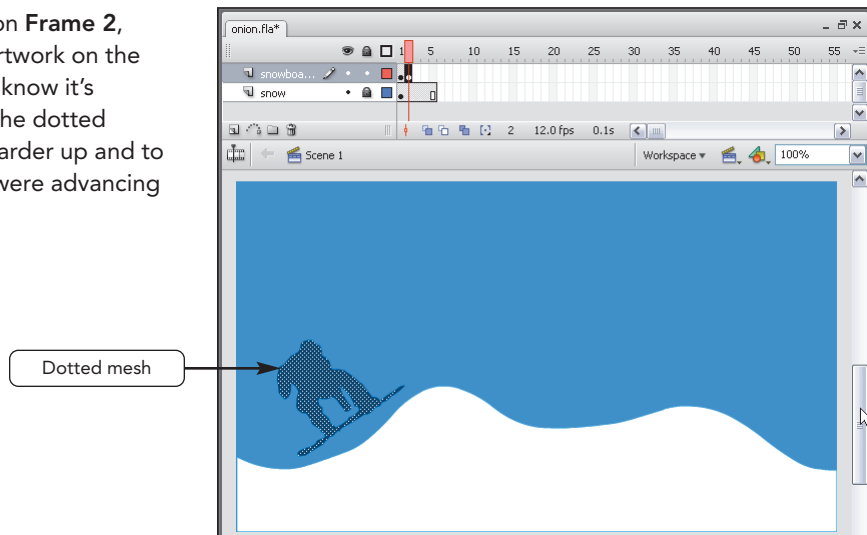


5 Click **Frame 2** of the **snowboarder** layer to select it, and choose **Insert > Timeline > Keyframe** to add a keyframe.

Frame 2 now contains a small black dot, indicating it contains content. As you know from Exercise 2, when you create a new keyframe, it copies the content from the previous keyframe—in this case, Frame 1.

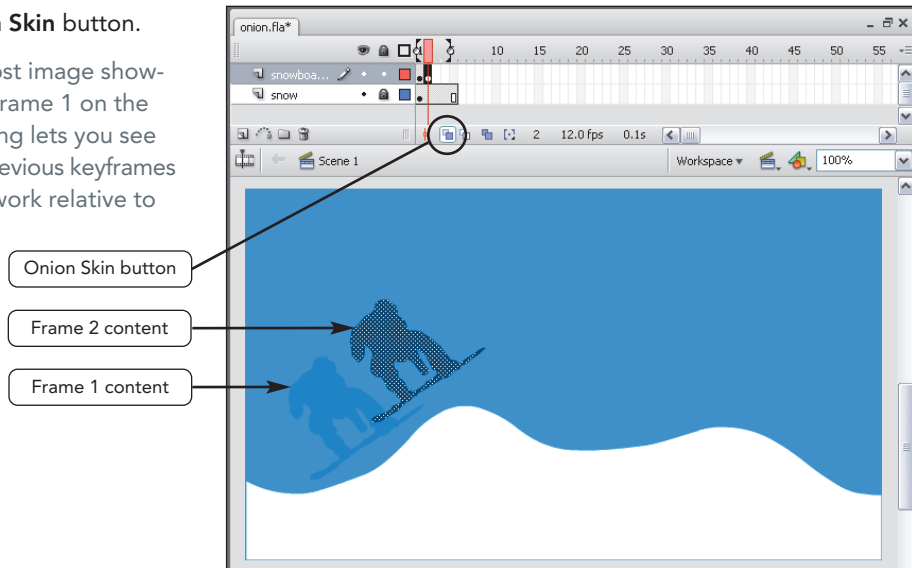
Tip: If you try to add a keyframe without first selecting a frame, nothing happens. Why? When you have more than one layer in your document, you have to select the frame so Flash CS3 knows in which layer to insert the keyframe.

6 With the playhead on **Frame 2**, click the snowboarder artwork on the **Stage** to select it. You'll know it's selected when you see the dotted mesh. Drag the snowboarder up and to the right, as though he were advancing in his jump.



7 Click the **Onion Skin** button.

Notice the faint ghost image showing the content of Frame 1 on the Stage. Onion skinning lets you see the artwork in the previous keyframes and change the artwork relative to the ghost images.

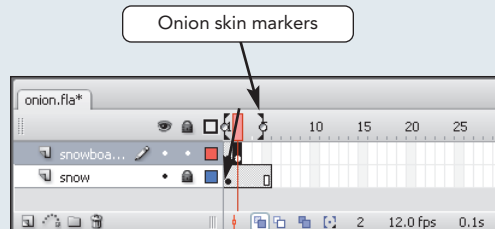


NOTE:



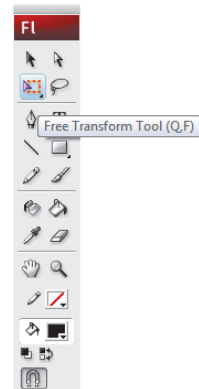
Onion Skin Markers

After you click the **Onion Skin** button, a gray bar with a draggable bracket on each end appears at the top of the **Timeline**. These are called **onion skin markers**. The start onion skin marker (the one on the left) is on **Frame 1** (the first frame of your animation), and the end onion skin marker (the one on the right) is on **Frame 5** (the last frame of your animation). If you click and drag your playhead to the right or left, the start onion skin marker will move along with it. You can also drag either of the onion skin markers to the left or right to include more frames if they are spanning fewer keyframes than you have on the **Timeline**.



8 Select the **Free Transform** tool in the **Tools** panel.

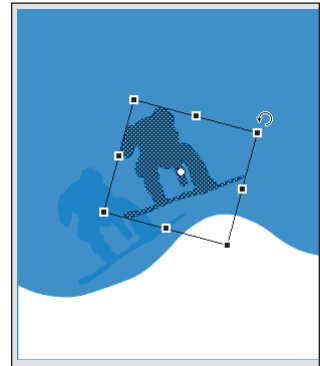
The Free Transform tool lets you modify selected artwork by changing the size, rotation, skew, and distortion. To learn more about the Free Transform tool, check out the chart at the end of this exercise.



- 9 Make sure the playhead is on **Frame 2**, and click the snowboarder on the **Stage** to select it.

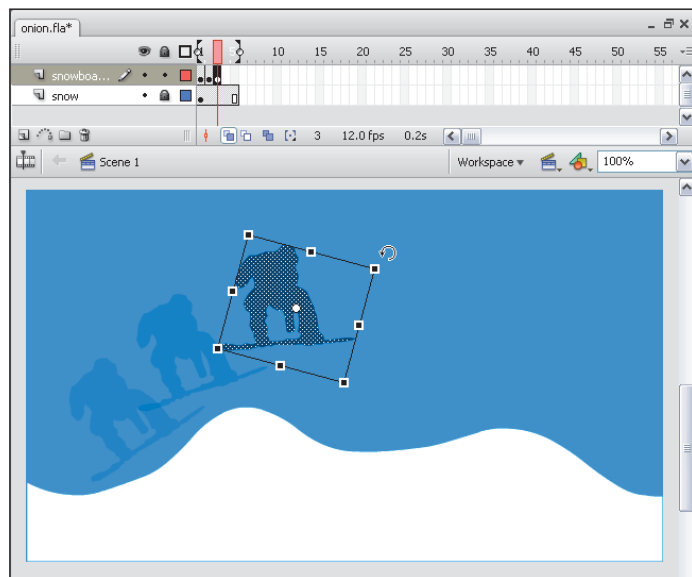
Notice a bounding box appears around the artwork, indicating you can transform the artwork. If you position the cursor near or over the handles (the squares in the corners and on the edges of the bounding box), the cursor changes, indicating the transform options.

- 10 Position your cursor just outside the upper-right corner of the bounding box until it changes to the **rotate** icon (a round arrow). Click and drag to the right to rotate the snowboarder slightly to make the jump look more realistic.



- 11 Click **Frame 3** to select it, and choose **Insert > Timeline > Keyframe** to insert another keyframe.

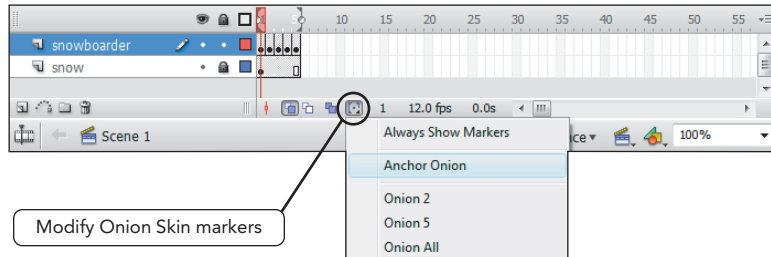
- 12 Click the snowboarder artwork with the **Free Transform** tool to select it. Click and drag the snowboarder to the right. Using the technique you learned in Step 9, click and drag to rotate the snowboarder.



13 Repeat Steps 11 and 12 twice, adding keyframes to **Frame 4** and **Frame 5** and positioning and rotating the artwork in each keyframe. When you're finished, the artwork on the **Stage** should match the artwork shown in the illustration here.



14 Choose **Control > Loop Playback**. Press **Enter** (Windows) or **Return** (Mac) to preview the movie on the **Stage**. When you're finished, choose **Control > Loop Playback** to stop the movie from repeating, and press **Enter** (Windows) or **Return** (Mac) to stop the movie.



As you can see, the snowboarder is catching some air—just like in the final movie you looked at in Step 1!

If you do not want the onion skin markers to move when you move the playhead or click a frame on the Timeline, you can choose **Anchor Onion** in the **Modify Onion Markers** button pop-up menu to lock the onion skinning span where it is until you unlock it again or manually drag the start or end onion skin marker.

15 Experiment with the **Free Transform** tool to create more effects. Try resizing, rotating, and skewing using the editing nodes.

You'll get a chance to work with the **Free Transform** tool again in Chapter 6, "Creating Symbols and Instances."

16 When you are finished experimenting, close **onion.fla**. You don't need to save your changes.

VIDEO:



onion.mov

To learn more about onion skinning, check out **onion.mov** in the **videos** folder on the **Flash HOT CD-ROM**.

NOTE:

The Free Transform Tool

The **Free Transform** tool lets you modify objects in several ways. As you position the cursor over the bounding box of a selected object, it will change to indicate what type of transformation is available. As you click and drag, you will see a preview of the transformation you are about to make. The following chart lists how you can use the **Free Transform** tool to transform objects:

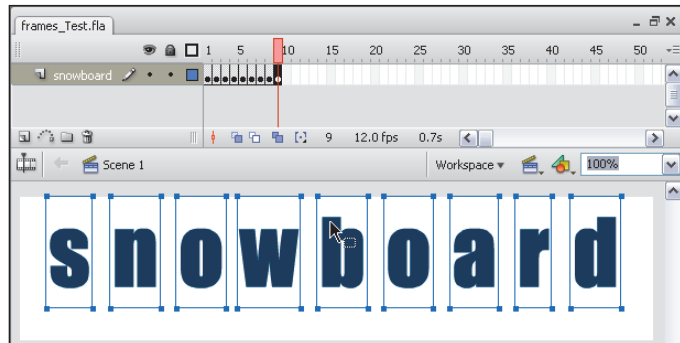
Free Transform Tool Features	
Example	Description
	Clicking and dragging up or down on a corner transform handle rotates the object. The cursor icon changes to a round arrow, indicating you can rotate the object.
	Clicking and dragging one of the corner transform handles diagonally modifies the scale of the object. The cursor changes to a diagonal double-pointed arrow when you can perform this transformation.
	Clicking and dragging one of the middle-side transform handles modifies the width or height of the object. The cursor changes to a horizontal (or vertical depending on which side you are on) double-pointed arrow when you can perform this transformation.
	Clicking and dragging between any two transform handles skews the object. The cursor changes, indicating you can skew the object.
	Clicking and dragging one of the middle-side transform handles to the other side of the object flips the object. The cursor changes to a horizontal or vertical double-pointed arrow depending on which side you are on.
	Clicking and dragging the center registration point modifies the center point of the object. After you alter the center point, all transformations will rotate or move in relation to the new center point location.

6 Testing Movies

So far, you've been testing your movies by previewing them on the **Stage**. This is a great way to test the frame rate, but you can test your work in other ways. In this exercise, you will learn how to preview the movie file as a SWF file—the format you would use to publish the movie to the Web—with the **Test Movie** feature. You'll learn a really easy way to produce the HTML file required to view the SWF file in a browser. You'll also learn how to preview the movie in a browser with the **Preview in Browser** feature. This exercise covers the basics—you'll find more in-depth information about publishing Flash CS3 content in Chapter 17, "Publishing and Exporting."

1 Open `frames_Test.fla` from the `chap_04` folder.

It is important to know where your project file (FLA) has been saved before you use the Test Movie and Preview in Browser features because Flash CS3 generates new files and automatically saves them in the same location as your project file (FLA). If you saved your file in a different location, just make sure you know where it is. In this case, you're working with `frames_Test.fla`, which is included in the `chap_04` folder.



2 Choose **Control > Test Movie** or press **Ctrl+Enter** (Windows) or **Cmd+Return** (Mac) to preview the movie file in a new window as a SWF file.

When you test the movie, Flash CS3 automatically previews the movie as a SWF file, which is exactly what you'd see if you exported the file as a SWF.



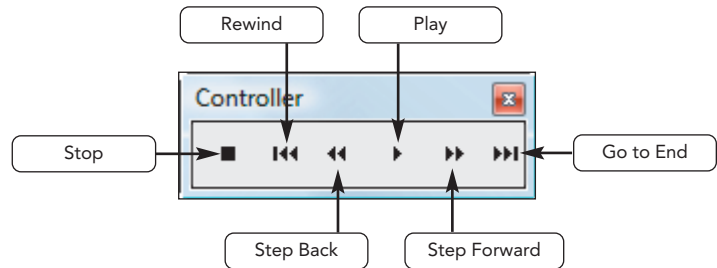
Tip: You can click and drag the resize handle of the preview window to change its size. Although the size of the window changes, the snowboard letters stay the same size. You'll learn how to make content scalable using the publish settings in Chapter 17, "Publishing and Exporting."

TIP:**Loop-de-Loop**

At this point, you're probably wondering why your animation is looping (playing over and over). This is the default behavior of all movies in Flash CS3, although you don't see it when you simply press **Enter** (Windows) or **Return** (Mac) to preview your movie (unless you've turned on the **Loop Playback** option). If you uploaded this published file to the Web, it would loop. You will learn to control the looping in your final movie (SWF) file in Chapter 12, "ActionScript Basics," when you learn how to add actions to frames. But if all this looping is making you dizzy, you can choose **Control > Loop** to turn this feature off in the SWF preview window.

- 3** With the preview window still open, choose **Window > Toolbars > Controller** to open the **Controller** toolbar.

This handy little gadget is especially useful with longer movies—it lets you easily stop, restart, or step back one frame at a time on the Timeline.



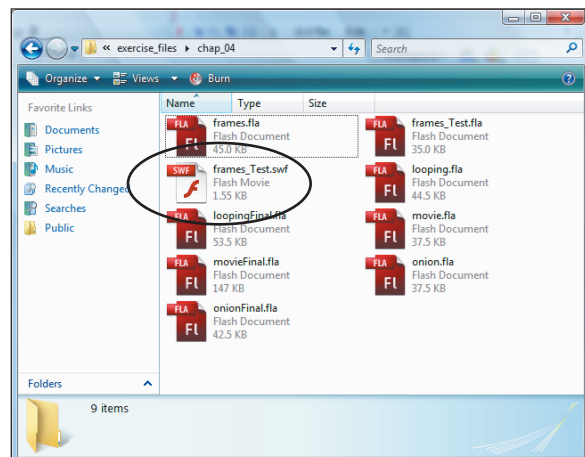
- 4** Click the **Stop** button on the **Controller** to stop your animation.

- 5** Click the **Play** button to play the animation. If you'd like, experiment with the other buttons on the **Controller**.

Although you didn't see it happen, when you tested the movie in Step 2, Flash CS3 automatically created the SWF for the movie and saved it in the same location as your project (FLA) file. You'll locate this file next.

- 6** Open the **chap_04** folder.

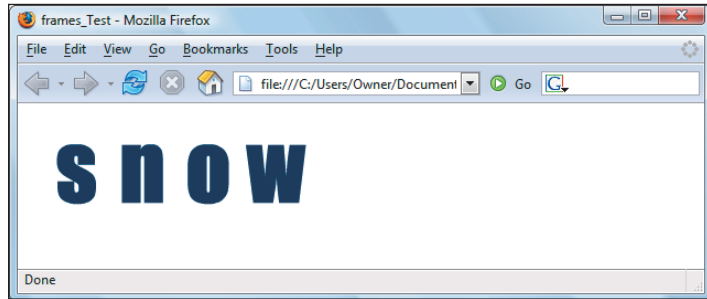
Notice the **frames_Test.swf** file inside this folder. Flash CS3 automatically generated this file. Also notice the SWF file has a different icon than the FLA files, which can be helpful visual feedback, especially if your file extensions are turned off. The SWF file is the file you'd use on a Web page in the same manner you would use a GIF or JPEG.



7 Return to Flash CS3, and close the preview window.

8 Choose **File > Publish Preview > Default – (HTML)** or press **F12** to launch your default browser with a preview of your movie file (SWF).

Previewing the SWF file in a browser is a quick and easy way to see what the movie looks like and how it plays back in a browser. Although this technique is great for previewing your movies, you'll learn better ways to publish the final SWF file in Chapter 17, "Publishing and Exporting."



NOTE:



Defining a Default Browser

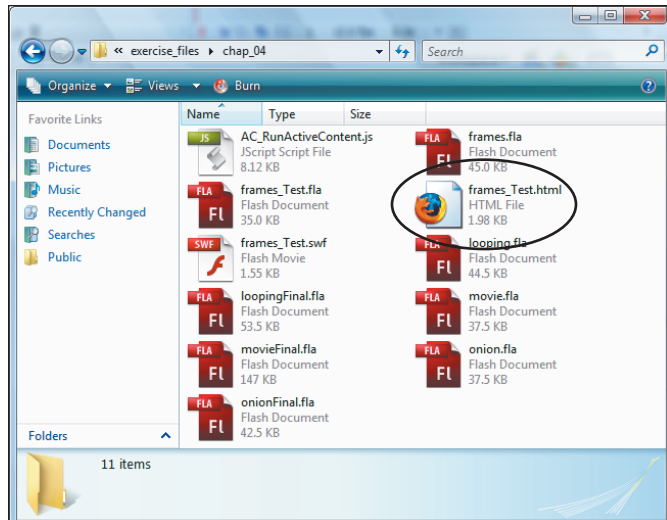
If you have several browsers installed on your computer, you can specify which one Flash uses as the default browser. You can find a great explanation of how to define default browsers in Windows and on a Mac on Adobe's Web site:

www.adobe.com/cfusion/knowledgebase/index.cfm?id=tn_15133

9 Hide Flash CS3, and navigate to the **chap_04** folder.

Notice there is a frames_Test.html file inside the chap_04 folder. When you published a preview of the file in Step 8, Flash CS3 generated the HTML file automatically, which is what lets you view the SWF file in a browser.

At this point, all the files necessary to publish to the Web have been generated for you automatically. You'll find more thorough instructions and details about this process in Chapter 17, "Publishing and Exporting." The purpose of this exercise was to demonstrate a quick and easy way to preview your projects.



10 Return to Flash CS3. Close **frames_Test fla**. You don't need to save your changes.

Congratulations—you just completed a long but essential part of your animation training! The next three chapters focus on more complex and specific animation topics, such as shape tweening, symbols and instances, and motion tweening. Now would be a great time for a break. You've worked through a lot of material, and you deserve one!
