project 1

Rocket Ship Artwork

Your client is the owner and founder of a delivery service named Rocket Overnight Delivery, which specializes in quick, overnight package handling between local and regional businesses. The company is growing rapidly, and they plan to further expand their revenues by using an email marketing campaign that promotes special Web site offers.

This project incorporates the following skills:

- ❏ Defining a movie file with appropriate settings for the job you're building
- ❏ Importing a scanned image provided by the creative director
- ❏ Using Flash drawing tools to develop a digital version of a rough sketch
- ❏ Adding depth to a line-art rocket ship using various shading and blending techniques
- ❏ Placing a background image that simulates deep space, so the client can see the artwork in position as it might appear on a Web banner, poster, or postcard

Project Meeting

client comments

We hired your agency to develop our site and corresponding mailers. The first thing we need is the primary graphic — the rocket ship — that will be used for banners, mailers, and eventually animated on the site.

We want the main rocket artwork to reflect a "retro" design, looking like something from a 1950s science fiction movie. The art should not be overly sophisticated or perfectly rendered. We want to develop a visual "look and feel" that will help local businesses immediately recognize us, so we're going to use this basic rocket artwork as a visual branding asset.

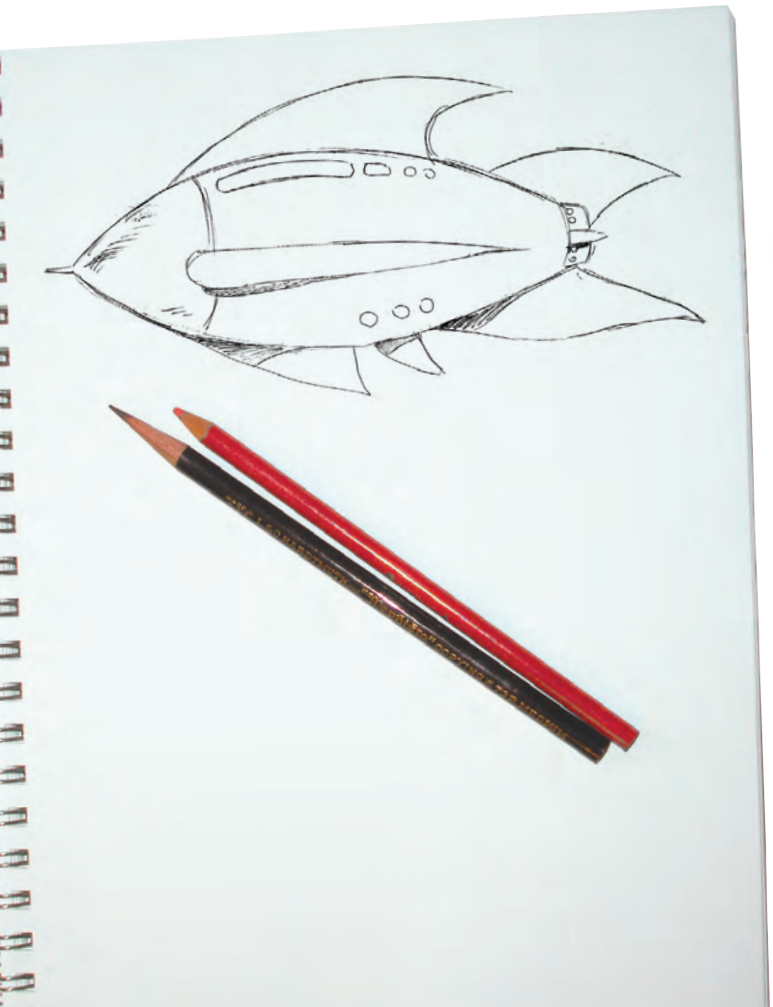
art director comments

Since Flash produces vector artwork, we can use the artwork for just about anything once it's done.

We already received approval for the sketch, so the first thing to do is import that sketch to use as a guide. Start by tracing the drawing using a bright color that you can see against the gray lines in the sketch.

Once you finish the line art, you can add color. I want you to start out with flat colors because I might want to show that to the client — it gives a good "retro" feel. Then I want a version using gradients, so the client can see how the artwork looks with more depth.

Also, make sure you build the artwork using logical layers — such as a body layer, separate layers for each set of fins, etc. That way, if we need to make changes later, or if we need to animate the rocket ship, the document will be structured properly.



project objectives

To complete this project, you will:

- ❑ Set up the workspace to match the requirements of the project
- ❑ Import the scan of the sketched rocket ship
- ❑ Create a set of logical layers to hold the various components you'll create
- ❑ Understand the difference between standard- and object-drawing modes
- ❑ Use the primitive shape and line tools to develop the components of the drawing
- ❑ Draw precise Bézier curves with the Pen tool
- ❑ Use the Pencil tool to draw freehand shapes
- ❑ Apply color with the Paint Bucket, Ink Bottle, Eyedropper, and Brush tools
- ❑ Use object groups to combine and protect drawing objects
- ❑ Apply and edit color gradients

Stage 1 Setting up the Workspace

The first step of any new project is to set up the Stage. Once you set up a new file for this project, you use the Import command to bring the rough sketch (which we already scanned for you) into the document so you can get right to work.

Create a New Document

1. **On your desktop, copy the `Rocket` folder from the WIP folder on your Resource CD to the WIP folder where you're saving your work.**

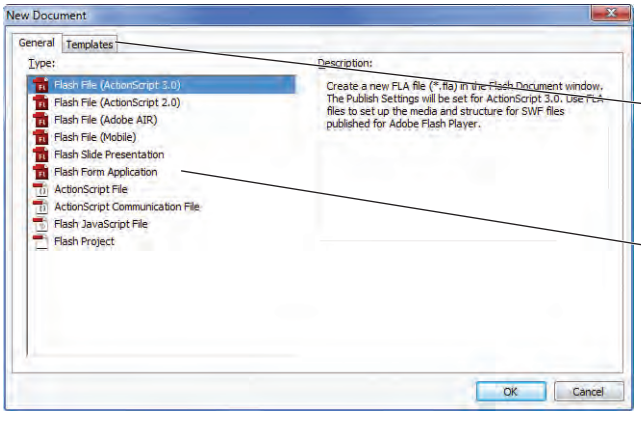
   You should save all files for this project in your WIP>Rocket folder.

2. **In Flash, choose Essentials in the Workspace switcher. If Essentials already shows in the Workspace switcher, choose Reset 'Essentials' to revert to the default interface options as defined by the software.**

   Although you won't use all the panels included in the Essentials workspace, this workspace provides a good starting point. This step allows you to work from the same interface you see in our screen shots.

3. **Choose File>New.**

   The New Document dialog box presents a list of document types you can use as the basis for your new file.



Click the Templates tab to access pre-defined templates in many different styles.

This list provides ten types of files on which you can base a new document.

4. **Make sure the first option — Flash File (ActionScript 3.0) — is selected in the list, and then click OK.**

5. **Choose File>Save As.**

6. **In the resulting dialog box, navigate to your WIP>Rocket folder as the target location.**

Note:

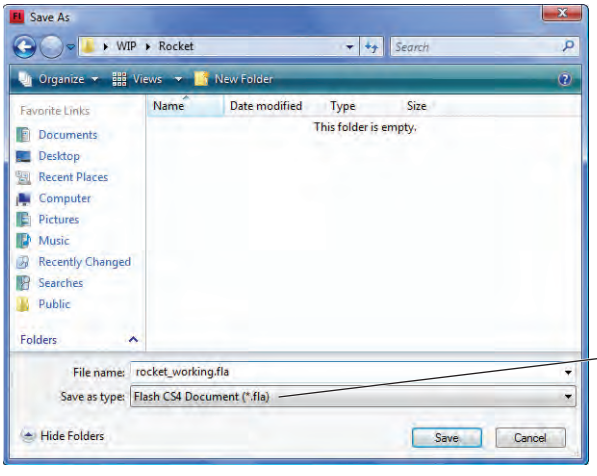
Although there are slight differences in appearance between the Macintosh and Windows (shown here) dialog boxes, the options are all the same.

7. **Change the file name to `rocket_working.fla`. Make sure Flash CS4 Document is selected in the Format/Save As Type menu and click Save.**

By default, the extension is included in the Save As/File Name field. You don't need to type it again if you don't delete the default extension from the field.

Note:

It's good practice to include the ".fla" extension in the file name. Doing so will help you distinguish Flash files from Flash player files (with the ".swf" extension) when you start exporting files for digital distribution.



If necessary, you can use this menu to save a file to be compatible with the previous version of Flash.

Flash files — that is, "live" files in the program's native format — use the ".fla" extension. When distributing movies and animations for viewing by other people or for use on a Web site, you use a stand-alone format that does not require the actual Flash application. These files are called "player" files (because they require the Flash Player to view) and use the ".swf" extension.

Import Objects from Other Programs

As we discussed during the production meeting for this assignment, you will base your work on a hand-drawn sketch of a rocket ship. We already scanned the sketch for you, so you don't need to worry about that step. (In an actual on-the-job project, however, you would need to scan the sketch as the first step in the design process.) Flash can import a wide variety of file formats, including native Illustrator and Photoshop files, as well as JPG, GIF, TIF, and EPS. The first three formats are bitmaps; the fourth — EPS, or Encapsulated PostScript — is a common vector format.

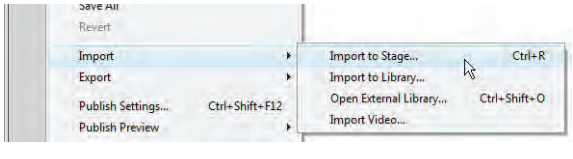
1. **With the `rocket_working.fla` file open, choose File>Import>Import to Stage.**

Four options are available when you choose the Import command:

- **Import to Stage** simply brings an external image onto the current Stage. (The image is also added to the file Library panel.)
- **Import to Library** automatically places graphics into the Flash Library panel.
- **Open External Library** is commonly used to incorporate graphics from one project into another project.
- **Import Video** allows you to bring digital video into a Flash file.

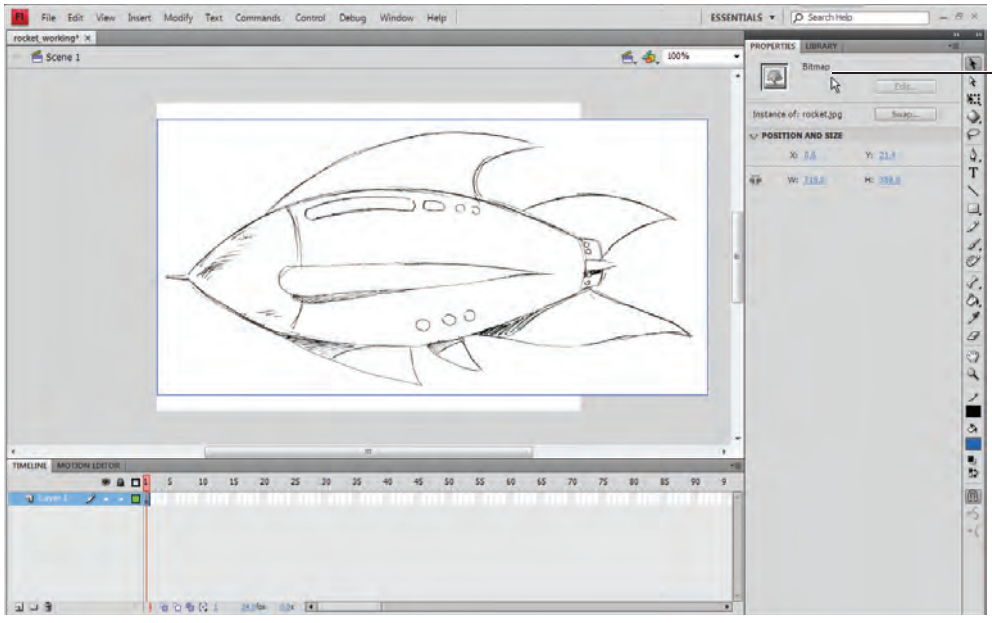
Note:

The key command for importing objects to the Stage is Command/Control-R.



2. **Navigate to the RF_Web>Rocket folder and double-click the `rocket.jpg` file.**

3. **Look at the Properties panel on the right side of your workspace.**



The Properties panel shows that the selected object is a bitmap file.

4. **Save the file and continue to the next exercise.**

Bitmap Images vs. Vector Art

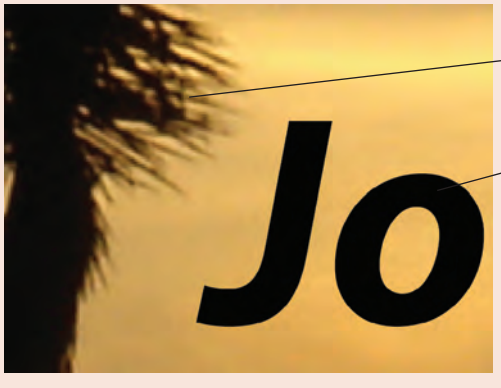
FLASH FOUNDATIONS

There are two kinds of computer images. The first, known as a **bitmap**, is composed of simple pixels. Each pixel has a specific value, and that value determines the color, intensity, and brightness of that pixel. The number of pixels that make up a bitmap image is fixed at the time of the scan or photograph. If you blow up (enlarge) a bitmap image, it becomes grainy and loses quality; in fact, you can see the individual pixels in an enlarged bitmap image.

Flash is a vector-based program. **Vector art** is not based on pixels; instead, it is based on mathematical values. Vector art is essentially a tiny program that tells the printer or monitor to "draw a line from point a to point b, and that the line needs to bend x degrees coming out of point a and enter point b from an angle of z." Although this might sound confusing, you don't have to write any complicated code to make vectors work properly; you can simply draw with the Flash tools and the vectors are created for you.

An example of the difference between a bitmap image and vector art is shown below. At 100% size, both the image (a bitmap) and the type (composed of vector objects) are crisp. If you zoom in close enough, however, the individual pixels in the photograph start to show, and the image breaks down — while the type remains perfectly crisp and clear.

At actual size, both the type in this image and the photograph appear perfectly crisp and clear.



The detail on the tree breaks down if you look closely enough.

The type object, which is a vector object, remains clear even when enlarged

Change Document Properties

There are many reasons why you might need to change the size and other properties of a document; for example, when it's complete, the artwork you're creating in this project will be placed horizontally along the top of a Web page. Knowing this, you need to make the document wider than it is high so it appears visually correct in its final application. It is important to note that changing the document size does not change the size of the objects contained in the document; you have to do that yourself on an object-by-object basis.

Objects on the Stage are controlled through the Properties panel. Document properties, on the other hand, change the size of the Stage only; the settings in the Document Properties dialog box have no effect on existing objects on the Stage.

1. **With `rocket_working.fla` open, choose the Selection tool at the top of the Tools panel.**

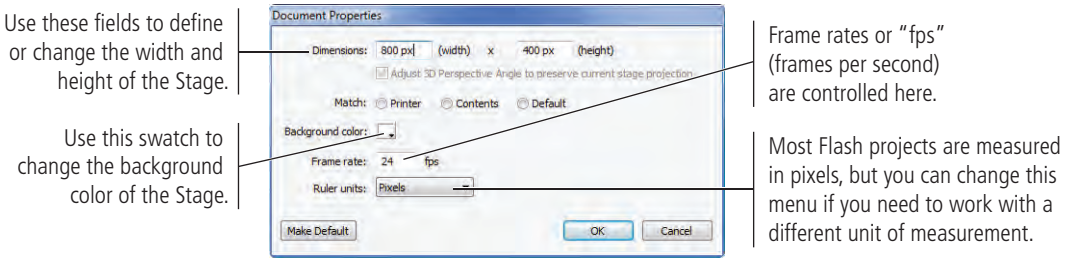
2. **Click away from the imported bitmap image to deselect it.**

3. **In the Properties panel, click the Edit button to the right of the document size.**

   This command opens the Document Properties dialog box. Changes made here affect the Stage (including all scenes contained within the movie). These changes do not, however, affect the objects contained in the movie; changing the size of the Stage doesn't alter the size of objects you've already drawn.

> ***Note:***
>
> *You can also choose Modify>Document to open the Document Properties dialog box.*

4. **Change the Width field to 800 pixels, and click OK to apply the change.**



5. **Save the file and continue to the next exercise.**

Align Objects

At times you might want to align a set of objects, such as a column of buzzing bees or a row of spectators in the bleachers at a sporting event. At other times, however, you'll need to align objects relative to the Stage. One example, which you see next, is positioning an object in the exact center of the Stage, equidistant from both the top and bottom edges, as well as from the two sides.

You can use the Align panel to control alignment and/or space-distribution options. You can align the sides, tops, bottoms, or centers of any and all selected objects, along either their horizontal or vertical axes.

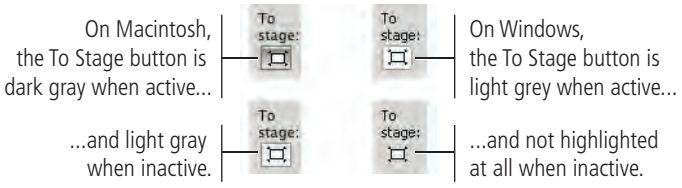
1. **With `rocket_working.fla` open, choose Window>Align to open the Align panel.**

   Remember: all Flash panels are accessed in the Window menu. Beginning in Project 2, we will only tell you which panel you need to use; we will not repeat the instruction to open the panel from the Window menu.

> ***Note:***
>
> *Press Command/Control-K to show or hide the Align panel.*

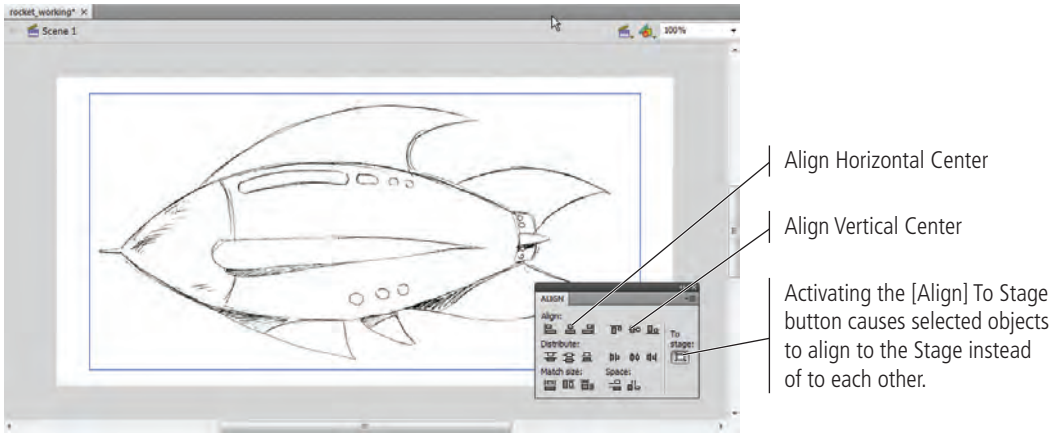
2. **Click the To Stage button until the button is active.**

The buttons in the Align panel are arranged in specific categories: Align, Distribute, Match Size, and Space. The Align panel remembers the last-used state of the To Stage button, so this option might already be active.



3. **Click the sketch on the Stage to select it, and then click the Align Horizontal Center and Align Vertical Center buttons.**

The scan of the rocket ship snaps into the center of the Stage, along both axes.



4. **Save the file and continue to the next stage of the project.**

Aligning Objects to Each Other

FLASH FOUNDATIONS

Besides being able to align an object to the Stage, you can also align two or more selected objects to each other. The images shown here are basic examples of how you can use the Align panel to align objects on the Stage.

You can also use the distribution buttons to equalize the amount of space between multiple objects, or use the Match Size buttons to match the sizes of different objects.

Align Left Edge

Align Top Edge

Original object placement

Align Horizontal Center

Align Vertical Center

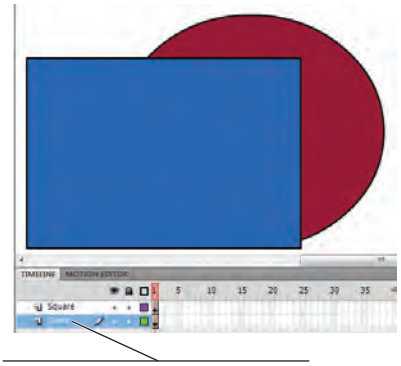
Align Right Edge

Align Bottom Edge

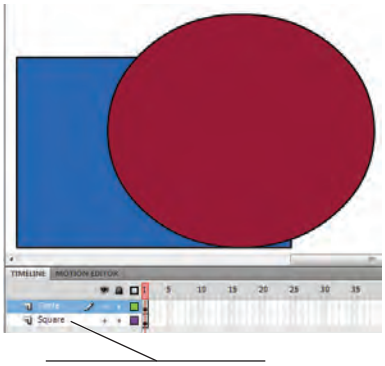
Stage 2 Using Layers to Develop Artwork

If you've used other professional drawing or imaging programs, you might already know about layers and how they work. If not, the following exercises will introduce you to these important concepts.

Think of layers as individual sheets of transparent material on which you can draw. For example, let's say you drew a red circle on one sheet of the material and a blue square on another sheet. If the sheet containing the square were on top of the sheet containing the circle, the portion of the square laying directly over the circle would hide that portion of the circle. If you were to move the sheet containing the circle to be on top of the sheet containing the square, the opposite would occur: the circle would obscure the square.



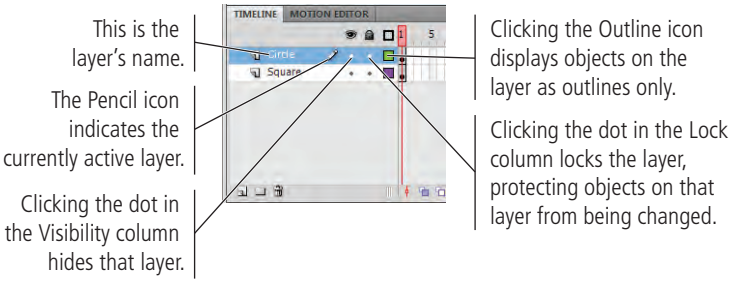
These are layers. As their names suggest, one layer holds the circle and another layer holds the square.



Rearranging layers determines which objects cover other objects.

Create Layers for Organizing Artwork

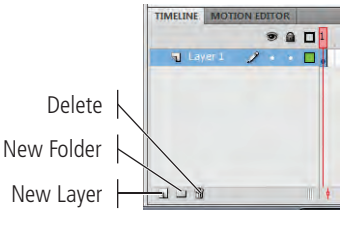
To facilitate work on complex objects — both from a drawing perspective as well as from the standpoint of being able to animate complex objects — Flash provides a simple way to create, rearrange, and otherwise manage layers (the imaginary "sheets" we discussed above). Some Flash objects, especially complex animations, require many layers to create the desired result.



> ***Note:***
>
> *Layers are stacked on the left side of the Timeline. The order in which the layers are stacked (from top to bottom) is referred to as the* ***stacking order****.*

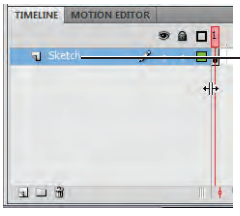
1. **With `rocket_working.fla` open (from your WIP>Rocket folder), look at the layers portion of the Timeline.**

   There is only one layer, named Layer 1. By reviewing the icons to the right of the layer's name, you know Layer 1 is active, visible, unlocked, and displaying regular — not outlined — objects.



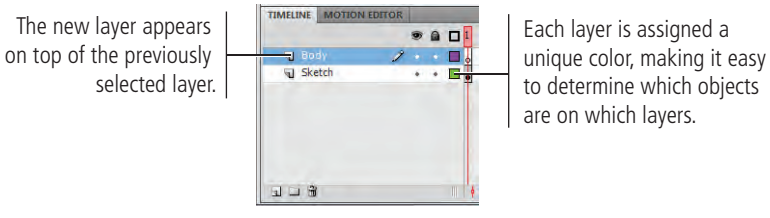
2. **Double-click the name of the layer to highlight the name. Type `Sketch` to rename the layer, and then press Return/Enter to apply the change.**

   Layers are stacked on the Timeline. Objects on the lowest layer are covered by objects on all layers above it in the Timeline. When developing a drawing with many layers, you often change the layer stacking order.

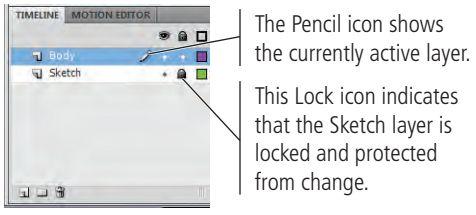


3. **Below the list of layers, click the New Layer button to add another layer on top of the first layer.**

4. **Rename the new layer `Body` and press Return/Enter to apply the change.**



5. **Lock the Sketch layer by clicking the small dot below the Lock icon.**



Note:

If a layer is selected but locked, the pencil is covered with a slash, indicating that you can't change objects on the layer or add objects to the layer.

6. **Save the file and continue to the next exercise.**

Organize Layers into Folders

A Flash project can contain dozens of layers representing the various components of the animation or movie. To organize all these layers into logical groups or categories, you can use layer folders. You can rename layer folders in the same way you rename layers, and you can reorder layer folders (and their contents) by dragging the folders into new positions in the layer stack.

1. **With `rocket_working.fla` open, click the New Folder button at the bottom of the Timeline panel (below the list of layers).**

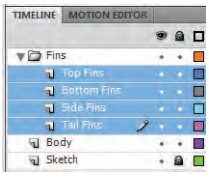
2. **Double-click the layer folder name and type `Fins` to rename the folder.**

   You change the name of a layer folder the same way you change the name of a layer; simply double-click the folder name and type in the new name.

3. **Create four new layers named Top Fins, Side Fins, Bottom Fins, and Tail Fins.**

4. **Shift-click the four new layers and drag them onto the Fins layer folder.**

   The dragged layers now reside inside the Fins layer folder. The layers will stay together as long as they all remain inside the folder.



Note:

Press Shift to select contiguous layers — that is, layers directly on top of or below one another. To select layers that aren't next to each other, press the Command/Control key while clicking the individual (non-contiguous) layers.

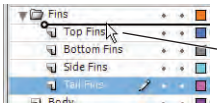
5. **Rearrange the layers within the Fins folder to match the following top-to-bottom stacking order:**

   Tail Fins

   Bottom Fins

   Side Fins

   Top Fins



To rearrange layers, simply click the layer and drag it into a new position in the list of layers.

6. **Click the Sketch layer name to select it, and then create another new layer folder and name it Body Parts.**

   New layers and layer folders are created in the same nesting level as the currently selected layer. If you click the New Folder button with the nested layers selected, the new layer folder will be created inside the Fins folder instead of at the same level as the Fins folder.

7. **Create new layers named Nose Cone, Windows, and Exhaust Vent. Drag these layers — along with the existing Body layer — into the new Body Parts layer folder.**

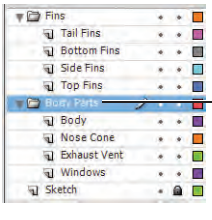
8. **Arrange the layers in the Body Parts folder in the following top-to-bottom stacking order:**

   Body

   Nose Cone

   Exhaust Vent

   Windows



Each folder contains separate layers, which will contain individual components of the artwork.

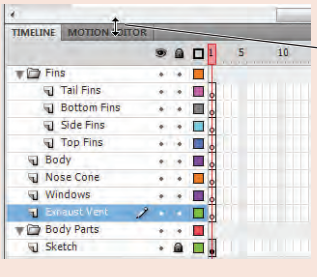
Note:

Layers and layer folders can assist you in organizing complex drawings and animations into logical, easy-to-recognize component categories — and at the same time, allow you to keep all the components separate.

Expanding and Reducing the Timeline

FLASH FOUNDATIONS

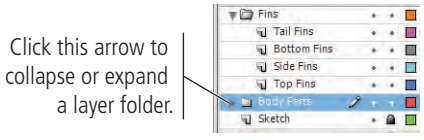
When you work with complex images that contain many layers, it's often helpful to expand the vertical size of the Timeline; the Timeline's default height wouldn't allow you to see all the layers the document contains. To increase the vertical size of the Timeline, simply grab the small bar that separates the Timeline from the Stage and drag it up. To decrease the vertical size of the Timeline, drag the bar down.



Drag this bar up or down to change the height of the Timeline.

9. **Click the Arrow icon to the immediate left of the Body Parts layer folder to collapse the folder.**

Once collapsed, you see only the layer folder; you do not see the individual layers it contains. (Layers in collapsed folders are still visible on the Stage, but not in the list of layers.) Collapsing folders makes it much easier to organize complex Flash documents.

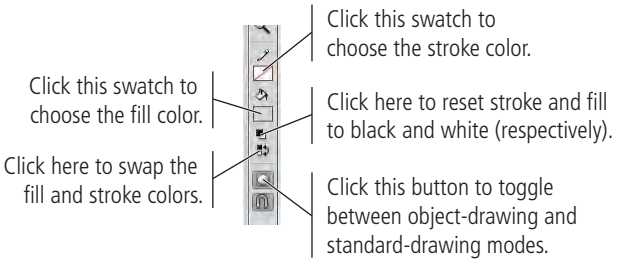


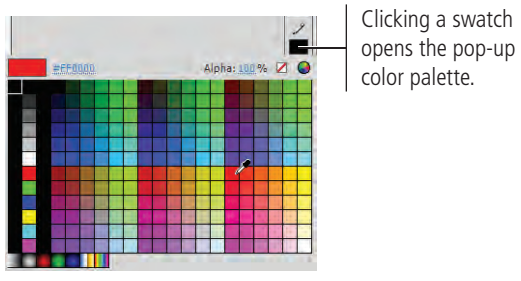
10. **Save the file and continue to the next stage of the project.**

Stage 3 Drawing in Flash

A **primitive shape** is a simple object such as a square, circle, oval, rectangle, or polygon. (A **polygon** is any shape with at least three sides and angles; this definition naturally includes triangles.) Other shapes include **freeform shapes**, and recognizable objects such as balloons, stars, twirls, cones with rounded bottoms, spirals, and a host of others.

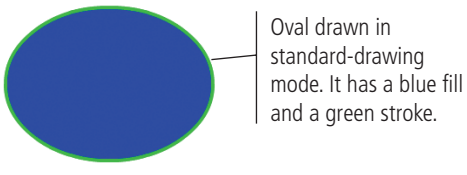
A shape displays two primary attributes: a fill and a stroke. The **fill** is the color contained within a shape, and the **stroke** is the line that defines the outside border of a shape. To change the fill and stroke of an object, use the pop-up Color Swatch panel that appears when you click and hold the Stroke or Fill button at the bottom of the Tools panel.

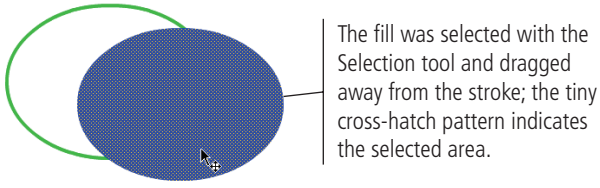




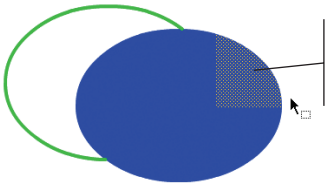
There are two modes for drawing in Flash: standard drawing and object drawing. When you draw with the primitive shapes tools, or with the Pen, Line, Pencil, or Brush tool, a toggle near the bottom of the Tools panel determines which type of drawing you will create.

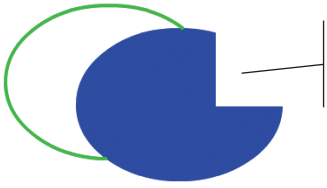
When created in **standard-drawing mode**, the fill and stroke are treated as separate entities. You can individually select each part with the Selection (solid arrow) tool, and you can move or modify each part without affecting the other.



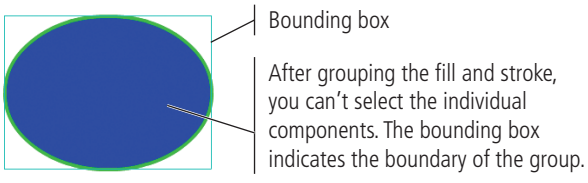


Standard-drawing mode has some advantages over object-drawing mode; specifically, you can select a part of a shape by dragging a marquee with the Selection tool.

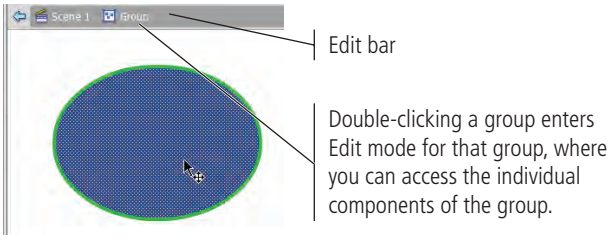




You can prevent this type of editing by grouping the components of the object. Simply drag a selection around the entire object and choose Modify>Group. When a standard object is grouped, you see only the group **bounding box** (the blue border) when you select the object on the Stage.



Even when standard objects are grouped, you can access the individual pixel components by double-clicking them on the Stage. This opens a secondary Stage — called **Edit mode** — where you can access and edit the individual components. The Edit bar above the Stage shows that you are no longer on the main Stage, but editing a group.



Of course, standard-drawing objects have their drawbacks as well; you could easily move or change an object that you don't want to change — such as dragging a fill away from its stroke and not realizing it until 15 steps later when it's too late to easily undo the error.

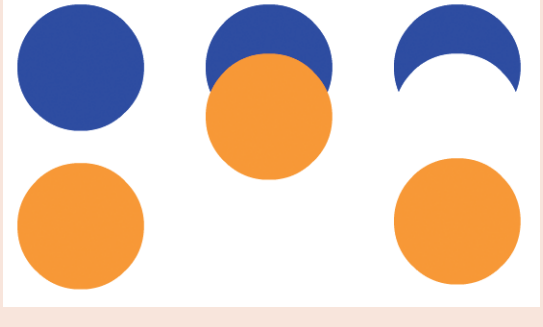
Note:

When you double-click an object or group, you are editing the object in place (this is often referred to as "entering into" the object or group). Other objects on the Stage remain visible but shaded back; you can see those objects, but you can't access them.

Destructive vs. Non-Destructive Editing

FLASH FOUNDATIONS

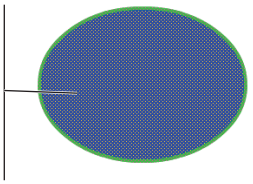
When you drag one standard object onto another standard object on the same layer, the topmost object removes whatever portion of the lower shape it covers. In the second image to the right, we placed the orange circle from the first image on top of the blue circle. In the third image, you see the result of deselecting the orange circle, and then reselecting it and pulling it away from the blue circle. (This type of destructive interaction does not occur until you deselect the topmost object. This gives you a chance to "finalize" the edit. As long as you still see the crosshatch pattern on the object you're dragging, the underlying objects have not yet been changed.)

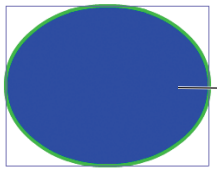


This type of interaction does not occur with objects created in object-drawing mode or when you're working with grouped objects. If you select something with the Selection tool and see a bounding box instead of the crosshatch pattern, underlying objects will not be affected. Only you can tell when an object needs to be protected from destructive interaction with other objects or, conversely, when you want one object to interact another object.

To solve this problem, you can draw in **object-drawing mode** by toggling on the switch at the bottom of the Tools panel. When you create a shape or line in object-drawing mode, it automatically displays the bounding box as soon as you create it, and you can't select the fill and stroke independently — at least not on the main Stage.

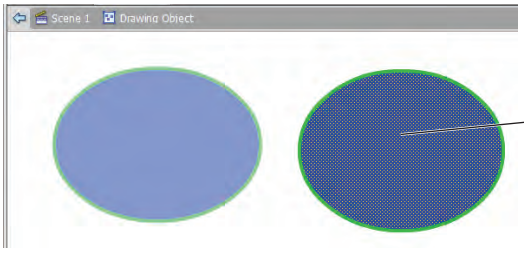
A circle drawn in standard-drawing mode; when selected with the Selection tool, the fill and stroke are treated as distinct elements that can be moved or edited independently.





A circle drawn in object-drawing mode; when selected with the Selection tool, you see the outer bounding box instead of the highlighted area.

If you want to access the individual components of an object in object-drawing mode, simply double-click the object. Like modifying a group, double-clicking activates Edit mode; the Edit bar shows that you are "inside" (editing) a drawing object that exists in Scene 1.



In Edit mode, you can access the individual drawing objects that compose an object created in object-drawing mode.

Note:

You can also convert an object-drawing object to a standard-drawing object by selecting it on the main Stage and choosing Modify>Break Apart.

Use the Oval Tool to Create Shapes

Many otherwise complex objects are, in fact, simply a collection of primitive shapes combined, overlaid, and mixed together. Actually, with a little vision, you can see that most artwork is a combination of various primitive shapes.

1. **With `rocket_working.fla` open, select the Side Fins layer inside the Fins layer folder.**

2. **Zoom in to the front of the side fin.**

   As a general rule, we don't tell you the specific view percentage to use because every user's monitor and personal preference determine a comfortable working environment. We do, however, tell you where to focus your attention.

3. **Choose the Oval tool (nested under the Rectangle tool) in the Tools panel.**

4. **Make sure the Object Drawing option is toggled off at the bottom of the Tools panel.**

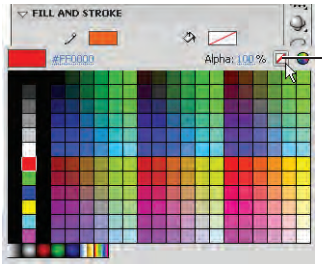
The Object Drawing toggle is dark gray when active.

The Object Drawing toggle is not highlighted when inactive.

5. **In the Properties panel, click the Stroke swatch and choose a bright color that will stand out against the gray and black lines in the sketch.**

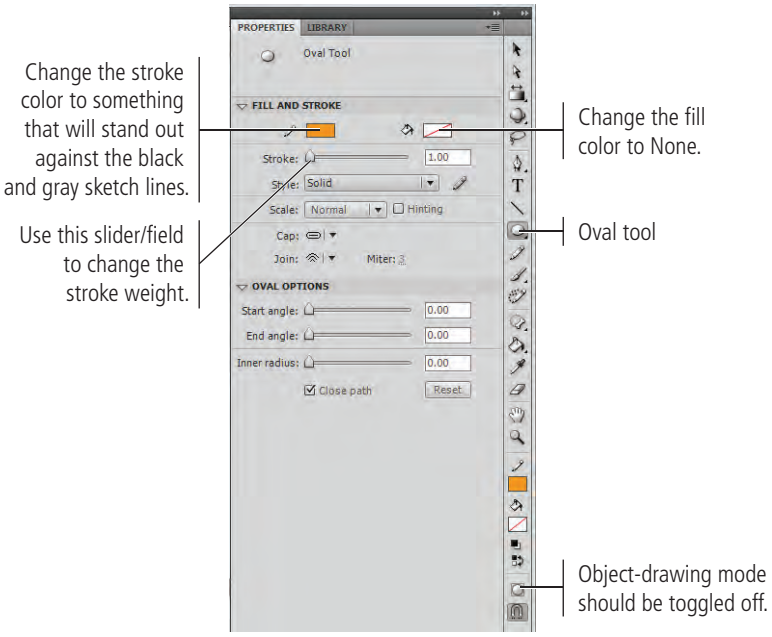
   We used orange, but feel free to use whichever color you prefer.

6. **Click the Fill swatch and choose the None option in the top-right corner of the pop-up palette.**



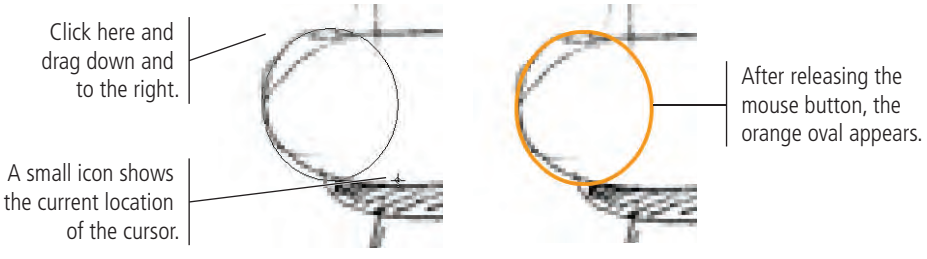
7. **Set the stroke weight (thickness) to 1 pt and choose Solid in the Style menu.**

When you select a drawing tool, the Properties panel provides controls for fill color, stroke color and weight, the type of stroke (now set to Solid), access to custom strokes, end cap styles (round, square, etc.), and whether strokes meet in sharp or blunt corners.



8. **On the Stage, click at the upper corner of the curve, and then drag down and right to create an oval that closely matches the shape of the front of the fin.**

If you don't get it right the first time, press Command/Control-Z to undo and try again.



Note:

Press the Shift key while drawing to constrain the shape to a perfect circle. The same method works with the other primitive shape tools as well.

9. **Choose the Selection tool (the solid arrow) in the Tools panel.**

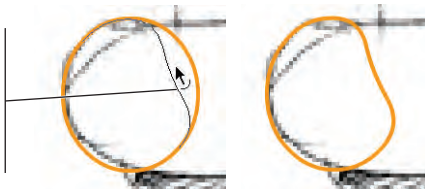
10. **Click away from the circle to deselect it, and then move the cursor near the top-right edge of the circle until you see a curved line in the cursor icon.**

11. **Click and push the top-right edge of the circle toward the center of the circle.**

One unique aspect of drawing with Flash is using the Selection tool to pull and push a shape until it exactly fits what you're tracing. When you release the mouse button, the circle is reshaped. Although it takes a bit of getting used to, you will find this method quite effective once you've mastered it.

> ***Note:***
>
> *This type of "bending" works for objects created in standard-drawing or object-drawing mode.*

When the Selection tool cursor includes a curved line in the icon, you can click and drag to "push" the line into a different shape.

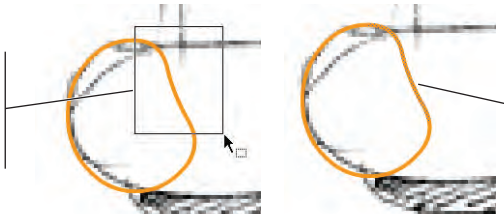


12. **Use the Selection tool to draw a rectangle marquee that covers the upper-right side of the object you reshaped in Step 11.**

When you release the mouse button, the area you surrounded with the rectangle (called a selection marquee) displays a hatch pattern, indicating that the area is now selected.

Because you drew this object in standard mode, you don't have to "enter into" the object to edit the components.

A selection marquee can be used to select certain parts of a drawing object.



The hash pattern shows the selected part of the drawing.

13. **Press the Delete/Backspace key to remove the selected portion of the shape.**

The selected area is removed from the Stage. You can select any portion of an object in this manner, and then change its stroke and fill values independently of the rest of the drawing — or, as is the case here, remove it from the Stage completely.

14. **Use the same method to remove the bottom-right side of the shape.**

15. **Use the Selection tool to refine the shape until the curves fit the sketch.**

If you position the Selection tool at the very end of a stroke, you can pull the end of the stroke to a new position. The lines connected to the end point will reshape as necessary to match the new position of the end point.

16. **Save the file and continue to the next exercise.**

Work with the Line Tool

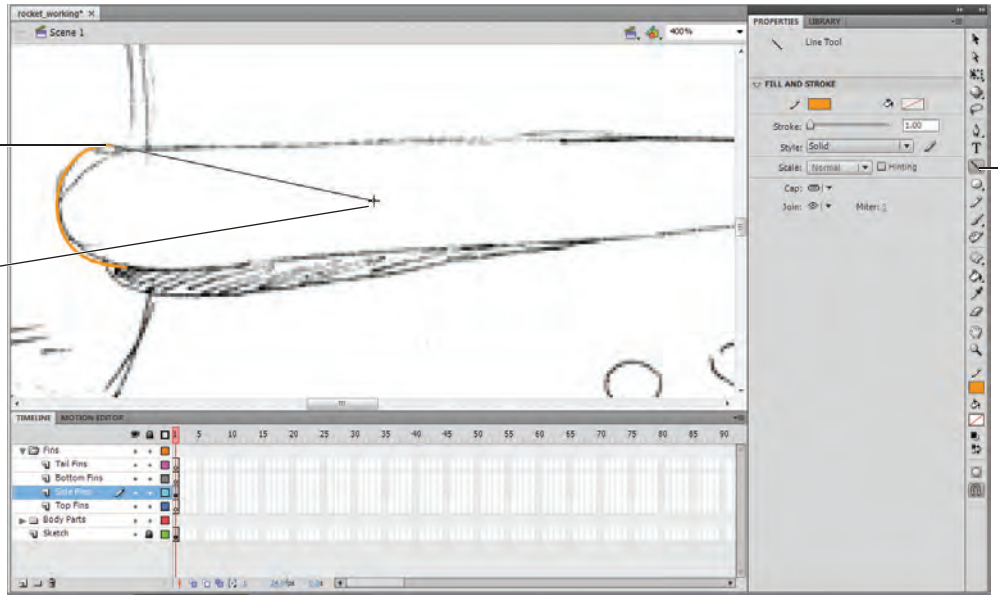
The Line tool draws lines, which are simply strokes with no fills. You can combine lines with other shapes to develop custom objects, such as the fin you're working on now. In this exercise, you draw several lines to complete the shape of the side fin.

1. **With `rocket_working.fla` open, select the Line tool in the Tools panel and make sure the object-drawing option is turned off.**

   You're adding to the standard-drawing mode object you created in the previous exercise, so you should continue working in standard mode.

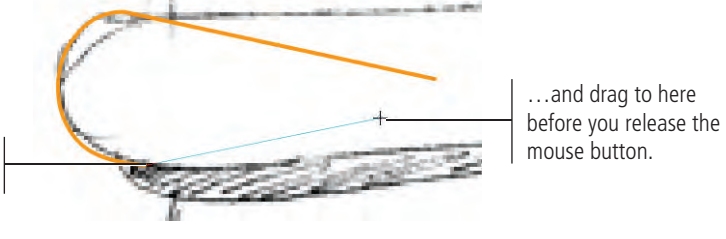
2. **Click the upper-right end of the half-oval shape, then drag down and to the right before releasing the mouse button.**

   Since you're clicking the end of an existing line, Flash assumes you're continuing the same shape and automatically connects the lines with a corner point. The line doesn't have to be a specific length; it should stop somewhere above the center of the empty space to the right of the partial oval shape.



3. **Drag another line from the bottom edge of the half-oval to somewhere below the endpoint of the line you drew in Step 2.**

   At this point, you should have two lines that come off the top and bottom of the curve and hang in the middle of the fin shape.



4. **Using the Subselection tool (the hollow arrow), click the end of the top line to select that point, and then pull it out until it sits at the rear of the fin.**

The Selection tool selects entire paths, but the Subselection tool selects individual anchor points. You use the Subselection tool to edit, add, or delete anchor points, or adjust curves using the handles that radiate from anchor points.

Note:

Anchor points are more fully explained in the next exercise.

Use the Subselection tool to select the point at the end of the line and pull it to the end of the shape.

5. **Pull the end of the bottom line until it touches the end of the top line.**

If Snap To Objects is active (View>Snapping>Snap To Objects), the point you drag will "snap" to the other point as soon as it gets close.

Using the Subselection tool, pull the end of the line until it touches the end of the top line.

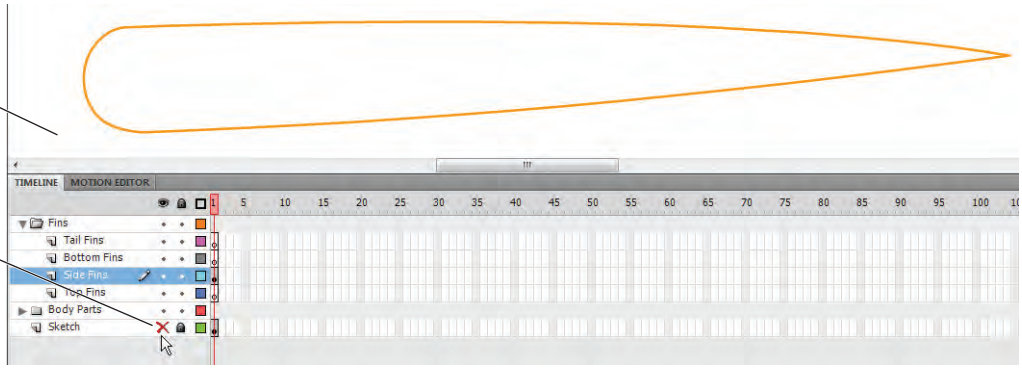
6. **Use the Selection tool to bend the top and bottom lines so they more closely match the curve of the original sketch.**

7. **Hide the Sketch layer.**

By hiding the Sketch layer, you can better see how your side fin shape is coming along. With the background hidden, it's easier to check the lines, curves, and overall integrity of the shapes you're developing.

The sketch bitmap, on the hidden Sketch layer, is not visible on the Stage.

Hidden layers show an X in the Visibility column.



8. **Show the Sketch layer, lock the Side Fins layer, save the file, and continue to the next exercise.**

Locking the layer protects the object while you work on other components of the drawing. If the layer remains unlocked, you might accidentally delete or otherwise modify the shape. (The sketch is the basis for developing the actual drawing, so the Sketch layer should remain locked.)

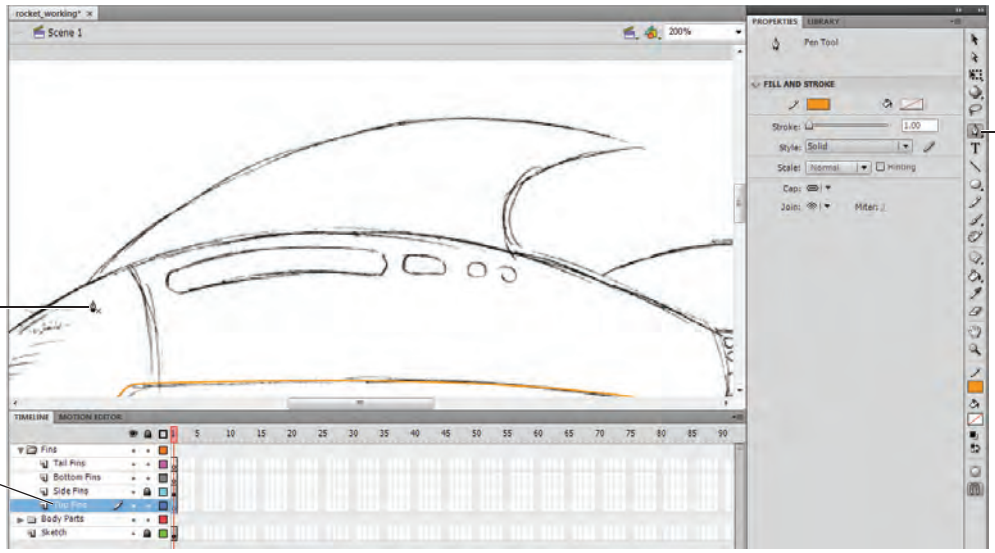
Draw with the Pen Tool

The Pen tool draws curved lines, also known as Bézier curves. A Bézier curve is a curved line defined by specific points called anchor points. These anchor points define the direction and shape of the curves that make up a line or shape. In this exercise, you use the Pen tool to create the top fin of the rocket ship.

1. **With `rocket_working.fla` open, select the Top Fins layer.**

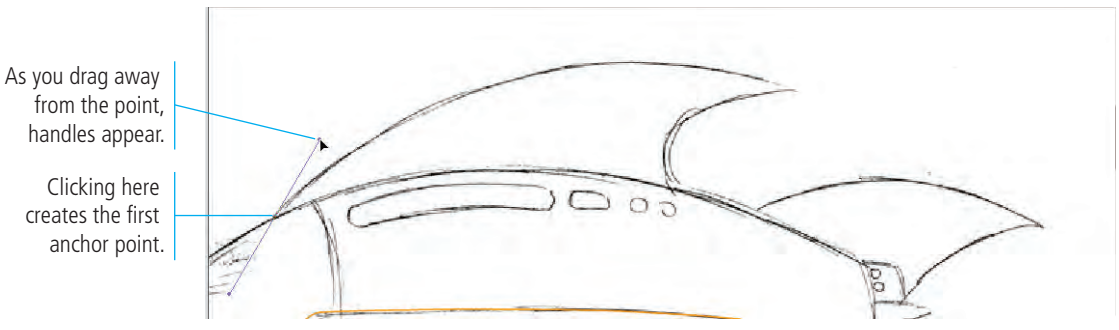
2. **Select the Pen tool in the Tools panel.**

   The Properties panel shows different settings that affect how and what you draw with the Pen tool. Make sure the stroke color is set to the same orange you used earlier, the stroke weight is set to 1 point, and the stroke style is set to Solid. It's likely these settings are already in place; but if someone used your computer or you changed the settings since the previous exercise, you might have to return the settings to the ones you used earlier.



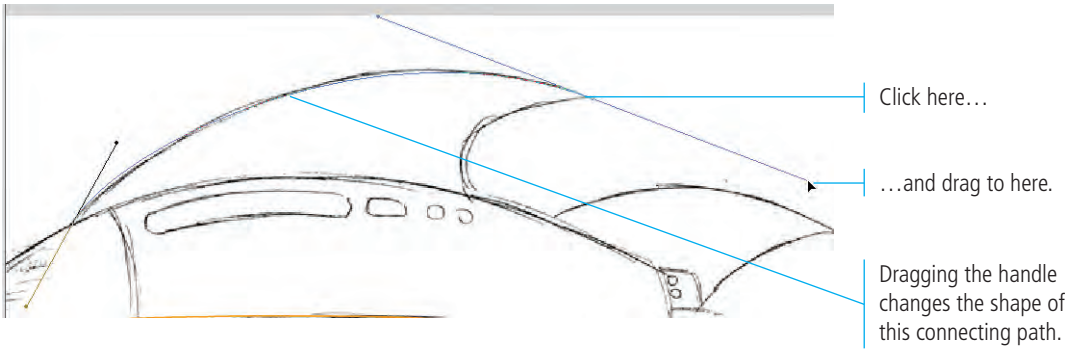
3. **Click the Pen tool at the left side of the top fin where it meets the body. Without releasing the mouse button, pull up and to the right.**

   The point you first click becomes an anchor point, which is a point at which the curve is attached to the drawing. As you pull, handles appear. Handles control the size and shape of the lines connected to the point; longer handles make a steeper curve.



4. **Now click at the upper-right corner of the top fin to place another anchor point. Without releasing the mouse button, pull down and to the right to create handles for the point, dragging carefully to fit the curve to the sketch.**

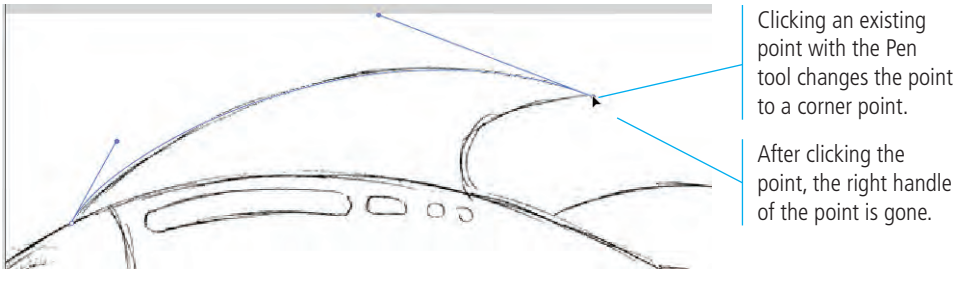
Clicking the upper-right corner of the fin shape creates a second anchor point, and pulling handles out from that anchor point creates the shape of the curve between the two points.



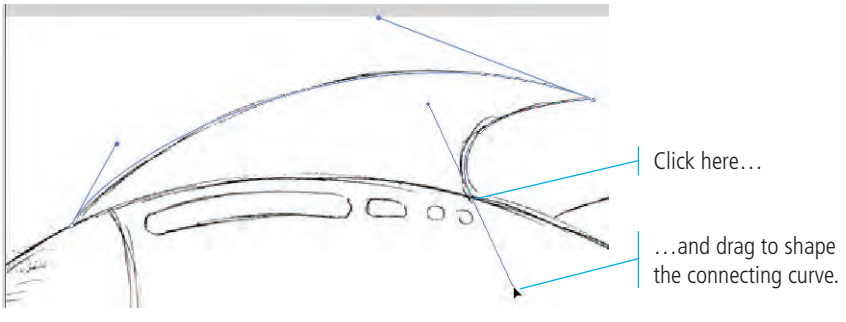
5. **Click the right anchor point with the Pen tool.**

There are two kinds of anchor points: curve and corner. In this case, you have to create a sharp corner.

While you're drawing a shape with the Pen tool, single-clicking the anchor point allows you to change direction, leaving a sharp corner instead of a smooth curve.



6. **Using the Pen tool, click at the point where the rear side of the top fin touches the ship body. Drag handles for this point until the shape of the curve matches the shape of the fin's back edge.**

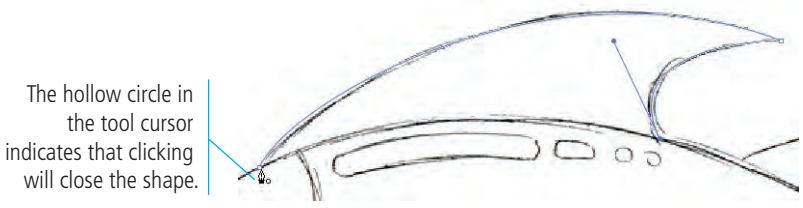


Note:

Placing the Pen tool cursor over an existing point shows a small arrow in the tool icon.

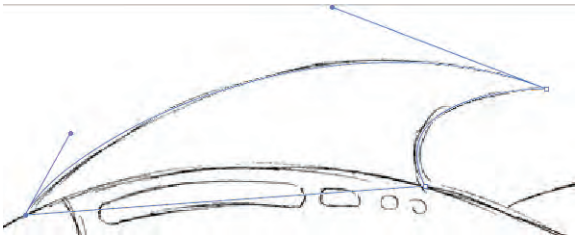
7. **Click the third point with the Pen tool to convert the point to a corner.**

8. **Hover the Pen tool cursor over the first anchor point you created until you see a small hollow-circle icon next to the cursor.**



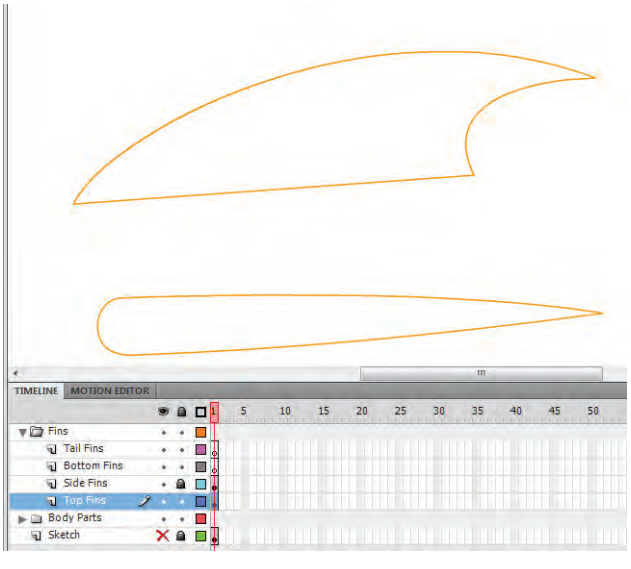
9. **Click to close the shape with a straight line.**

The straight line will be covered by the ship body, so it doesn't need to be adjusted.



10. **Deselect all objects on the Stage, and then hide the Sketch layer.**

Your fin should be graceful, not choppy. If you aren't satisfied with the result, delete your fin and try again.



Note:

While drawing with a basic shape tool, press Command/Control to temporarily access the Selection tool; when you release the modifier key, you return to the last-selected tool.

The easiest way to deselect everything is to press Command/Control, and then click away from any object on the stage.

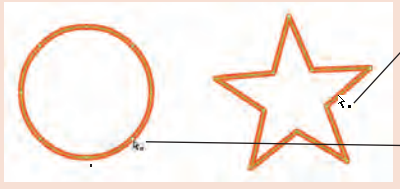
11. **Display the Sketch layer again and lock the Top Fins layer.**

12. **Save the file and continue to the next exercise.**

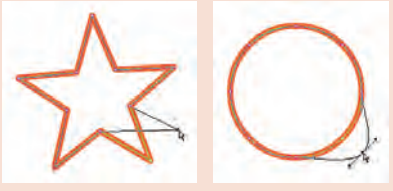
Pen Tool Basics

Using the Subselection tool. When you click a line with the Subselection tool, you can see the object's anchor points. In the image to the right, both objects were selected by surrounding them with a selection rectangle; you can see all the objects' points and curves.

Selecting entire objects or single points. As you move the Subselection tool near a stroke, a small, solid black square appears at the bottom right of the icon. If you move the Subselection tool directly over a single anchor point, a hollow square in the icon indicates that clicking selects only that point.



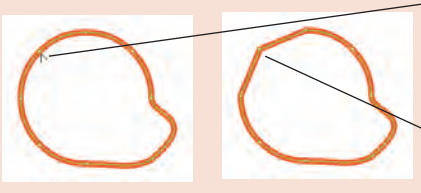
Moving points. To move an anchor point, select the point with the Subselection tool and move it to the desired location. You can also **nudge** (move it a little bit at a time) a point by selecting it and then pressing the Up/Down and Left/Right Arrow keys on your keyboard.



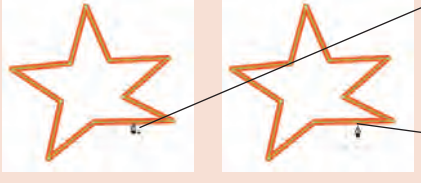
Reshaping a curve using its handles. To reshape a curve, first select it with the Subselection tool, and then drag the related handles. (Handles will appear from each smooth anchor point that is connected to the curve.)

Converting corner points to curves. To change a corner point into a smooth curve, first select the point you want to convert with the Subselection tool. Then press the Option/Alt key and drag the point; handles appear, and the corner becomes a curve. You can then adjust the shape of the curve by adjusting the handles.

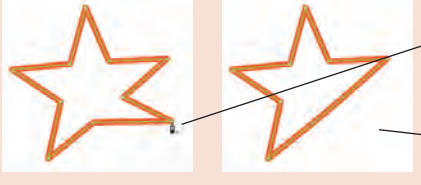
Converting curves to corner points. If you need to convert a curve to a corner point, place the Pen tool over the curve point, press the Option/Alt key, and click to change the point to a sharp corner. (Alternatively, use the Convert Anchor Point tool.)



Adding anchor points. To add an anchor point, first select the path with the Subselection tool. Using the Pen tool, place the cursor near the path but not over an existing anchor point until you see a plus sign (+) in the tool cursor. Click the path to add a new point to the line. (Alternatively, use the Add Anchor Point tool.)



Deleting anchor points. To delete an anchor point, first select the path with the Subselection tool. Using the Pen tool, place the cursor near an existing point until you see a minus sign (-) in the tool cursor. (Alternatively, use the Delete Anchor Point tool.)

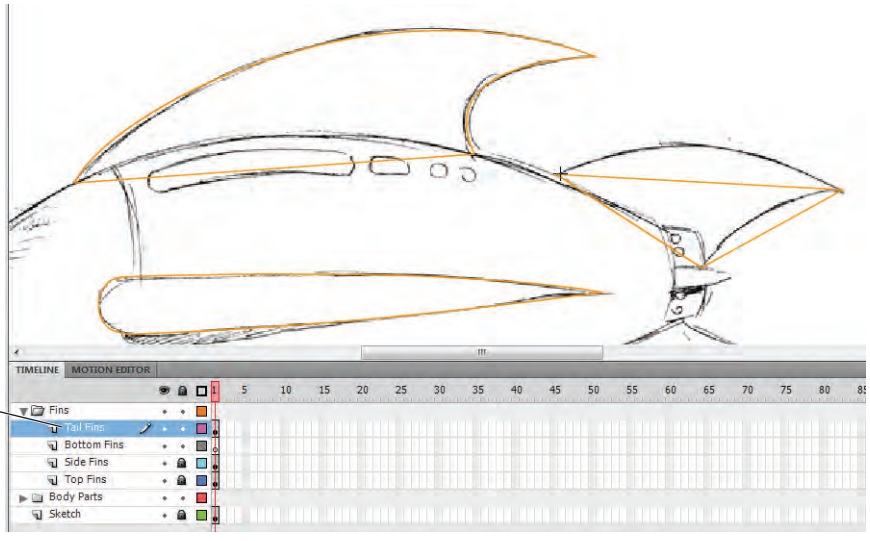


Work with Anchor Points and Curves

At times, you will need to create lines that follow multiple curves. You can use several different methods to accomplish this task, but all of them require you to manage multiple anchor points with curves of varying shapes and angles. To do this, you need to know how to add, delete, and modify anchor points and their curves and handles.

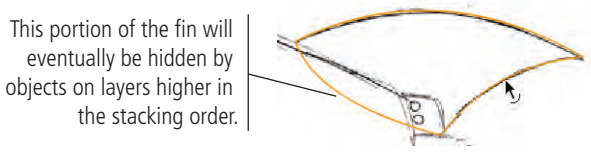
1. **With `rocket_working.fla` open, select the Tail Fins layer. Use the Line tool in standard-drawing mode to draw a triangle that touches all three corners of the top portion of the fin.**

   When you hover the cursor over the original starting point to close the shape, the cursor shows a small, hollow circle in the icon; this icon indicates that you can close the shape.



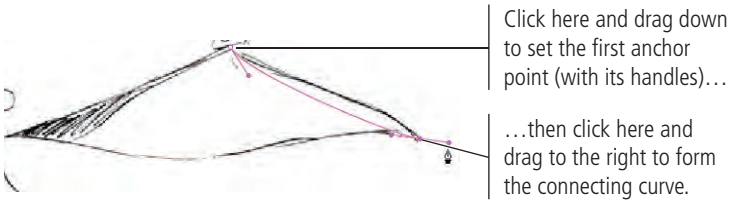
2. **Use the Selection tool to pull the three lines into shape.**

   Reshape the portion of the fin that intersects the body so it extends into the area where the body will be positioned. When you arrange the layers and put the body layer on top of the fins layers, the body will hide that portion of each fin. Make sure no gaps show between the fins and the ship.



3. **Starting on the top-right corner of the bottom tail fin, use the Pen tool to create a curve that curves away and down from the fin shape.**

   If you look closely, you'll see that the top portion of the sketched fin curves twice. You need to add an anchor point on the curve you just drew, which is actually a two-step process: first, you need to select the line, and then you need to add the anchor point.

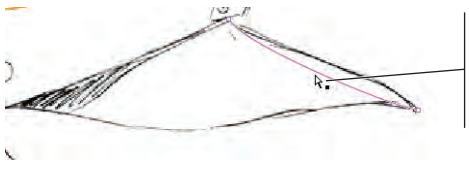


4. **With the Pen tool active, press the Command/Control key and click away from the line to deselect it. Do not release the Command/Control key.**

   Pressing Command/Control while using the Pen tool temporarily switches to the Subselection tool.

5. **Still holding the Command/Control key, move the cursor near the line you deselected in Step 4. When you see a black square in the cursor icon, click the line to re-select it.**

   This is a quirk of the software. For the following steps to work properly, you have to first deselect and then reselect the line.



When you hold down the Command/Control key, the Pen tool temporarily becomes the Subselection tool.

Note:

The Subselection tool selects individual anchor points and line segments. Use this tool when you want to add or delete an anchor point, reposition an anchor point, or adjust a curve using the handles that radiate from an anchor point.

6. **Release the Command/Control key to return to the Pen tool.**

   You could also simply choose the Add Anchor Point tool, but the method outlined in these steps allows you to add points to a path without switching tools.

7. **Move the Pen tool toward the line until a plus sign (+) appears in the tool's icon. Click the line to add an anchor point at that location.**

When you see a plus sign in the tool cursor, you can click to add an anchor point to the selected line.

8. **Choose the Subselection tool in the Tools panel and click the new anchor point.**

Clicking with the Subselection tool selects the point. Selected points are solid.

9. **Drag the anchor point and place it on top of the sketched line.**

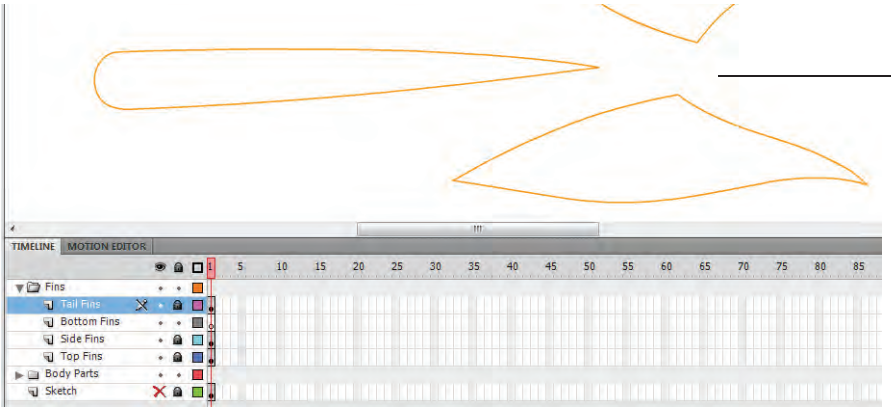
   As you move the anchor point away from its current position, the handles that control the curve become apparent. In the next step, you use these handles to change the shape and direction of the curve where you added the new anchor point.

10. **Using the Subselection tool, pull the handles of the three anchor points to adjust the shape of the line.**

11. **Deselect everything, then hide the Sketch layer and review your curve.**

Remember, curves should be smooth with no apparent flat spots or unnatural bumps or ridges (unless, of course, the artwork calls for a bump or ridge; this piece does not).

12. **Make the Sketch layer visible again, and then complete the rest of the tail fin using the methods you just learned. When you're satisfied with your fin shape, lock the Tail Fins layer.**

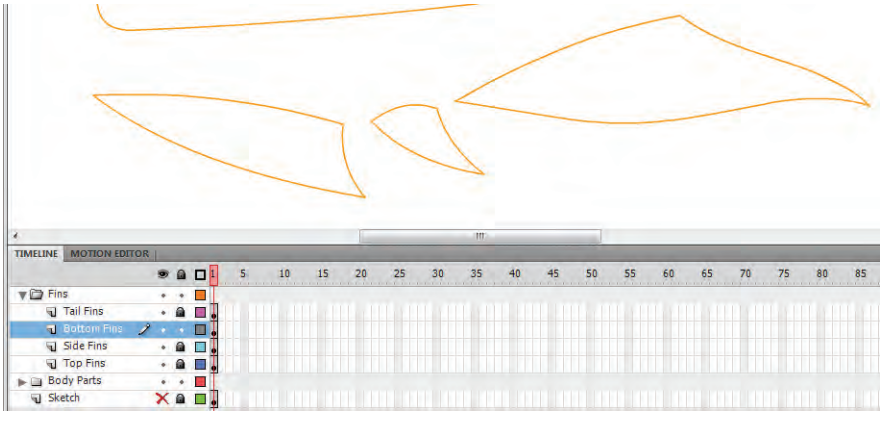


As you draw, you can show and hide the Sketch layer as necessary so you can review your progress.

13. **Select the Bottom Fins layer to make it active, and then use any techniques you've learned so far to complete the two bottom fins.**

14. **Using the Selection tool, bend the inner edges of each fin (where the fins meet the body) into the body area so the body area will overlap the fins and prevent any gaps.**

15. **Hide the Sketch layer and review your drawing.**



16. **Show the Sketch layer, save the file, and continue to the next exercise.**

Use Groups to Control the Interaction between Objects

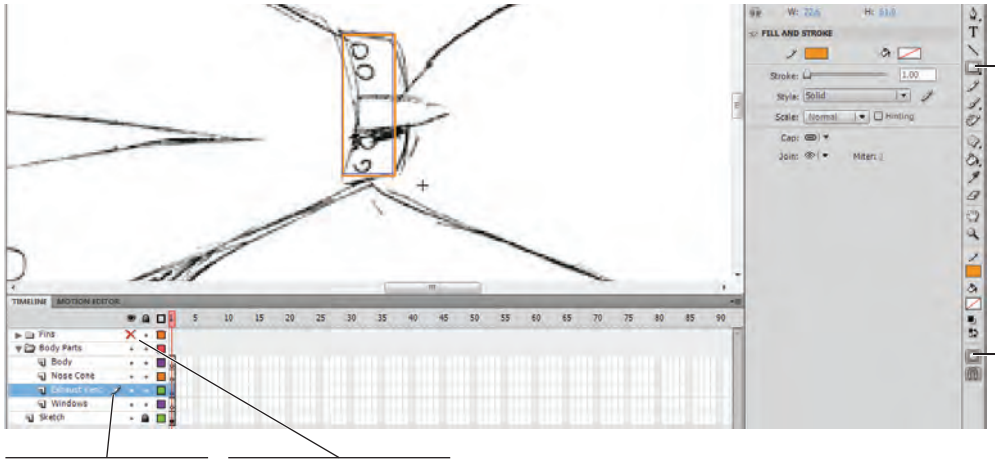
All your fins should be complete and neatly organized inside their layer folder. In this exercise, you collapse the Fins folder, hide it, and then start working on the body of the ship — and working with object groups. A group is a collection of shapes combined into a single object. You can ungroup a grouped object, returning it to the original collection of discrete components.

As you complete this exercise, you also learn how Flash objects residing on a single layer interact with each other, and how grouping and ungrouping objects offers control over that interaction.

Note:

When you use layer folders, you can lock and hide all the contents in the folder by locking and hiding the entire folder. As we mentioned earlier, many of your projects will be quite complex, requiring dozens of layers. Without layer folders, it would become very difficult to structure and manage your drawings and animations.

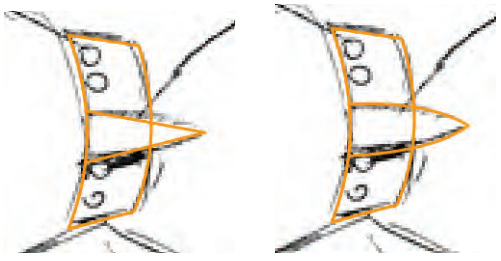
1. **With `rocket_working.fla` open, collapse the Fins layer folder. Hide all the fins by clicking the Visibility column of the Fins layer folder.**
2. **Expand the Body Parts layer folder so you can see the layers in the folder.**
3. **Make sure the Sketch layer is visible, and then click the Exhaust Vent layer to make it active.**
4. **Use the Rectangle tool in object-drawing mode to draw a shape for the four sides of the vent.**



5. **Deselect everything, then use the Selection tool to move the corners and bend the sides of the rectangle until they fit the sketch.**

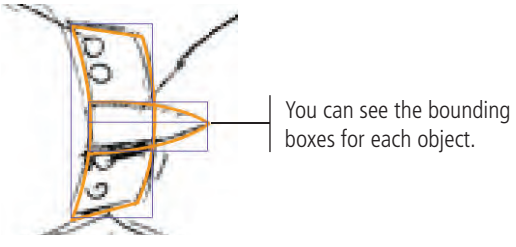
6. **Using the Line tool in object-drawing mode, draw two lines that extend from the left edge of the exhaust vent to the point at the end of the spear shape.**

7. **Using the Selection tool, bend the two horizontal lines into shape to match the spear-shaped part of the exhaust vent.**



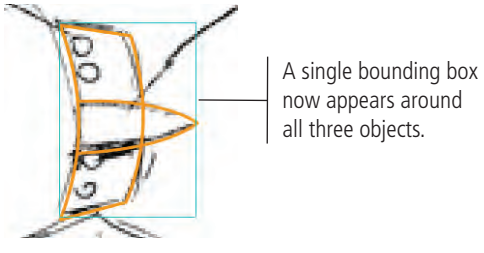
8. **Select all three shapes on the Stage.**

Because you created these objects in object-drawing mode, you can see a bounding box surrounding each shape. To prevent moving one of these components independently, you can group them into a single unit.



9. **Choose Modify>Group.**

When you group objects, the bounding box displays around the entire group. Using the bounding box, you can resize, move, and otherwise modify a group as you would a single object. Grouped objects are isolated from other elements on the same layer, so you can place grouped objects on top of one another with no worries of damaging the underlying objects.



Note:

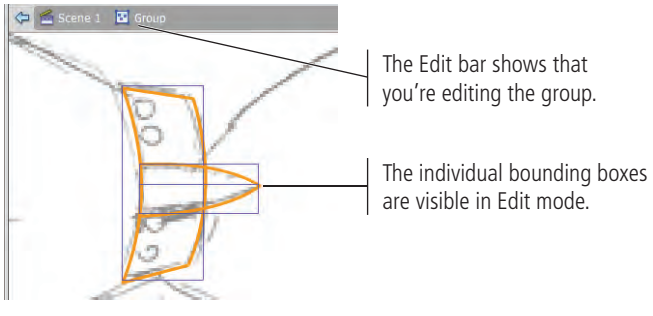
You can also group objects by pressing Command/Control-G.

To ungroup objects, select the group and choose Modify>Ungroup or press Command/Control-Shift-G.

10. **Double-click the group to enter into it (view the group in Edit mode).**

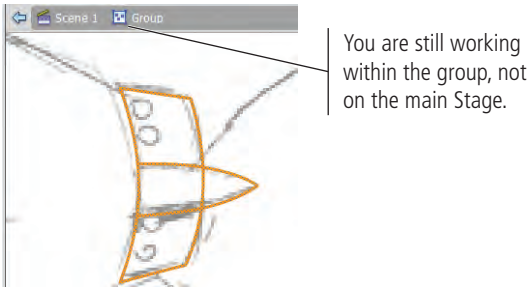
Even though the objects are grouped on the main Stage, you can access the individual components in Edit mode.

Because you drew these shapes in object-drawing mode, you can't access the pixels of the lines. You can't select and delete parts of the lines with the Selection tool, which you need to do.



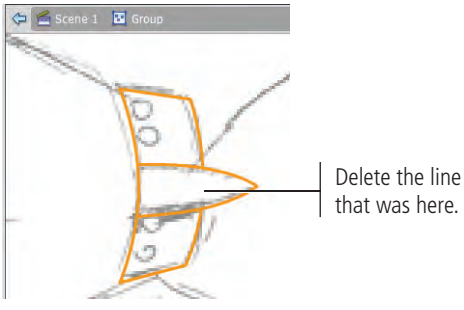
11. **With all three objects in the group selected, choose Modify>Break Apart.**

This command converts objects in object-drawing mode to standard mode so you can use the destructive editing capabilities of the Selection tool.



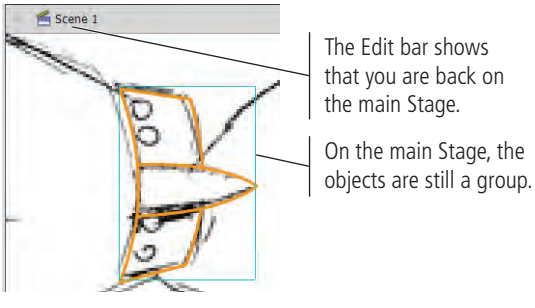
12. **Deselect all objects. Use the Selection tool to click the line in the middle of the spear shape to select it, and then press Delete/Backspace.**

Remember from the earlier discussion on destructive editing that when you're editing a drawing object, Flash recognizes and separates overlapping elements. (If you selected the shape with the Subselection tool, you would see that Flash added anchor points where the lines meet.)

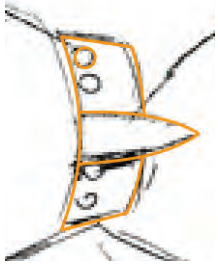


13. **Click Scene 1 in the Edit bar to return to the main Stage.**

Because these objects started as a group, and you made all the edits inside the group, the selection on the main Stage is still treated a single unit; the bounding box surrounds the outer edge of all the objects in the group.

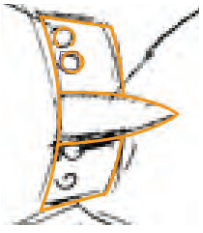


14. **Use the Oval tool in object-drawing mode to draw the circle at the top of the vent.**



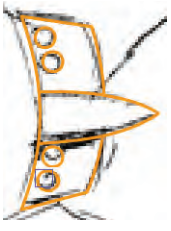
15. **With the Selection tool active, press the Option/Alt key and drag the shape to the second circle on the sketch.**

Pressing Option/Alt while dragging clones (makes a copy of) the object you drag.



> ***Note:***
>
> *Be careful while making copies of any object. Do not release the Option/Alt key before releasing the mouse. Doing so will move the original object instead of making a copy.*

16. **Using the same cloning method, make additional copies for the two round objects on the lower half of the vent.**



17. **Lock the Exhaust Vent layer, save the file, and continue to the next exercise.**

Use the Pencil Tool

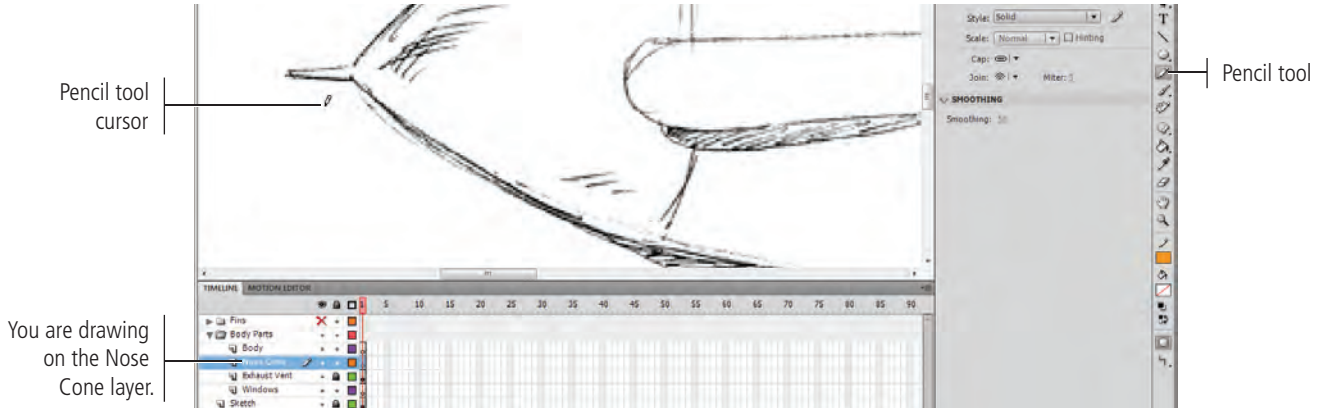
The Pencil tool provides another way to develop curved artwork. Drawing with the Pencil tool is easy; simply drag a line or shape, and the stroke — in whatever color is currently set in the Tools panel — follows the cursor.

With the proper equipment — notably a pressure-sensitive drawing tablet — the Pencil tool might very well be the most important tool Flash offers. This notion is particularly true for artists skilled at sketching or drawing with natural media such as pen and ink, pencils, and pastel chalks. Other people find the Pencil tool difficult to use, preferring the Pen tool, Bézier curves, primitive shapes, freeform shapes, and combinations thereof.

1. **With `rocket_working.fla` open, select the Nose Cone layer to make it active. Position the sketch so the nose cone area is prominent on the Stage.**

2. **Select the Pencil tool in the Tools panel.**

In the Properties panel, options for the Pencil tool are very similar to those you used with the Pen tool.



3. **In the lower portion of the Tools panel, click the Pencil Mode button and choose Ink from the pop-up menu.**

   These three modes affect the behavior of the Pencil tool. Specifically, the modes determine whether the lines you create with the tool are automatically smoothed, automatically straightened, or left alone (Ink mode).

4. **Make sure the object-drawing option is turned off, and then try drawing the tip of the nose cone. Hide the Sketch layer and inspect the results.**

   Hiding the Sketch layer between processes can dramatically improve the quality of your finished drawings. You should develop the habit of hiding and displaying sketched templates often, which will ensure that your drawings look good without the template showing.

5. **Using the Selection tool, select the shape you drew in Step 4 and delete it, and then redisplay the Sketch layer.**

6. **Select the Pencil tool, choose Smooth mode for the tool, and try drawing the tip of the nose cone section again. Hide the Sketch layer to review your shape.**

Note:

Interestingly, more often than not, using Straighten mode works best for drawing circles with the Pencil tool. Using Smooth mode results in bumpy, less-than-perfect circles because this option is more sensitive to slight mouse movements (although not nearly as sensitive as Ink mode).

7. **Delete the object you drew in Step 6, and then show the Sketch layer again.**

8. **Use the Pencil tool in Straighten mode to draw the tip of the cone again.**

9. **Use whichever drawing method you prefer to create a final version.**

   We found Straighten mode worked best, but you might prefer one of the other options.

10. **Choose Smooth mode, and then try drawing the top and bottom lines that compose the cone.**

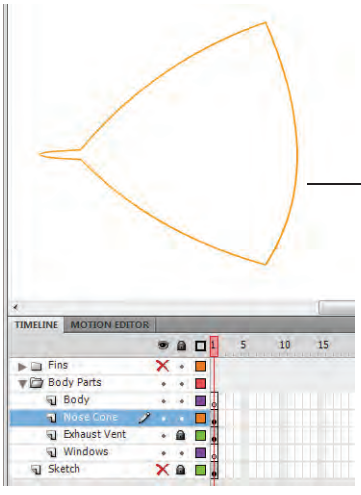
    You'll find that working at close range to your artwork is almost always the most effective method. There will be times, however — especially when you use the Pencil tool — that being a bit farther away from the artwork yields better results. When you're zoomed out, the lines you draw are shorter and require less mouse (or tablet stylus) movement, resulting in less jagged lines.

11. **Use the Subselection tool to adjust the lines until you're satisfied with the result.**

    Remember, lines behave one way when you use the Selection tool to edit them and a completely different way when you use the Subselection tool (which you use to fine-tune the anchor points that compose each stroke).

12. Using any combination of tools, complete the nose cone section.

Pay particular attention to the integrity and shape of the back section of the nose cone. You will use this line in the next exercise when you draw the body section. The two sections will share a common curve: the rear side of the nose cone will be copied and pasted for use as the front end of the body component.



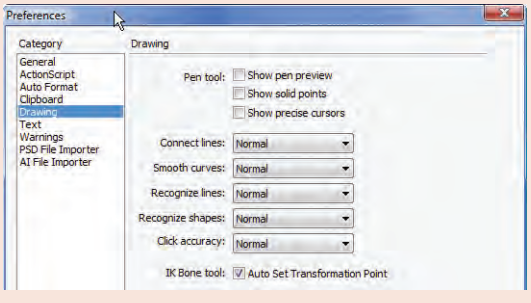
As we mentioned previously, feel free to toggle the Sketch layer visibility to review your progress.

13. Save the file and keep it open for the next exercise.

Drawing Preferences

FLASH FOUNDATIONS

You can control a number of drawing options using the Drawing pane of the Preferences dialog box. (On Macintosh, Preferences are accessed in the Flash menu; on Windows, Preferences are accessed in the Edit menu.)



Each time you click with the Pen tool, you add an anchor point; successive anchor points are connected by lines. If the **Show Pen Preview** option is checked, a preview line follows the cursor to show the line that will be created when you add a new anchor point.

When the **Show Solid Points** check box is active, selecting an anchor point with the Subselection tool shows the selected point as solid instead of hollow.

You can change the Pen tool cursor ( ) to a precise crosshair ( ) by activating the **Show Precise Cursors** check box.

The **Connect Lines** options (Must Be Close, Normal, and Can Be Distant) determine how close lines or points must be before Flash automatically connects them.

The **Smooth Curves** options (Off, Rough, Normal, and Smooth) determine how many points will be used to create a line when you're drawing with the Pencil tool with the Smooth or Straighten options turned on. The Rough option results in more points and a jagged line; the Smooth option results in fewer points and a smoother line.

The **Recognize Lines** options (Off, Strict, Normal, and Tolerant) determine how close to straight a line drawn with the Pencil tool must be before Flash recognizes it as straight.

The **Recognize Shapes** options (Off, Strict, Normal, and Tolerant) determine how close to the shape an oval or square drawn with the Pencil tool must be before Flash recognizes it as the actual shape and makes the necessary adjustment.

The **Click Accuracy** options (Strict, Normal, and Tolerant) determine how close to an object you must place the cursor to select the object.

Cut, Copy, Paste, and Paste in Place

Four important techniques that you might have used before are cutting, copying, pasting, and pasting in place. Cutting, as you probably know, is the act of removing a selected item from the Stage and placing it onto the Clipboard. The Clipboard is a reserved area of memory that allows you to temporarily hold objects — text, images, artwork, or Flash objects — until you need to use them again somewhere else. For example, you might cut an object from one layer and hold it on the Clipboard until you need it again later. Copying is similar to cutting, except when you copy an object, the original selected item remains on the Stage.

Pasting takes the content on the Clipboard and drops it onto the Stage, normally in the middle of the visible area. Pasting in place is virtually the same as pasting, except the object you paste is positioned exactly on top of the original, regardless of whether you cut the object or copied it.

Note:

To copy an object, select the object and press Command/Control-C.

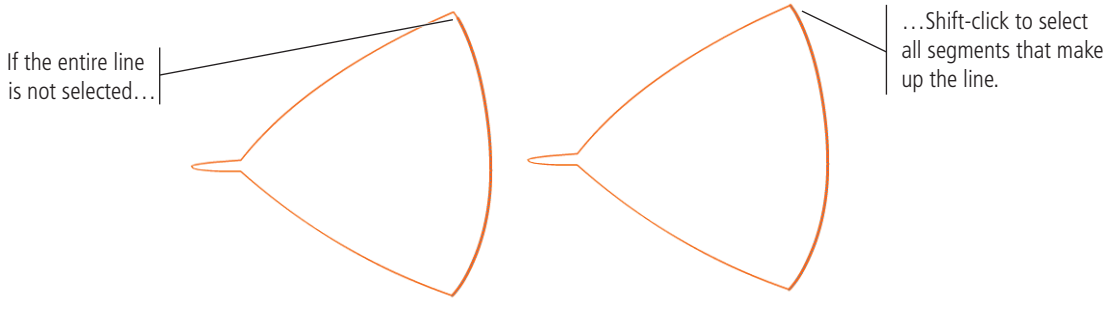
To cut an object, select the object and press Command/Control-X.

To paste an object, select the object and press Command/Control-V.

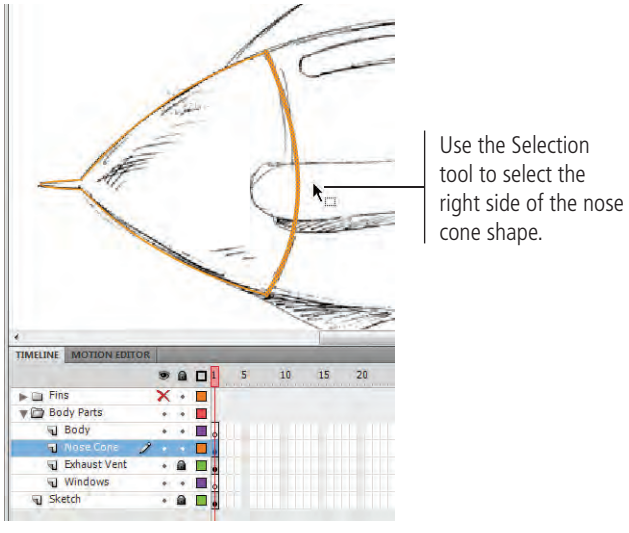
To paste an object in place, select the object and press Command/Control-Shift-V.

1. **In the open `rocket_working.fla` file, use the Selection tool to select the stroke on the right side of the cone shape.**

   Depending on how you created this line, you might need to Shift-click to select multiple segments of the path.



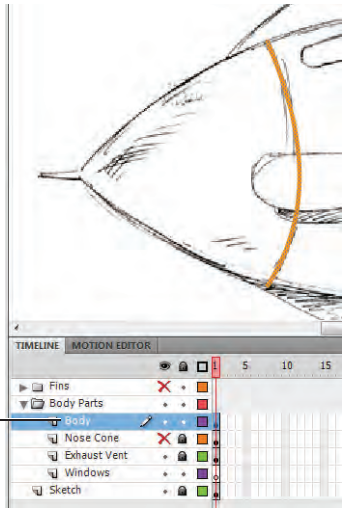
2. **Choose Edit>Copy to copy the stroke to the Clipboard.**



3. **Lock and hide the Nose Cone layer, and then select the Body layer.**

4. **Choose Edit>Paste in Place to paste the copied object in place on the Body layer.**

The copied stroke appears in the exact location as the original, but on the Body layer. After you've completed the body section, these two strokes will occupy the same location on the Stage, which ensures that the intersection of the two objects is absolutely perfect.



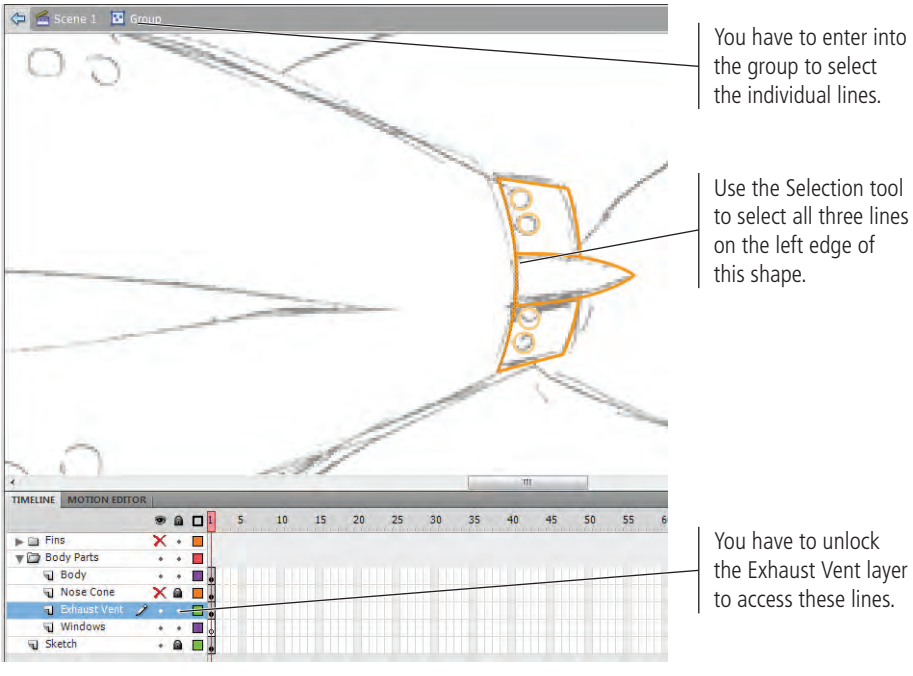
5. **Unlock the Exhaust Vent layer.**

6. **Double-click one of the edge lines to enter into the group on the Exhaust Vent layer.**

For the same reasons we outlined in Step 4, you are going to use the front of the exhaust structure as the back of the body shape. To access those lines, however, you have to first enter into the group.

7. **Using the Selection tool, Shift-click all three pieces of the left edge.**

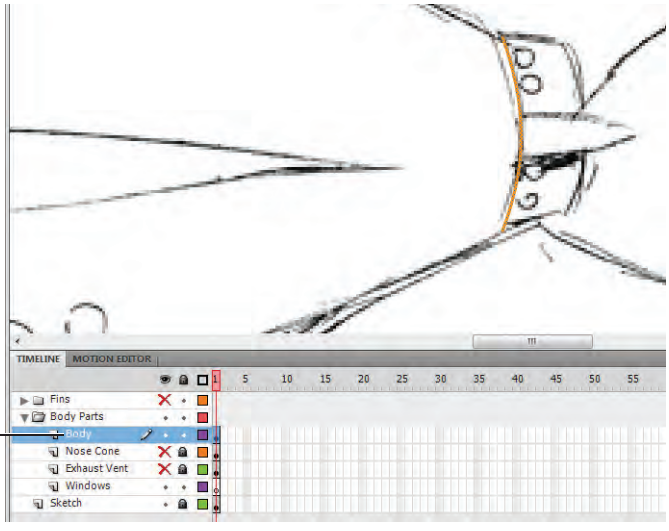
Remember, Flash adds anchor points where lines intersect, so you have to manually select all three pieces of the left edge.



8. **Press Command/Control-C to copy the strokes to the Clipboard.**

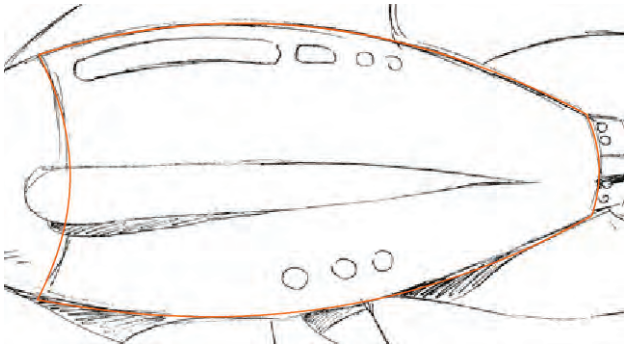
9. **Click Scene 1 to return to the main Stage.**

10. **Hide and lock the Exhaust Vent layer, and then select the Body layer. Press Command/Control-Shift-V to paste the rear stroke for the body in place.**

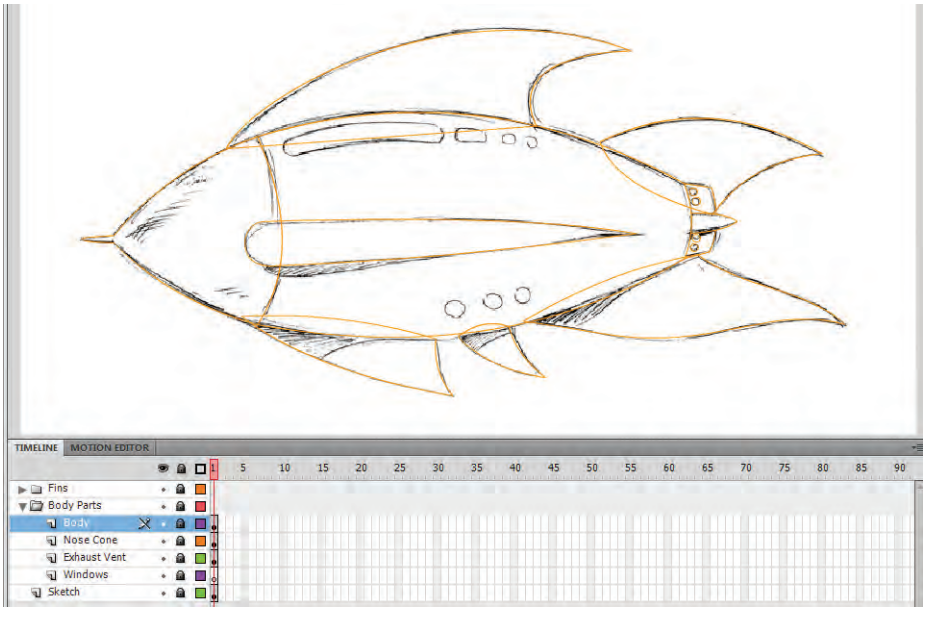


You are pasting the selected lines in the same place, but on the Body layer.

11. **Use the Line tool with the object-drawing toggle turned off to connect the top and bottom points of the curves. Use the Selection tool to bend the top and bottom lines into shape.**



12. **Show and lock all layers, save the file, and continue to the next exercise.**



Use Strokes to Create Complete Objects

In this exercise, you work with lines — specifically, you experiment with ways to incorporate stroke width (also called stroke weight) into your objects.

1. **In the open `rocket_working.fla` file, hide all but the Windows and Sketch layers. Unlock the Windows layer and select it to make it active.**

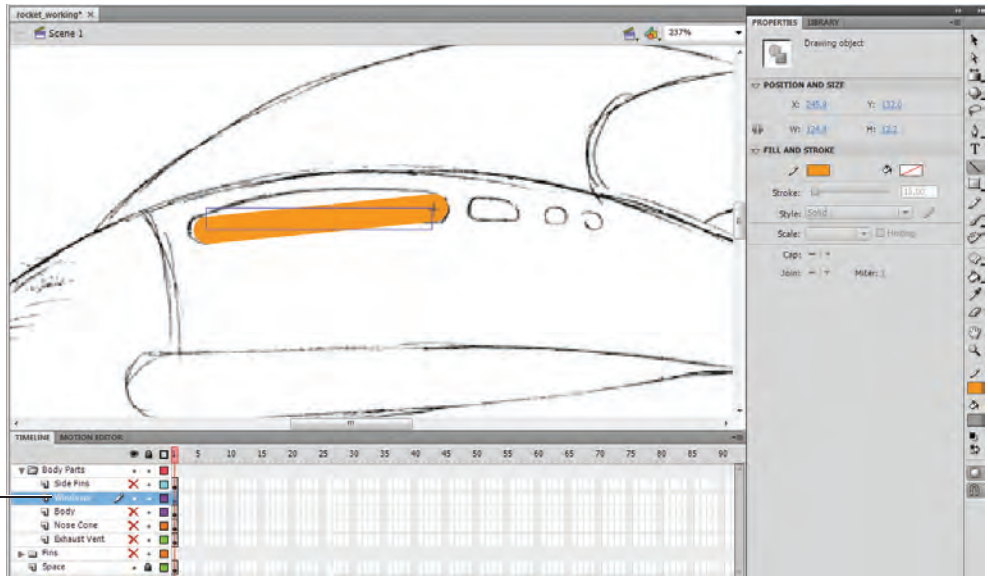
2. **Select the Line tool in the Tools panel and make sure object-drawing mode is turned on.**

3. **Using the Properties panel, define a stroke weight of 15 and choose the Round option in the Cap menu of the Properties panel.**

   This Cap menu defines the end treatment of the line. None means nothing special will happen at the ends of the line. Round means rounded ends will extend beyond the endpoints of the actual line. Square means square ends will extend beyond the endpoints of the actual line.

4. **Draw a straight line between the left and right sides of the long, rounded window at the top of the ship.**

   Don't extend the line all the way to the edges of the shape; keep the ends of the lines within the rounded sections, as shown in the following image.



You are drawing on the Windows layer.

5. **Deselect the line, and then use the Selection tool to bend the line into shape to fit the curve of the long window.**

   The stroke almost perfectly matches the sketched shape — and you accomplished the task with a single process. There was no need to draw a circle or use the Pen tool to carefully position anchor points.

   If the now-curved line isn't on top of the window area of the sketch, move or adjust the line as necessary to make your line match the sketch.

The bounding box corner shows the actual ends of the line.

Note:

Select a line with the Subselection tool to see the actual line instead of the bounding box.

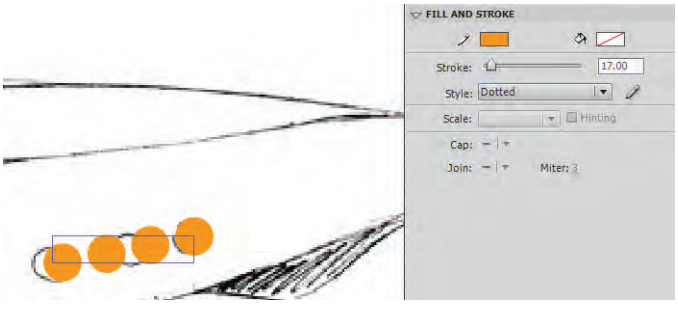
6. **Use the Line tool to draw the remaining three top windows. Use the Selection or Subselection tool to adjust and position the lines as necessary.**

7. **Move to the three round portholes at the lower part of the ship, and then draw a line from the middle of the left circle to the middle of the right circle.**

   Don't worry that the line covers all three windows; you fix that in the next step.

8. **With the line selected, use the Properties panel to change the stroke weight to 17 and the Style to Dotted.**

   Depending on where you started and ended your line, you probably have four or five dots instead of three. Don't worry; you fix that in the next exercise.



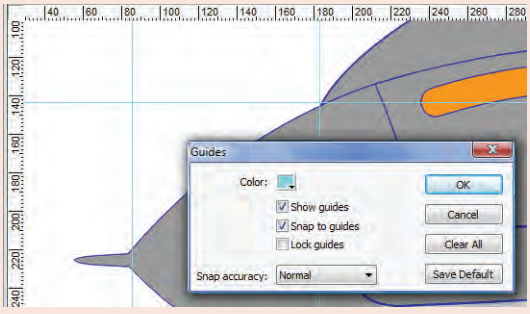
9. **Save the file and continue to the next exercise.**

Using Rulers, Guides, and Grids

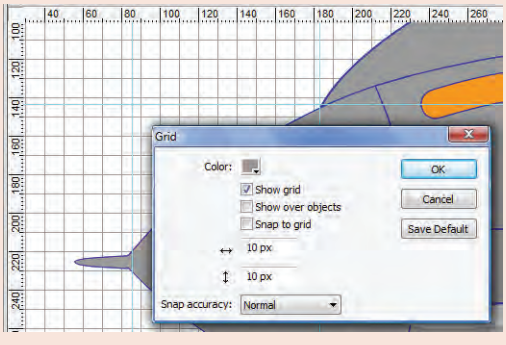
FLASH FOUNDATIONS

Flash provides three important visual features that can dramatically improve accuracy and reduce development time. All three — rulers, guides, and grids — can be found under the View menu.

Rulers (View>Rulers) are measurement tools located along the left side and top of the Stage. You can drag a **guide** from either of these two areas to assist in visual alignment. Rulers normally measure in pixels, but you can use the General Preferences dialog box to change this setting to any measurement system you prefer.



You can choose View>Guides>Edit Guides to modify guide lines. The **Show Guides** option toggles guides on or off. **Snap To Guides** causes guidelines to act like magnets when objects are dragged near a guide. **Lock Guides** prevents existing guides from being moved.



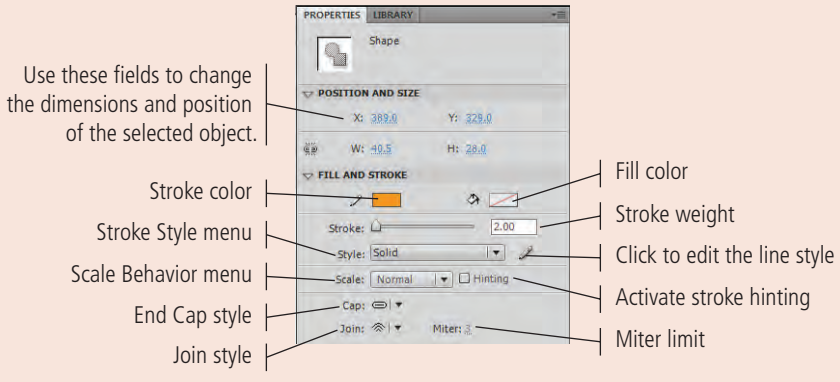
The **grid** (View>Grid>Show Grid) is a pattern of horizontal and vertical lines that also aid in the development/alignment process. You can edit the current grid and modify how the grid interacts with objects on the Stage by choosing View>Grid>Edit Grid. You can make gridlines "magnetic" using the **Snap To Grid** feature. When turned on, this feature causes objects close to a gridline to snap into place, avoiding minor placement errors during the drawing process.

Editing Line Properties

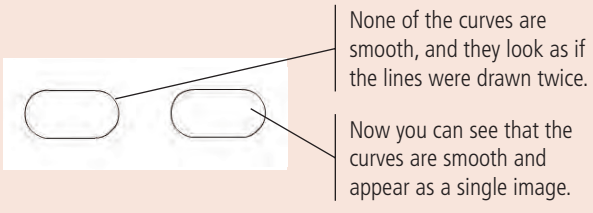
The Properties panel includes a number of options for editing lines in a Flash file.

The W, H, X, and Y fields control the dimensions and position of the line's bounding box.

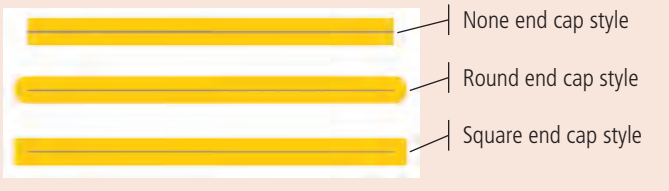
You can use the stroke swatch to change the color of a line. (A line technically has no fill, so the fill color swatch has no effect on a selected line.)



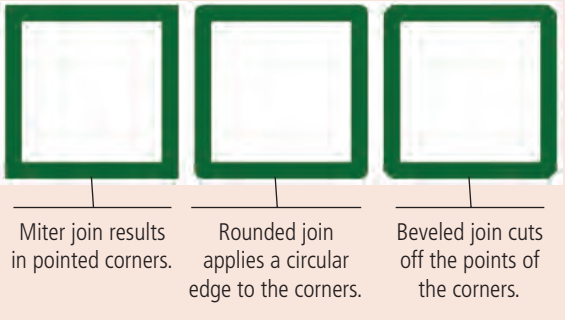
You can type a specific stroke weight in the **Stroke Weight** field, or you can drag the associated slider for a live preview of the size you drag to (between 0.25 and 200 points). The **Hinting** check box allows you to draw smooth and sharp lines. This feature is most helpful when you draw a rectangle with curves. When you draw a curved rectangle or square, the lines and the curves can be very blurred. Curves might actually seem to be different entities that are not joined with the connecting line. After you select the Stroke Hinting option, you will see that the lines are smooth and the blur effect is invisible. You can apply a predefined style from the **Stroke Style** menu or create your own style by clicking the Custom button.



The three options in the **Cap** menu (None, Round, and Square) define the appearance of a stroke beyond the endpoint of the line.



The three options in the **Join** menu (Miter, Round, and Bevel) define the appearance of corners where two lines meet. When Miter is selected, you can define a miter limit in the Miter field. A miter limit controls when the corner switches from a pointed joint to a beveled joint, as a factor of the stroke weight. If you define a miter limit of 2 for a 2-point line, the corner is beveled if the pointed corner extends beyond 4 points (2 × 2).



The **Scale** menu defines how strokes are affected by scaling a symbol in which the line exists. (This option only affects strokes on graphics that are part of a symbol.) Normal means the stroke will be scaled proportionally. Horizontal means a stroke will be scaled based only on the horizontal scale of the symbol. Vertical means the stroke will be scaled based only on the vertical scale of the symbol. None means the stroke will not be scaled.

Convert Strokes to Fills

To change these windows so they contain a different fill and stroke, you have to change the stroke to a fill, which would essentially change the stroke-only object to a regular filled object. The resultant shape would be the same as if you had used regular filled shapes to construct all the windows.

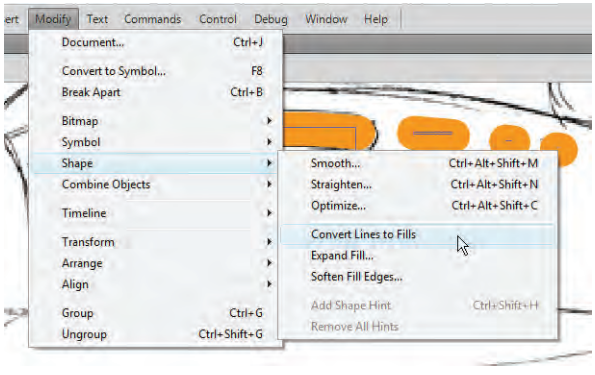
1. **In the open `rocket_working.fla` file, choose the Selection tool, and then choose Edit>Select All.**

   The Edit>Select All command selects all the strokes on the Windows layer. (All but the Windows and Sketch layers are hidden and locked, and the Sketch layer is locked.)

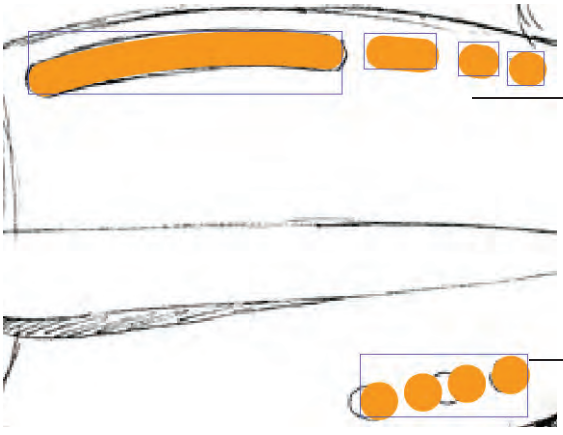
   Note:

   Press Command/Control-A to select all objects.

2. **Choose Modify>Shape>Convert Lines to Fills.**



All the lines are converted into regular fills; they do not yet have defined stroke attributes. You change the stroke for these shapes in a later exercise.



3. **If you have more than three circles in the bottom row of windows, deselect everything, and then select the bottom row of windows with the Selection tool. Choose Modify>Ungroup, deselect all the circles, select and delete the extras (more than three), and then drag the remaining three circles into the appropriate positions based on the sketch.**

4. **Lock the Windows layer.**

5. **Save the file and continue to the next stage of the project.**

Stage 4 Painting and Coloring

You now have the necessary parts to build a fairly respectable rocket ship. All your ship needs is a good paint job and plenty of open space. In this section, you color the individual components and launch the craft into space. You also add the shadowed areas you see in the original sketch.

You can use a wide variety of methods to paint the ship. For example, the Paint Bucket tool fills shapes with a specified color. The Ink Bottle tool changes the color of existing strokes, or adds a stroke to a fill that doesn't have one (such as the windows you converted to fills in the previous exercise).

Fill Artwork with the Paint Bucket Tool

Sometimes, the best way to color an object is to simply tip a can of paint into the shape and let it fill up with color — which is exactly what you do with the Paint Bucket tool in this set of exercises.

1. **With `rocket_working.fla` open, hide the Sketch layer. Show and unlock the Body, Nose Cone, and Exhaust Vent layers (in the Body Parts layer folder).**

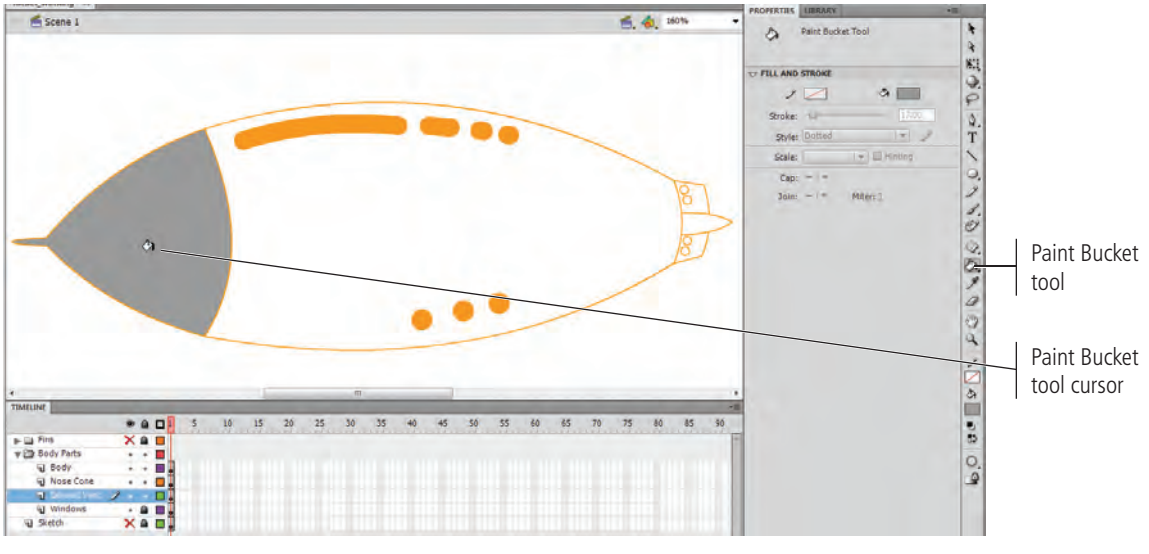
2. **Choose the Paint Bucket tool from the Tools panel.**

3. **Set the stroke color to None, and set the fill color to a light gray (#999999).**

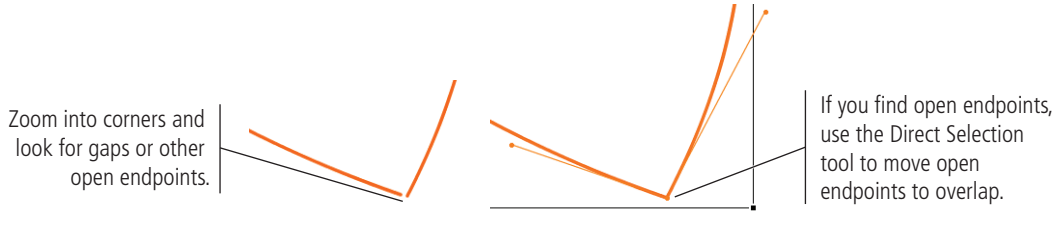
   Remember, you can change the stroke and fill colors by clicking the buttons in the Tools panel and choosing the color you want from the pop-up Color Swatch panel.

4. **With the Paint Bucket tool selected, click inside the nose cone.**

   As soon as you click, the nose cone fills with the gray fill color.



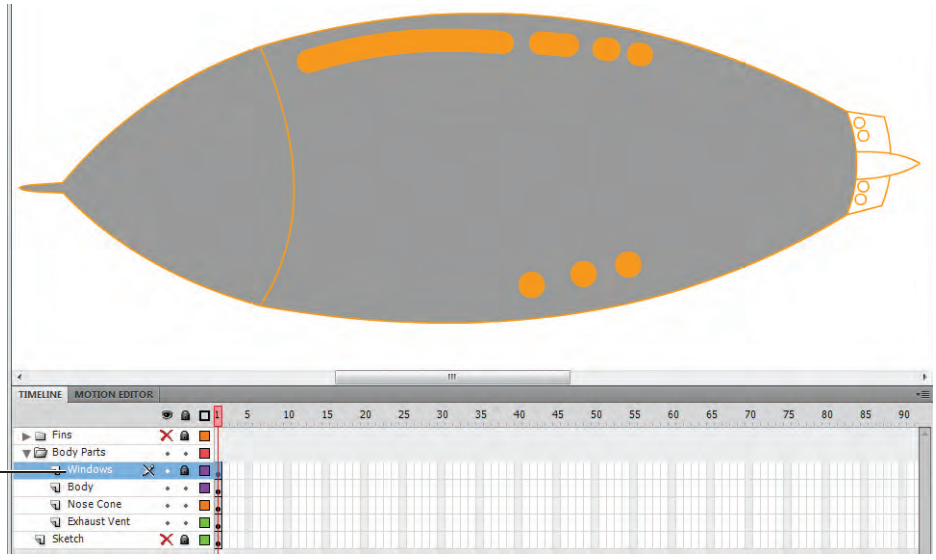
The Paint Bucket tool only fills closed shapes. If you have difficulty filling a particular object with the Paint Bucket tool, you probably didn't correctly connect the endpoints of the different lines that make up that shape. Select the problem endpoints with the Subselection tool, zoom into the corners, and make sure the endpoints of different lines meet one another.



5. **Click the Paint Bucket tool cursor inside the body to fill it with the same gray color.**

   Because the Windows layer is below the Body layer — and thus, below the now-filled body shape — you can't see the windows.

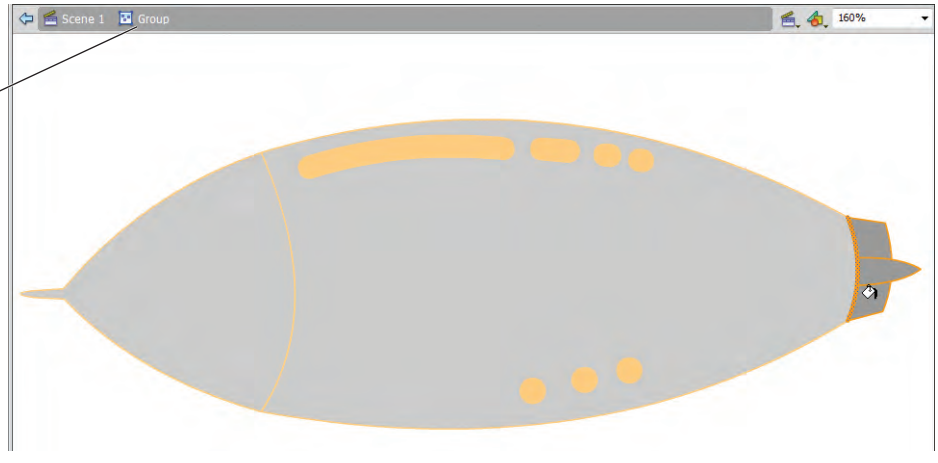
6. **In the layers section of the Timeline, drag the Windows layer above the Body layer.**



Moving the Windows layer above the Body layer makes the windows visible again.

7. **Double-click the exhaust vent with the Selection tool to enter into the group.**

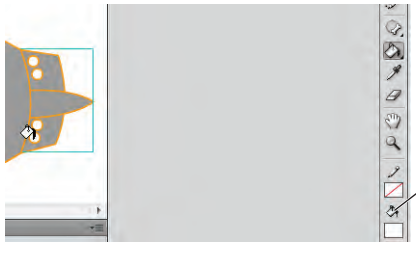
8. **Fill the three shapes with the same gray you used on the rest of the ship's body.**



You have to enter into the group to change the color of the exhaust vent shapes.

9. **Click Scene 1 to return to the main Stage.**

10. **Change the fill color to white and fill the four circles on the vent.**



Change the fill color to white, and then fill the four circles in the exhaust vent.

11. **Save the file and continue to the next exercise.**

Change Stroke Colors with the Ink Bottle Tool

Most, but not all, of the objects you've drawn so far should display a 1-point colored stroke. In this exercise, you use the Ink Bottle tool to add strokes to the windows (which currently have strokes of None) and change the colors of other strokes as well.

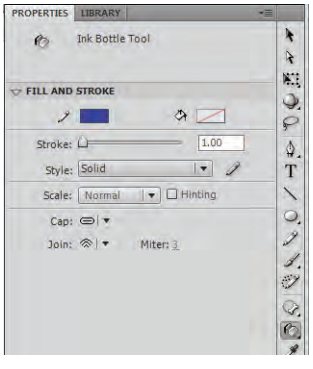
1. **With `rocket_working.fla` open, select the exhaust vent shape with the Selection tool and choose Modify>Ungroup.**

   By ungrouping these shapes, you no longer have to enter into the group to edit the fills and strokes.

2. **Make sure nothing is selected in the file.**

3. **Select the Ink Bottle tool (nested under the Paint Bucket tool) in the Tools panel. In the Properties panel, pick a dark blue color as the stroke color. Change the stroke weight to 1 and the style to Solid.**

   Once you select the Ink Bottle tool, you can use the Properties panel to predetermine the weight, color, stroke style, and other features before you use the tool. The current settings in the Properties panel will be applied to any shape you click with the Ink Bottle tool. These settings will remain in effect for the Ink Bottle tool until you change them.

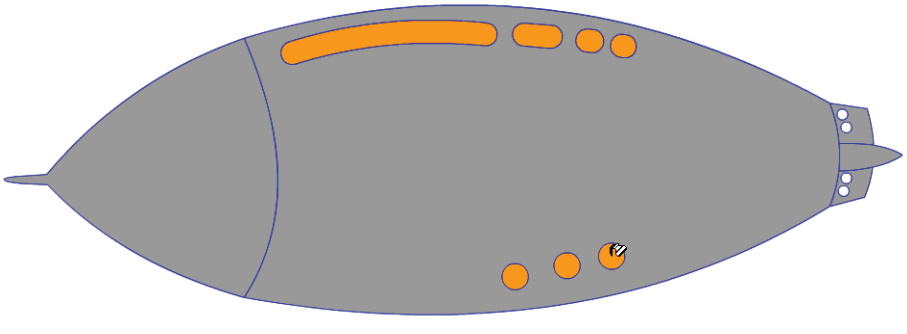


4. **Click the Ink Bottle tool cursor in the nose cone, the body, the three shapes of the exhaust vent, and the four circles on the exhaust vent.**

   The strokes instantly change to the new color; it doesn't matter if you select the layer or not. Since the objects are on unlocked layers, the Ink Bottle tool "knows" which objects it's touching.

5. **Unlock the Windows layer, and then add strokes to the windows by clicking them with the Ink Bottle tool cursor.**

   Remember that these shapes started as thick strokes with no fills applied. When you converted them to shapes, you set the stage for adding strokes to these shapes.

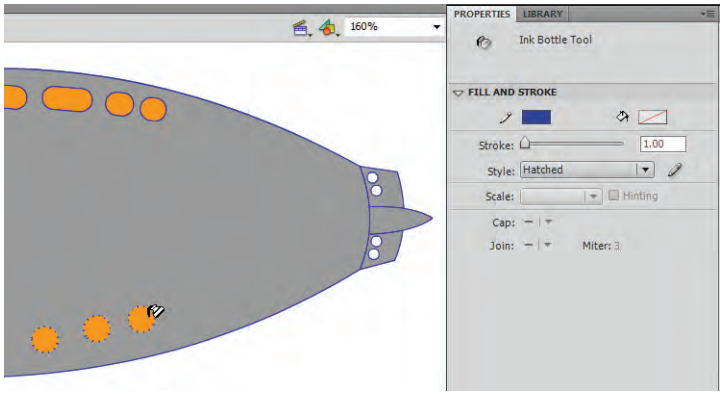


6. **Make sure nothing is selected, and then use the Properties panel to change the stroke style to Hatched.**

   Combining styles, colors, and shapes, as well as using strokes in combination with the Convert Line to Fill command, can not only save you a great deal of time, but it can also result in some very interesting artwork.

7. **Change the strokes of the bottom windows by clicking them with the Ink Bottle tool.**

   You must click exactly on the object strokes to change them to the hatched pattern.



8. **Save the file and continue to the next exercise.**

Use the Eyedropper Tool

The Eyedropper tool is used to "pick up" colors from one object and apply the colors to other objects in a drawing. In this exercise, you use the Eyedropper tool to automatically change the stroke color for all the fins at the same time, and then fill the individual fins with the same color you applied to the ship.

1. **With `rocket_working.fla` open, collapse and hide the Body Parts layer folder.**

2. **Expand, show, and unlock the Fins layer folder.**

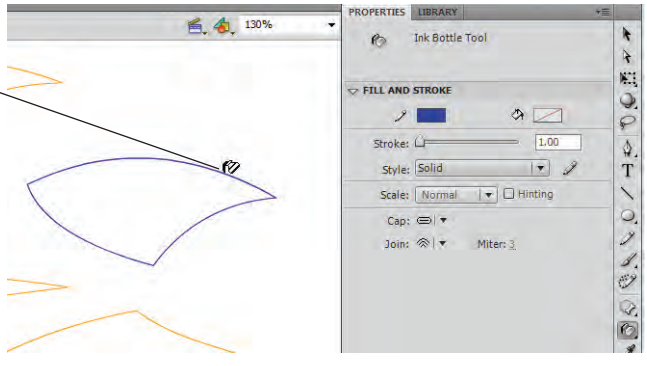
3. **Make sure the Body Parts layer folder is above the Fins layer folder in the stacking order.**

   If the Body Parts layer folder is under the Fins layer folder, drag the Body Parts layer folder above the Fins layer folder in the Timeline.

4. **Using the Ink Bottle tool, apply a solid 1-pt blue stroke to all the fins.**

   To change the strokes, you have to click the lines that compose the fin shapes.

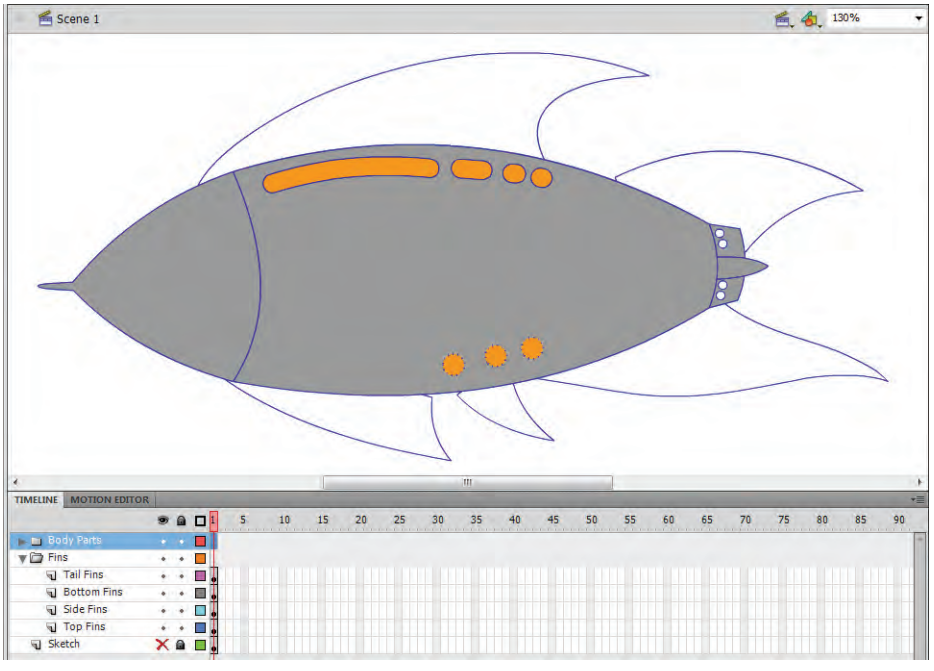
The fins have no fill, so you have to click the actual lines you want to change.



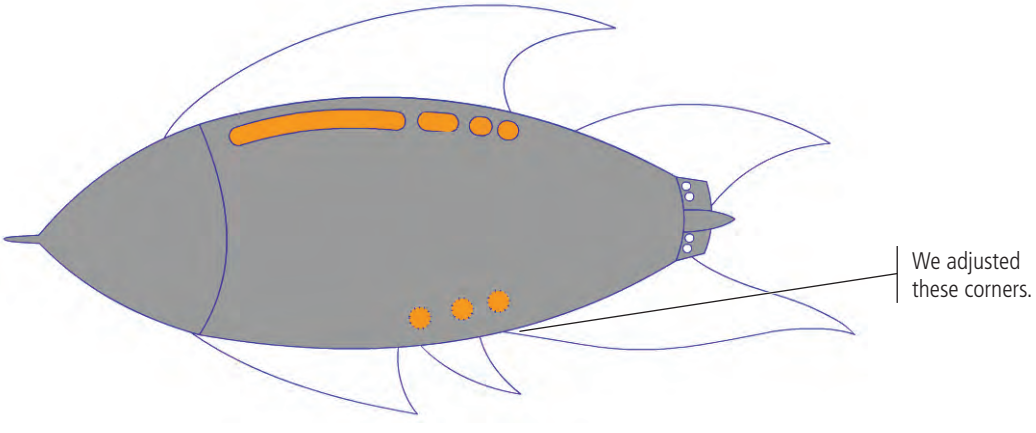
Note:

You don't need to select the objects before clicking with the Ink Bottle tool to change the stroke color.

5. **Show the Body Parts layer folder.**



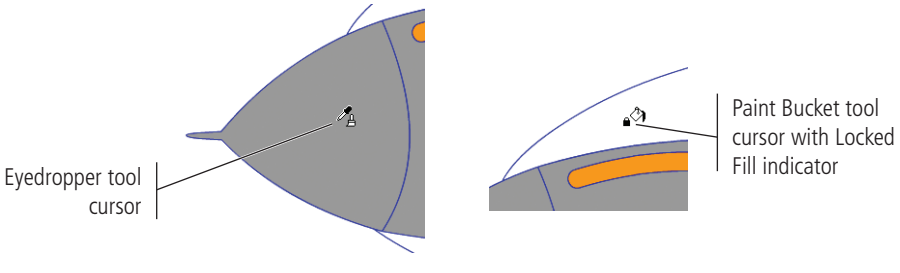
6. **If any of the fin corners are not hidden by the body of the ship, use the Selection or Subselection tool to reposition the fin corners.**



7. **Click the nose cone with the Eyedropper tool.**

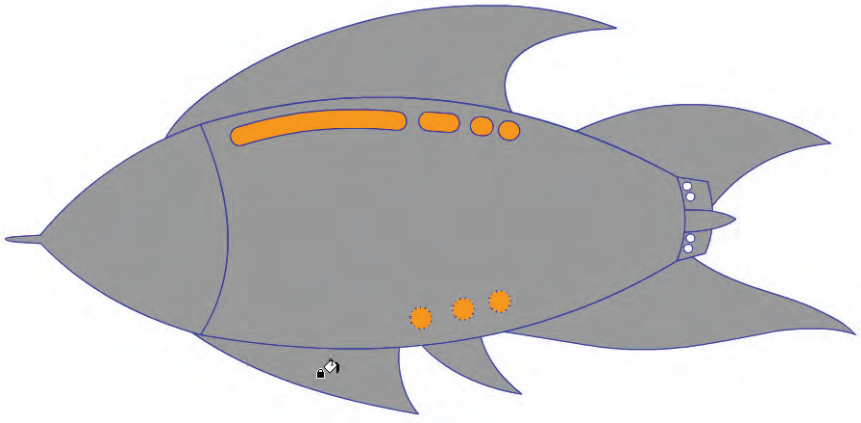
The Eyedropper tool copies fill and stroke attributes from one object and immediately applies them to another object.

When you click a stroke with the Eyedropper tool, the cursor automatically changes to the Ink Bottle tool. When you click a filled area, the tool automatically changes to the Paint Bucket tool with the Lock Fill modifier turned on. You can then click another object to apply the copied attributes.



8. **One at a time, click the Paint Bucket cursor on each fin shape.**

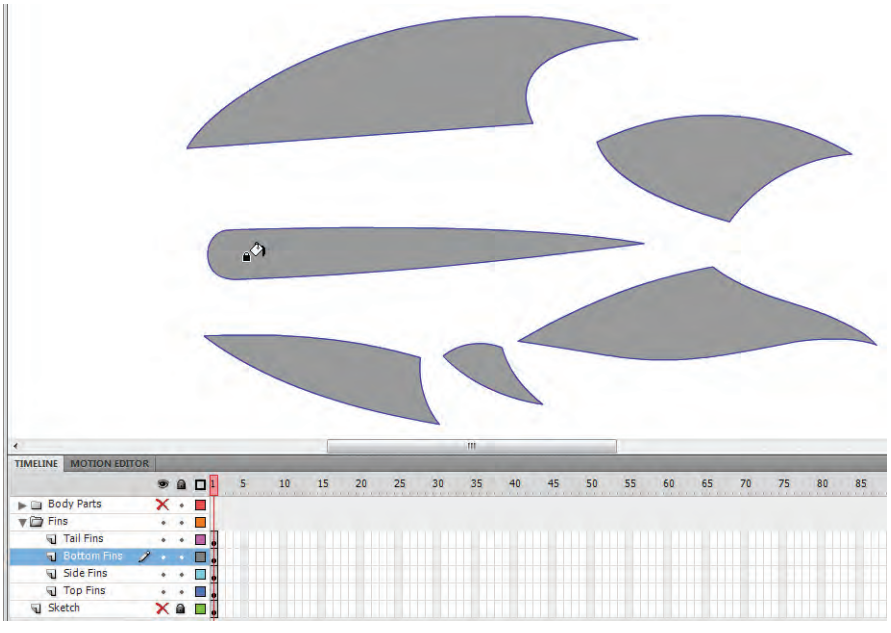
To fill the fins, you have to click the lines that compose the fin shapes. (The fins currently have no fill, so you have to click the outside edge of the shape you want to fill.)



Note:

The Lock Fill option controls the appearance of gradient and bitmap fills. If this modifier is active, the gradient or bitmap fills the entire Stage; objects filled with the gradient or bitmap show the underlying area of that gradient or bitmap.

9. **Hide the Body Parts layer folder, and then click the side fin outline to fill the shape with the same gray color.**

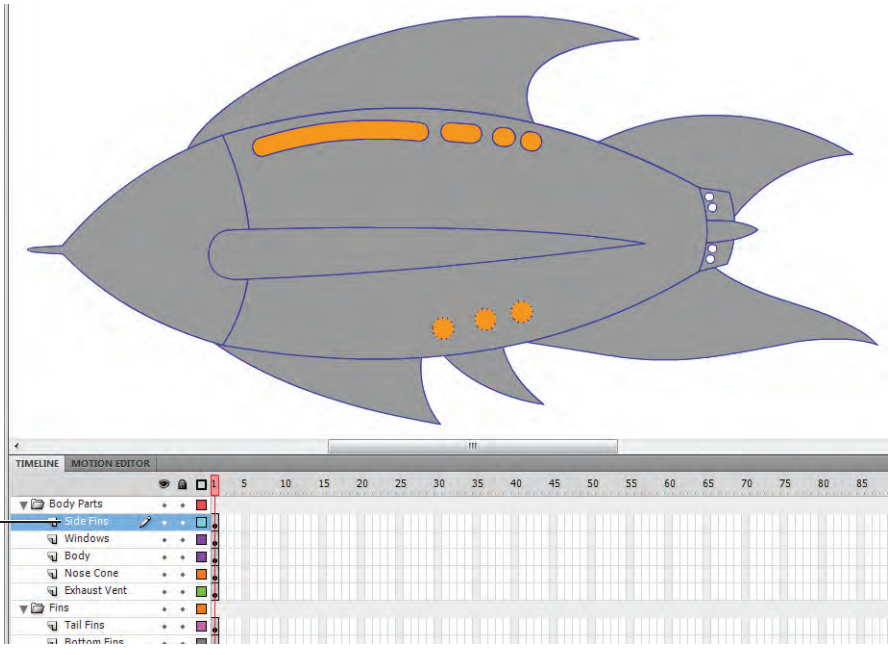


10. **Show the Body Parts layer folder.**

When the Body Parts layer folder is visible, it hides the side fin (which is in the Fins layer folder, lower in the stacking order).

11. **Expand the Body Parts layer folder, and then drag the Side Fins layer into the Body Parts layer folder. Position the Side Fins layer at the top of the Body Parts layer folder.**

The Side Fins layer is now part of the Body Parts layer folder. It appears in the proper position, as long as it remains above the Body layer within the Body Parts layer folder.



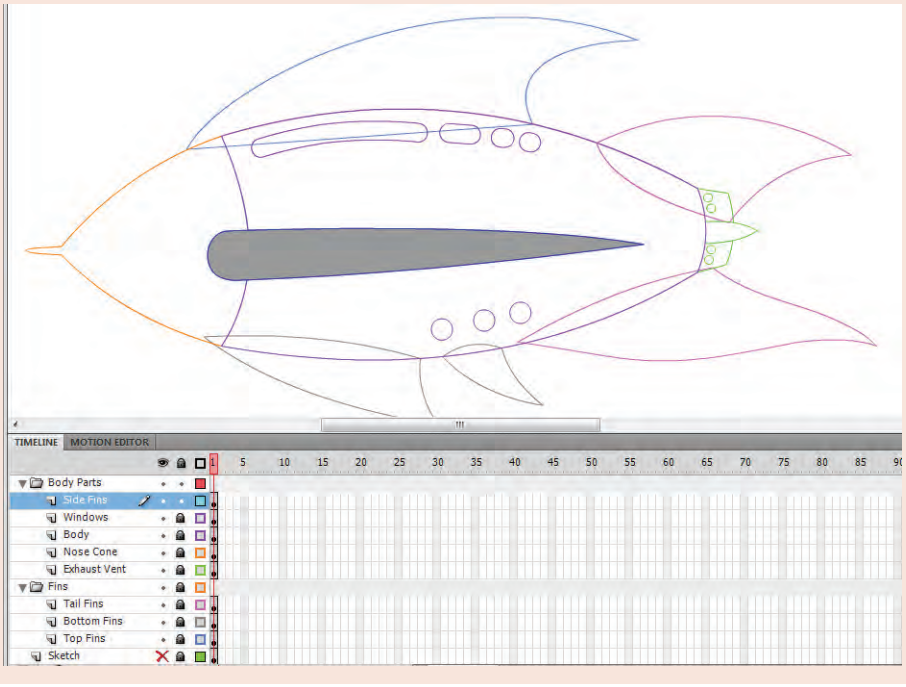
The Side Fins layer has to be at the top of the stacking order in the Body Parts layer folder.

12. **Save the file and continue to the next exercise.**

Using Outline View

FLASH FOUNDATIONS

Outline viewing mode is one of the choices available in the layers area of the Timeline. As is the case with the Visibility and Lock icons, you can turn on Outline mode for a single layer or a layer folder (which affects all layers in the folder).

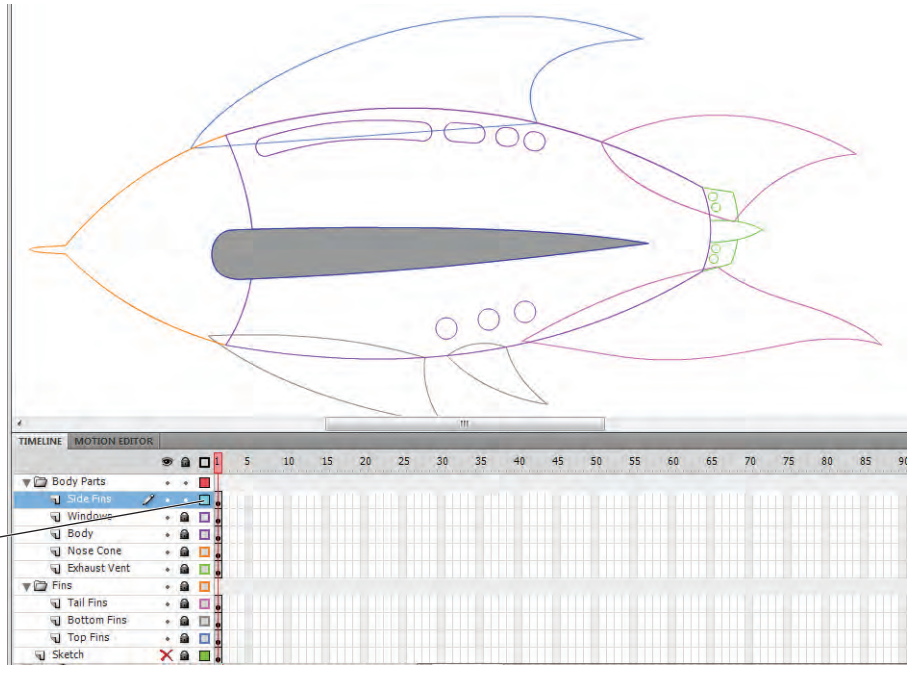


Use the Brush Tool

The Brush tool acts exactly as you might expect: it simulates a paint brush, and you use it to color objects, draw shapes, and add color to existing objects. You can exert considerable control over how the Brush tool behaves. You can use it to paint inside a specific object, paint behind an object, paint outside an object, or — as it normally behaves — paint directly over an existing object.

1. **With `rocket_working.fla` open, lock all layers except the Side Fins layer. Display all but the Side Fins and Sketch layers in Outline mode.**

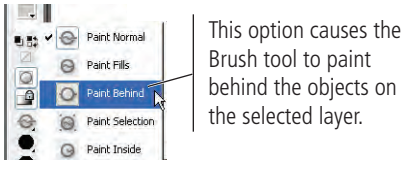
   You need to see the sketch as you develop the shadows, but keeping the Sketch layer locked ensures that you don't accidentally move the sketch. Since the sketch is a bitmap image, selecting Outline view for the layer makes the sketch disappear.



2. **Select the Side Fins layer to make it active, and then click the Selection tool anywhere on the Stage to deselect the object on the layer.**

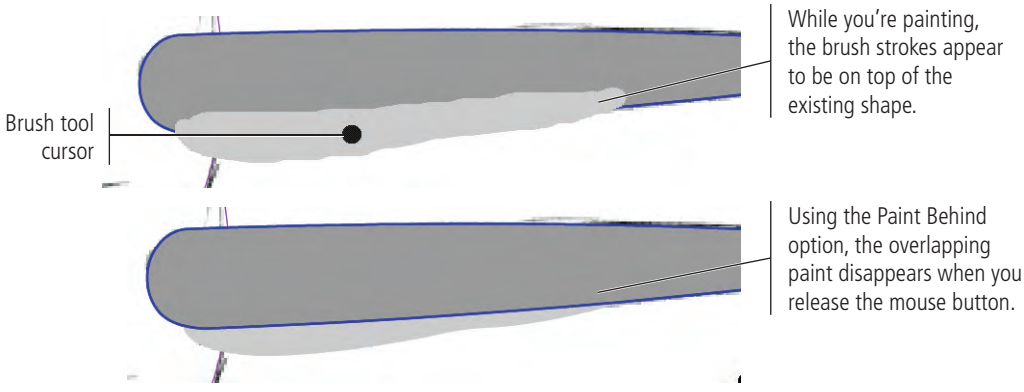
3. **Select the Brush tool in the Tools panel, and set its fill to light gray (#CCCCCC).**

4. **In the Options menu at the bottom of the Tools panel, choose Paint Behind.**



5. **Paint the shadow that appears on the sketch.**

While you're painting the shadow, it appears to be on top of (and obscuring) the fin shape; but when you release the mouse button, the shadow assumes its proper place behind the fin shape.

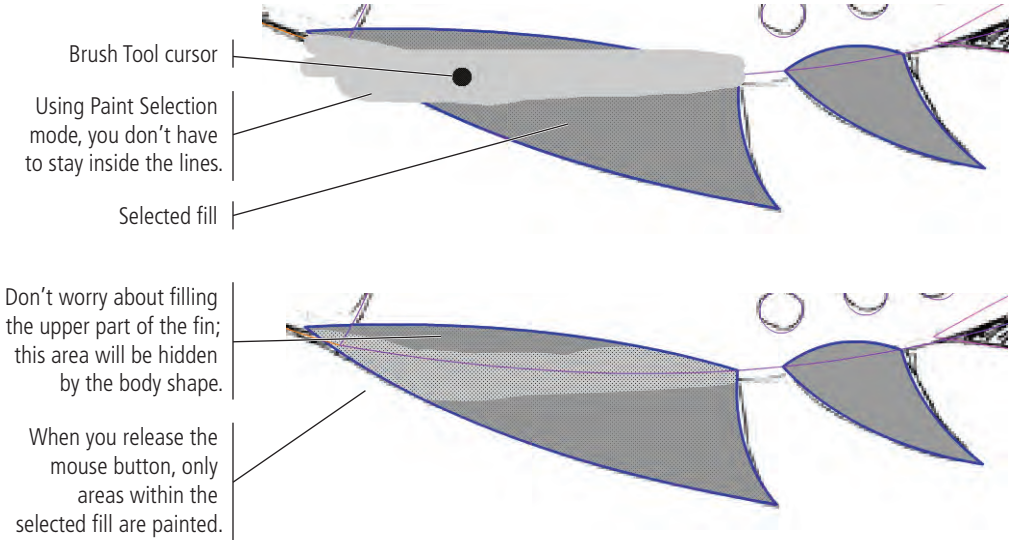


6. **Unlock the Bottom Fins layer and view it normally (turn off Outline mode).**

7. **Using the Selection tool, click the fill of the bottom-front fin to select it.**

8. **Choose the Brush tool in the Tools panel, and switch to Paint Selection mode.**

9. **Paint a shadow on the bottom-front fin, using the following image as a guide.**



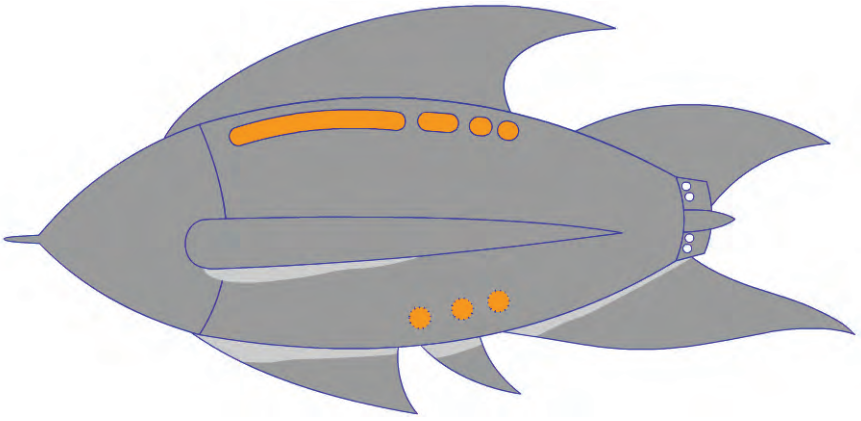
10. **Using the same method, paint the shadow on the bottom-rear fin.**

Remember, you have to select the fin's fill before you can successfully use the Paint Selection option.

11. **Repeat the process to add a shadow to the bottom tail fin on the Tail Fins layer.**

For this procedure to work correctly, you must show the layer in regular mode (not Outline mode) and select the fin's fill. Use the Undo command (Command/Control-Z) to step backward if you need to repeat the previous few steps.

12. **Hide the Sketch layer, show all the drawing layers in regular mode, and review your work.**



13. **Save the file and continue to the next exercise.**

Brush Tool Options

FLASH FOUNDATIONS

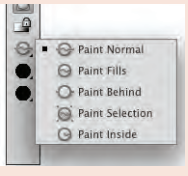
When you're using the Brush tool, four options are available in the bottom of the Tools panel.

The **Lock Fill** option applies when you paint with a gradient, allowing you to lock the gradient fill to the Stage instead of the object. If you turn on this option, the first spot you paint is considered the starting point of the gradient (whether linear or radial). Any additional areas you paint with the same gradient are considered extensions of the gradient.

With Lock Fill active, the gradient extends across the entire Stage. Painting essentially "reveals" the gradient in those places.

Without Lock Fill active, each stroke starts the gradient again.

The Brush tool has five modes:



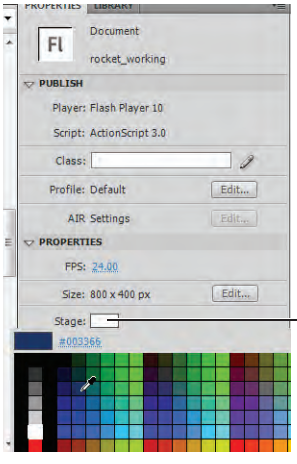
- **Paint Normal** is exactly that: it paints directly on top of anything already on the Stage.
- Using the **Paint Fills** mode, you paint over the background and any object fills, but you leave object strokes unaffected.
- **Paint Behind** allows you to paint only the background; any area with a fill remains unaffected by the brush stroke.
- **Paint Selection** applies your brush strokes to currently selected fill areas only.
- **Paint Inside** applies the brush stroke within the boundaries of the fill where you first click.

You can also change the brush shape and brush size using the bottom two menus.

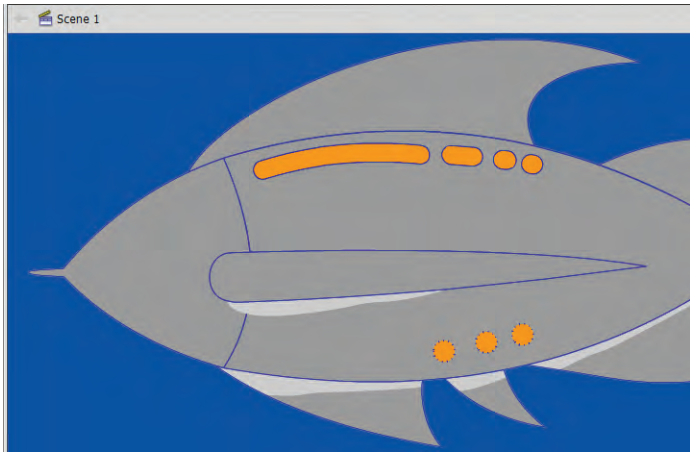
Add Backgrounds

You have two choices when it comes to using backgrounds on your projects. The first choice is to simply change the color of the Stage. Since all layers reside on the Stage, the background color appears behind all objects you create. The second option is to include a digital image, similar to the sketch you used in this project.

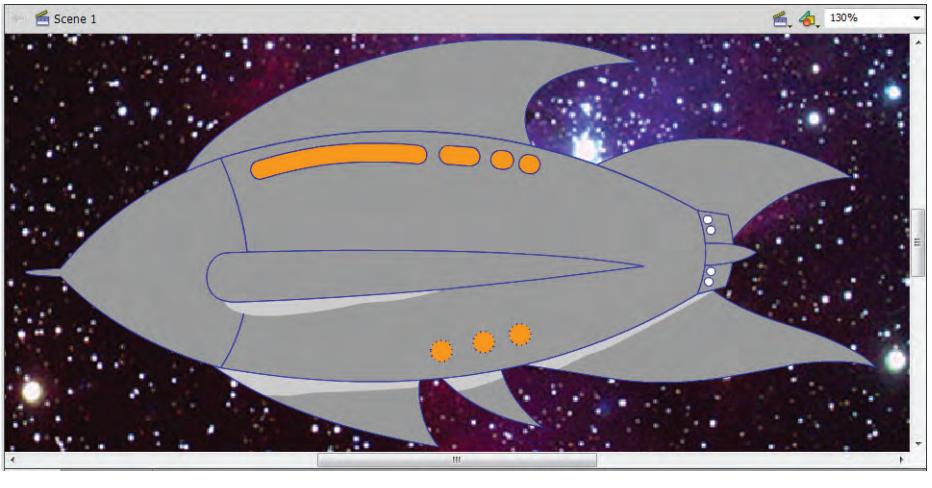
1. **With `rocket_working.fla` open, show and unlock the Sketch layer.**
2. **Using the Selection tool, select the sketch on the Stage and delete it.**
3. **With nothing selected on the Stage, click the Stage swatch in the Properties panel. Choose a dark blue from the pop-up color palette.**



Click this swatch to change the color of the Stage.



4. **Choose File>Save As. Save the file as `rocket_flat.fla` in your WIP>Rocket folder, and then close the file.**
5. **Rename the Sketch layer `Space`.**
6. **With the Space layer selected, choose File>Import>Import to Stage, and then double-click the `space.jpg` image in the RF_Web>Rocket folder.**



7. **Choose File>Save As. Save another version of the same file as `rocket_space.fla` in your WIP>Rocket folder.**
8. **Continue to the next exercise.**

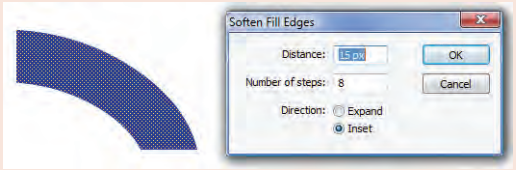
Note:

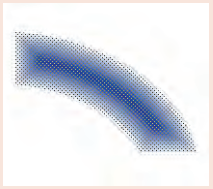
*Artwork that contains only solid fills is referred to as **flat art**.*

Softening the Edges of a Fill

FLASH FOUNDATIONS

Shadows and fills often work better when they're soft. In many cases, you might want to use the built-in Modify>Shape>Soften Fill Edges feature to automatically soften the edges of a fill. For example, the shape in the following images started out as a 12-point stroke, and was then converted to a fill. Once converted, the shape was selected with the Selection tool.





The **Soften Fill Edges** command opens a dialog box where you can determine whether the shape should soften inward (Inset), which keeps the soft edge within the current boundaries of the fill, or outward (Expand), which makes the fill larger by the pixel value you enter into the Field. The Number of Steps field determines how smooth the blend appears. If you look closely, you'll see that the softening effect is accomplished by gradually changing the pixel density from the color of the original object to white (or the current color of the Stage).

Stage 5 Using Gradients

In its current state, your rocket ship drawing is an example of flat art. In most cases, however, you'll find flat art is too restrictive, especially when you want to apply shading to your objects. Most shading is accomplished using blends of two or more colors, usually referred to as gradients or blends.

Blends add depth (sometimes called dimension) to otherwise flat artwork. Blends come in several types, the two most common being linear blends and radial blends.

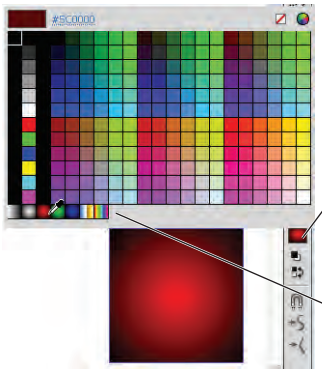
Note:

The terms "gradient" and "blend" are used interchangeably. Flash documentation uses both gradient and blend; both terms mean a smooth transition from one color to another.

Apply a Standard Gradient to Selected Objects

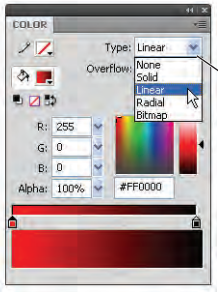
Flash includes several gradients (both linear and radial) in the Swatches panel. You can apply a gradient to a selected object by choosing from the available options in the fill color Swatches panel.

You can also apply a gradient fill by selecting the Paint Bucket tool, choosing a gradient swatch as the fill color, and then clicking the objects you want to fill. Finally, you can select an object on the Stage and choose Linear or Radial from the Type menu of the Color panel; the object fills with a gradient of the last-used colors.



With the object selected, click the Fill button in the Tools panel and choose one of the gradient swatches from the pop-up Color Swatch panel.

Built-in gradient swatches



Choose Linear or Radial in the Type menu to apply a gradient fill to a selected object.

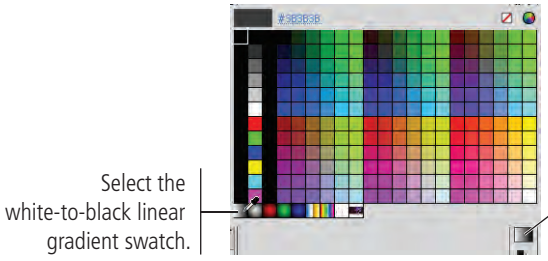
1. **With `rocket_space.fla` open, unlock all the layers except the Space layer.**

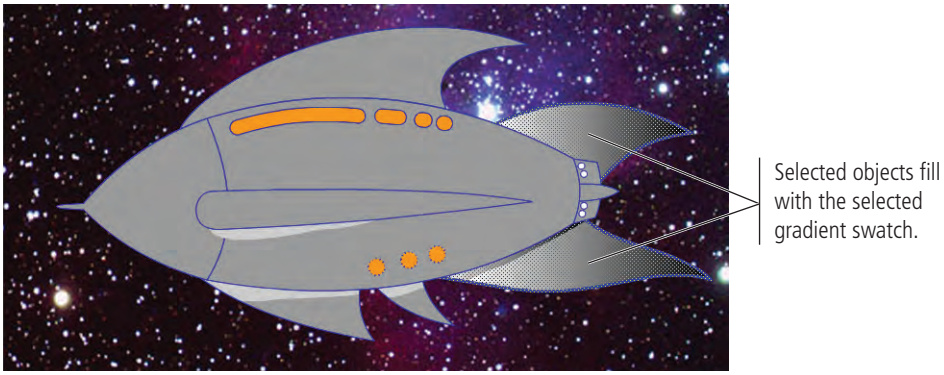
   Make sure you open the correct file; you don't want to modify the flat-art version you saved in the previous exercise.

2. **Click the Tail Fins layer name to select the layer and all objects on that layer.**

3. **Click the Fill button in the Tools panel and choose the white-to-black linear gradient swatch.**

   When you select a layer (as you did in Step 2), the objects on that layer are automatically selected — which means that when you choose a new fill color, the selected objects automatically reflect the color change.

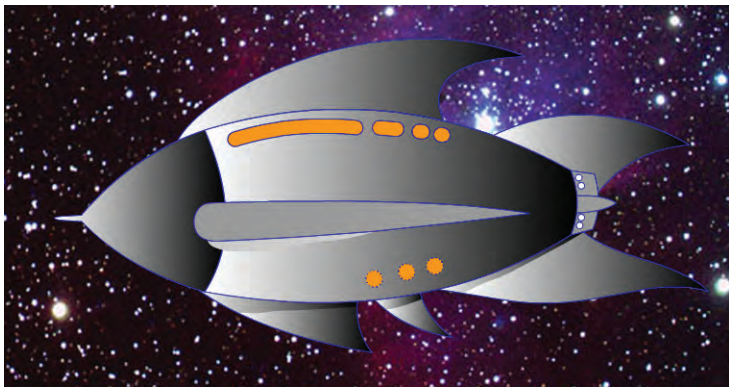




4. **Repeat the process with the bottom fins: select the Bottom Fins layer, and then select the white-to-black swatch in the fill color Swatches panel.**

5. **Use the same method to apply gradients to the top fin, nose cone, and body of the ship.**

   Leave the side fin alone for now. You will use a different kind of gradient to add dimensionality to that shape.



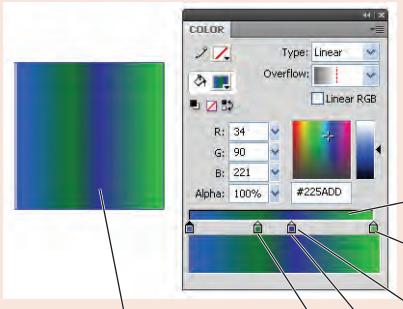
6. **Save the file as `rocket_depth.fla` in your WIP>Rocket folder, and continue to the next exercise.**

Editing Gradients

FLASH FOUNDATIONS

You can edit the colors in a gradient using the gradient ramp in the Color panel (Window>Color). This option allows you to create custom gradients that blend across multiple colors (up to 15) at different locations along the ramp.

When you use the Paint Bucket tool to apply a gradient, the bottom of the Tools panel offers an option to lock the fill to the Stage. When this option is toggled on, the gradient is applied relative to the overall Stage; when you fill individual objects with the Lock Fill modifier, those objects show the associated portion of the underlying gradient.



Gradient ramp

Gradient stop

Click below the gradient ramp to add another gradient stop.

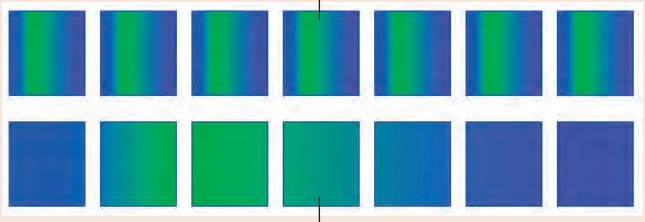
Click a gradient stop to change the color of the specific stop.

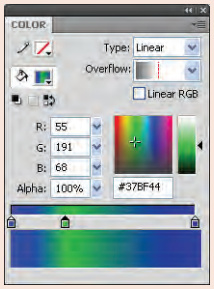
Drag gradient stops across the ramp to move the location of that color along the gradient.

The gradient in the object matches the added and adjusted stops in the gradient ramp.

Lock Fill modifier

Without the Lock Fill modifier, the gradient was applied to the top row of squares. The gradient is applied individually to each square.





Using the Lock Fill modifier, the same gradient was applied to the bottom row of squares. The fill is treated as a single gradient across all seven squares.

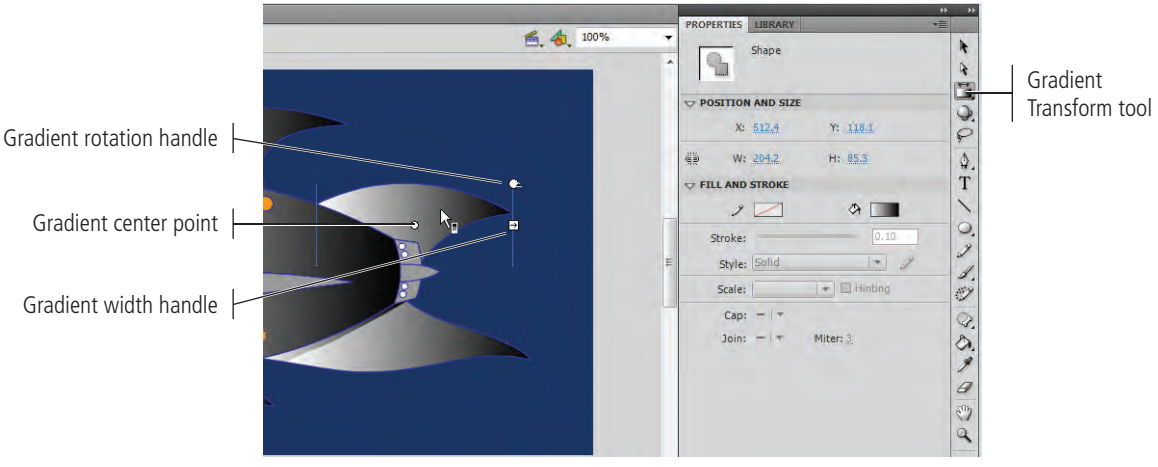
Change the Direction of a Gradient

In your drawing, all the shapes containing gradients follow the same flow of colors: from light (white) to dark (black). However, real shadows follow real light sources. This fact requires you to exercise some degree of control over the direction of the gradients in your drawing.

You can accomplish this task using the Gradient Transform tool. When you select the tool and click a gradient, a bounding box appears. You can use the handles on the bounding box to enlarge, reduce, rotate, or otherwise transform a gradient applied to a Flash object.

1. **With `rocket_depth.fla` open, hide the Space layer.**
2. **Select the Gradient Transform tool (nested under the Free Transform tool) in the Tools panel.**

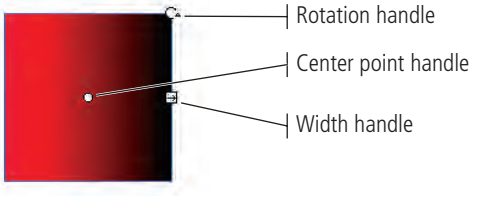
3. **Click the top-rear fin with the Gradient Transform tool to show the gradient handles.**

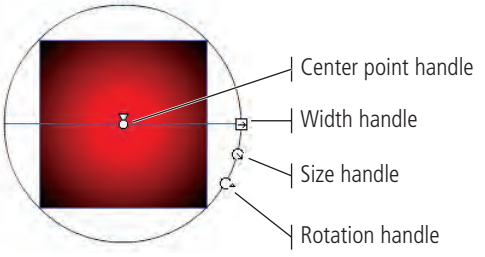


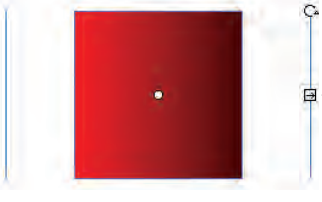
Transforming Gradients

FLASH FOUNDATIONS

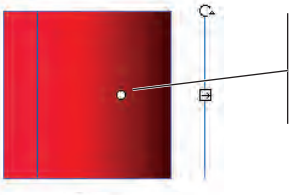
The Gradient Transform tool (nested under the Free Transform tool) enables you to adjust the size, direction, and center point of a gradient fill. When you click an object filled with a gradient, a special bounding box shows the gradient-editing handles.



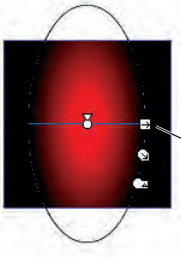




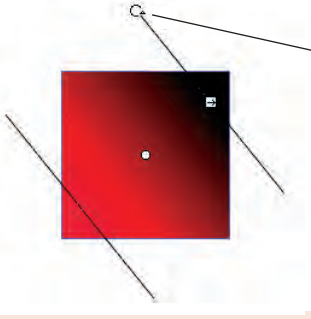
Dragging the width handle makes the gradient larger or smaller relative to the object that you are modifying.



Dragging the center point handle moves the center of the gradient to a new location.

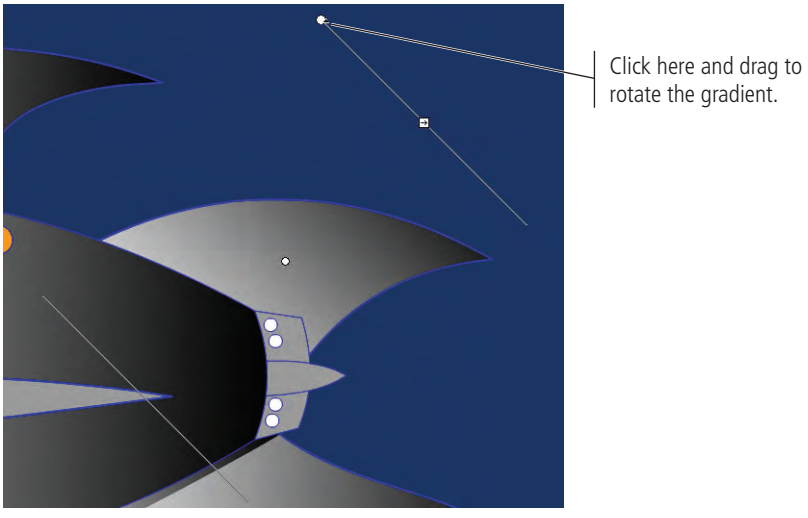


For a radial gradient, dragging the width handle changes the width of the gradient to create a skewed effect.

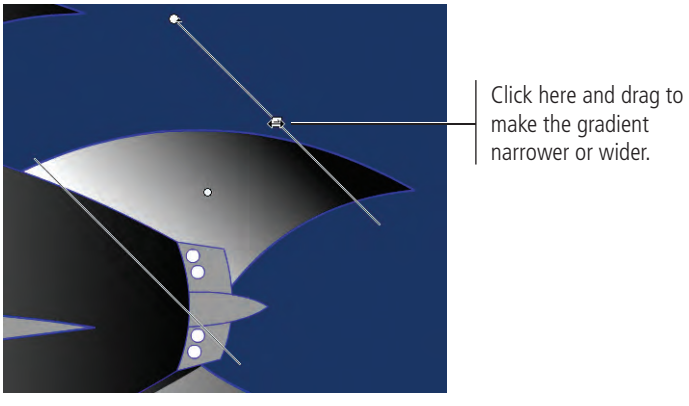


Dragging the rotation handle rotates the gradient around its center point.

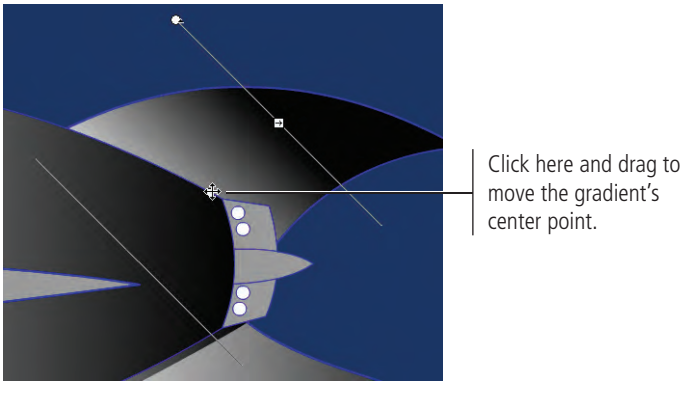
4. **Click the gradient rotation handle and drag left until the white part of the gradient roughly aligns to the point where the fin meets the body.**



5. **Click the gradient width handle and drag left to make the gradient narrower (about half the width of the original gradient).**

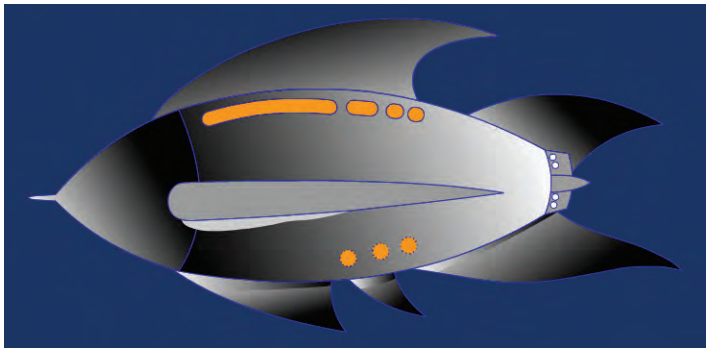


6. **Click the gradient center point and drag left until the center point touches the body edge.**



7. **Using the same techniques, transform the gradients that fill the other components of the ship. Try to create the effect of a consistent light source.**

   When you get to the main body, rotate the gradient so the black part is on the left, meeting the black portion of the gradient that fills the nose cone.



Note:

You can use the rotation handle to reverse a gradient. Simply drag all the way around (180°) until the gradient colors are reversed.

8. **Save the file and continue to the next exercise.**

Use Radial and Custom Gradients

So far you've used linear gradients that move from one end of a shape to the other, changing color along the way. You can also use radial gradients, which start in the center of a shape and radiate outward toward the edges. Radial gradients are very well suited for making round objects appear three-dimensional. Fortunately, you have several perfect candidates in your drawing for radial gradients: the round portholes at the lower rear of the ship.

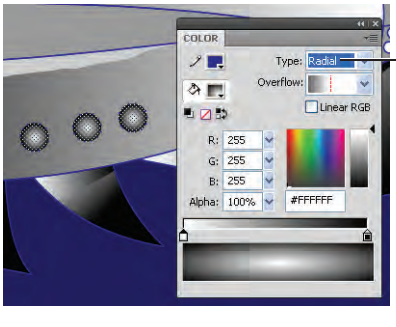
1. **With `rocket_depth.fla` open, use the Selection tool to select all three window shapes in the bottom row of windows.**

2. **Select the Paint Bucket tool and display the Color panel (Window>Color).**

3. **In the Color panel, choose Radial from the Type menu.**

   A number of choices are available in the Type menu: None, which represents no fill; Solid (or flat) colors; Linear; Radial; and Bitmap, which affects imported bitmap images, allowing you to adjust color tones.

   The selected objects are automatically filled with a radial gradient of the last-used gradient stop colors.



Change the gradient to Radial in this menu.

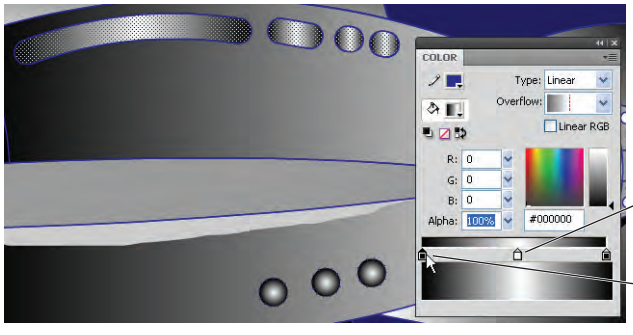
4. **Select the top windows and change the fill type to Linear in the Colors panel.**

   Because the windows are already selected, they automatically fill with the white-to-black linear gradient. (White-to-black is the last gradient setting you used, so it remains in the gradient ramp until you choose or create a new gradient.)

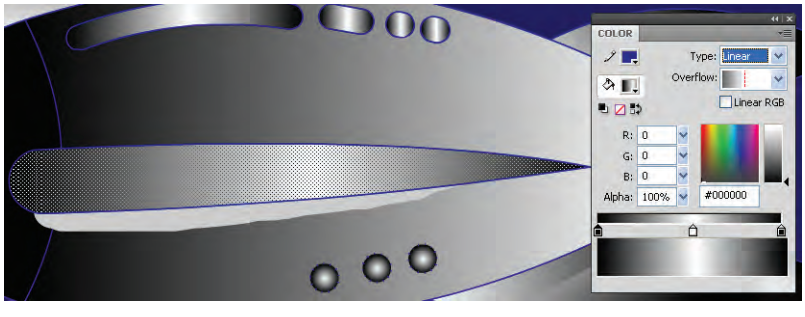
5. **In the Color panel, drag the left gradient stop to the midpoint of the gradient ramp.**

6. **Click under the left end of the ramp to add another gradient stop.**

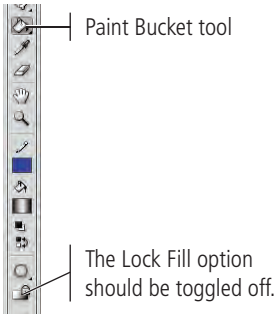
7. **While the new gradient stop is selected, change the RGB color values to R:0, G:0, B:0 (the equivalent of black).**



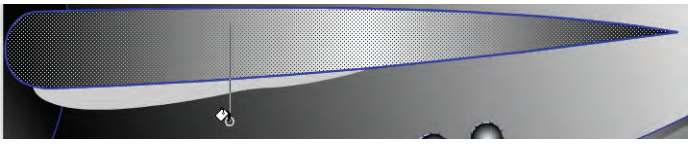
8. **Select the side fin shape. Choose the Linear option in the Color panel to apply the black-to-white-to-black linear gradient to the shape's fill.**



9. **Select the Paint Bucket tool and turn off the Lock Fill modifier at the bottom of the Tools panel.**



10. **Click near the top of the side fin and drag down past the lower edge to define the direction of the gradient fill.**



When you release the mouse button, the gradient fill is redirected based on the length of the line you drew with the Paint Bucket tool. We dragged past the lower edge about the same distance as the fin's height; the center point of the gradient is near the bottom edge of the middle of the fin.

11. **Show the Space layer.**

12. **Adjust any fill colors or gradients until you are satisfied with the overall result.**

13. **Save the file and close it.**

Project Review

fill in the blank

1. The _____ can be used to change the size of the Stage.
2. _____ in the Timeline can be used to manage the top-to-bottom order of objects on the Stage.
3. When created in _____, the fill and stroke are treated as separate entities; you can individually select each part, and move or modify each part without affecting the other.
4. When you create a shape in _____, it automatically displays the bounding box as soon as you create it; you can't select the fill and stroke independently on the main Stage.
5. A(n) _____ allows multiple objects to be treated as a single entity on the Stage.
6. The _____ tool can be used to select areas of a standard drawing object, or to bend lines created in either drawing mode.
7. The _____ tool can be used to select individual anchor points and handles that make up a shape.
8. The _____ tool is used to create precise Bézier curves.
9. The _____ tool is used to change the fill color of closed shapes.
10. The _____ tool is used to change the stroke color of any object.

short answer

1. Briefly explain how anchor points and handles control the lines in a vector shape.
2. Briefly explain the difference between the Selection tool and the Subselection tool.
3. Briefly explain what is meant by "destructive editing."

Portfolio Builder Project

Use what you learned in this project to complete the following freeform exercise.
Carefully read the art director and client comments, then create your own design to meet the needs of the project.
Use the space below to sketch ideas; when finished, write a brief explanation of your reasoning behind your final design.

art director comments

Your client is happy with the rocket ship artwork, and asked you to create a second set of illustrations required for the new Web site.

To complete this project, you should:

- ❑ Search the Internet or any other source for graphic ideas relating to the client's five icons. If necessary, use images as templates when you draw the icons.
- ❑ Create the five icons, each in its own Flash file.
- ❑ Carefully consider the best approach for each icon and use whichever tool (or tools) are most appropriate to create the icon artwork.

client comments

We need a series of icons we can use on our Web site. These icons will eventually be turned into buttons that will link to various areas of the site: basic shipping information, cargo and freight shipping information, packing services, tracking services, and customer service.

We really like the 'retro' look of the rocket ship you drew. If possible, can you incorporate that style into the icons?

Use any colors you want except brown/yellow and blue/orange. Those schemes are already taken by our primary competitors, and we don't want to be accused of infringing on any trademarks.

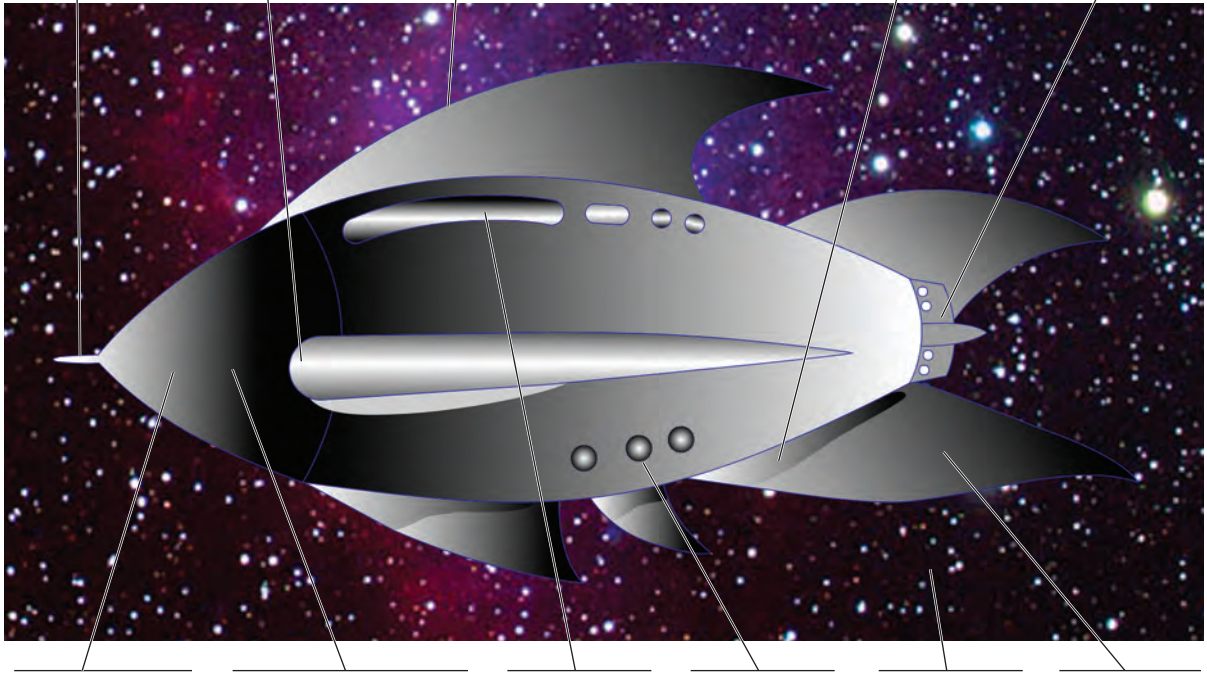
We don't have the images for these icons. Can you find something on the Internet to use as a guide? We are talking about icons, which need to be easily recognizable in any language. Each illustration should very clearly convey what each one is for.

Can you have the project finished within the next two weeks?

project justification

Project Summary

Although Flash is known as an animation program, you can see from this project that the application offers a considerable array of drawing and painting tools. You learned how to import a sketch, control the size of the Flash Stage, and align objects to the Stage. These skills set the groundwork for any type of assignment.

You also developed an understanding of layers and how they positively affect the construction of complex drawings and artwork. You now know how to create, rename, lock, and hide layers. You know that artwork contained on one layer resides either above or below other layers in the document, and that the top-to-bottom order of layers in the Layers panel is called the stacking order. You also found that you can change the stacking order at any time to hide or reveal specific sections of your artwork.

You learned about the two Flash drawing modes, and discovered the strengths of both modes. You created shapes using several different methods, including the primitive drawing tools, the Line tool for simple lines, and the Pen and Pencil tools for more complex curves. You also learned how to control shape attributes such as the fill and stroke colors, as well as how to apply stroke styles and gradients to create unique artistic effects.