

# Session 2

## On an Alien Planet

In this session, students continue animating their space adventure. They create two scenes using frame by frame animation. To start, they create the planet surface that shows grass growing and a flower blooming. Afterwards, they apply their new skills to make a hover craft drive over bumpy terrain. The session ends with students selecting an Animation Challenge and creating it using Frame by Frame Animation.

Assignment 11: What Is Frame by Frame Animation?

Assignment 12: Create Scene 2 – The Planet

Assignment 13: Create Scene 3 – The Hover Craft

Assignment 14: Frame by Frame Challenge

Session 2 Review: About Frame by Frame Animation

Session 2 Skill Review: Animate a Dog's Tail Wagging

Session 2 Extension Activity: Using Layers

# Session 2: On an Alien Planet

## Getting Started

### Overview

In this session, students continue animating their space adventure. They create two scenes using frame by frame animation. To start, they create the planet surface that shows grass growing and a flower blooming. Afterwards, they apply their new skills to make a hover craft drive over bumpy terrain. The session ends with students selecting an Animation Challenge and creating it using Frame by Frame Animation.

### Materials

- Animate CC
- Scene 2 sample
- Scene 3 sample
- Sign sample
- Wave sample
- Workbook folder with individual worksheets
- Session 2 Review: About Frame by Frame Animation
- Session 2 Skill Review: Animate a Dog's Tail Wagging
  - Tail sample

### Teacher Preparation

(Refer to the Preparing to Teach section of this guide for instructions)

- Make the Animate folder available to students.

### Teaching Strategy

In this session, students learn about frame by frame animation. Explain scenario to students.

*In this session, you are going to animate using frame by frame animation. Frame by frame animation is used to move an object from one position to another, by creating content in EVERY frame. Although creating this type of animation does take time, it is a great way to gain control over how an object will move across the stage.*



*Let's create the way animators did in the past, by creating an animated sequence one frame at a time. To become good at making frame by frame animation you need to create it more than once. For this reason, you will animate grass growing, hover craft driving, flashing sign, and waving creature.*

## Assignment 11 What Is Frame by Frame Animation?

In this assignment, students learn about frame by frame animation. This type of animation places content in EVERY frame of the Timeline in a keyframe. To gain an understanding of how each frame has different content, students study sample videos to notice the use of frame by frame animation.

Emphasize the difference between a keyframe and a blank keyframe. A blank keyframe does not copy the content of the previous frames and is empty. A keyframe does copy the content of the previous frames.

Introduce the following terminology:

- *Frame by Frame Animation*: Frame by frame animation has the content of every frame change, by placing content in every frame of the Timeline into a keyframe.

## Assignment 12 Create Scene 2 – The Planet

In this assignment, students create a scene that has the alien standing on his planet with the grass growing and flowers blooming. The action is created using frame by frame animation. You may wish to model the steps of making a frame by frame animation before students begin the assignment.

## Assignment 13 Create Scene 3 – The Hover Craft

In this assignment, students create a scene that has a hover craft drive over bumpy terrain. You may wish to review the steps of making frame by frame animation before students begin the assignment.

## Assignment 14 Frame by Frame Animation Challenge

This is an optional assignment. Students should complete this assignment, based on their needs. If time is a factor, then this assignment can be skipped. However, if students are struggling to understand frame by frame animation, or are looking for an extra challenge, this assignment offers two fun activities. One is a sign with letters that change color, and the other is a rock creature that waves at the hover craft.

## Lesson Plan

### Assignment 11 - What Is Frame by Frame Animation?

- Read about frame by frame animation and then answer questions.
- Study frame by frame animation by viewing a sample.

### Assignment 12 - Create Scene 2 – The Planet

- Open the Animate document.
- Insert a new scene. View the scenes in the document.
- Insert the alien from the Library onto the stage for Scene 2.
- Animate the Ground: Draw a short line using the Pencil Tool, to make a portion of the ground. Insert a keyframe into Frame 6. Draw another short line and add another keyframe. Continue until the ground stretches across the stage.
- Draw the Grass: Draw the blade of grass using the Pencil Tool. Insert a keyframe into the frame beside the last keyframe in the Timeline. Draw another blade of grass and insert another keyframe in the next frame. Continue to draw blades of grass and add keyframes until the grass reaches across the entire stage.
- Draw a Flower Blooming: Use frame by frame animation to draw a flower stem, leaf, and petals, with each appearing one after the other in its own keyframe.
- Add the text to describe the action.
- Solve the problem of how to make the words appear at the SAME TIME as the action (Solution: place it on its own layer). Insert a new layer and rename it Words. Cut the words from Layer\_1 and paste them onto the Words layer.
- Save the Animate document and then close the program.

### Assignment 13 - Create Scene 3 – The Hover Craft

- Open the Animate document.
- Insert a new scene.
- Rename Layer\_1 to Hover Craft.
- Draw the planet surface.
- Draw the hover craft and group the object.
- Animate the hover craft using frame by frame animation to have it drive over the bumpy terrain by moving up and down across the stage.
- Add words to describe the action on a new layer.
- View the story.
- Save the Animate document and then close the program.

### Assignment 14 - Frame by Frame Animation Challenge

- Open the Animate document and display Scene 3.
- Select from two challenges: planet sign or waving rock creature.
- Save the Animate document and then close the program.

## Learning Objectives

Students should be able to complete each learning objective independently.

### Content Knowledge:

- define frame by frame animation
- understand the difference between a blank keyframe and keyframe

### Technical Skills:

#### Operating Environment

- open and close a program
- save a document

#### Animation

- insert a new scene
- view scenes in a document
- insert an object from the symbol Library
- select a frame
- insert a keyframe
- animate an object using frame by frame animation
- view the animation using the ENTER key
- insert and rename a layer
- cut an object
- paste an object in the same position as the copied item using Paste in Place
- test the movie in the preview window

#### Graphics

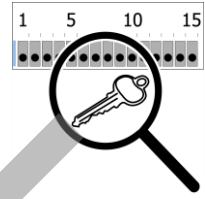
- add text and customize the properties
- draw objects and customize their appearance

#### Applied Technology

- analyze frame by frame animation within a movie clip
- animate a space adventure using frame by frame animation

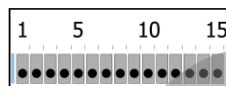
# Assignment 11 What Is Frame by Frame Animation?

In this session, you are going to animate using frame by frame animation. Frame by frame animation is used to move an object from one position to another, by creating content in every frame. Although creating this type of animation does take time, it is a great way to gain control over how an object will move across the stage. In this assignment, you will read about frame by frame animation and view sample videos.



## What Is Frame by Frame Animation?

Frame by frame animation uses keyframes in EVERY frame of the Timeline. A keyframe copies the content from the previous keyframe. The keyframes in frame by frame animation are placed right beside each other. Slight changes are then made to the objects in each frame. These changes are seen as movement when the animated sequence is played.



In frame by frame animation, a keyframe is placed into every frame of the Timeline.

Frame by frame animation is a lot like what animators used to do in the past. Before there were computers, animators used to draw the character in a new position, one frame at a time. To create animation using this technique is a time-consuming task, however, it does offer lots of control over how the object moves.

## Questions about Frame by Frame Animation

1. What is frame by frame animation?

2. Frame by frame animation uses keyframes. How is a keyframe different from a blank keyframe?

## Study the Frame by Frame Animation Samples

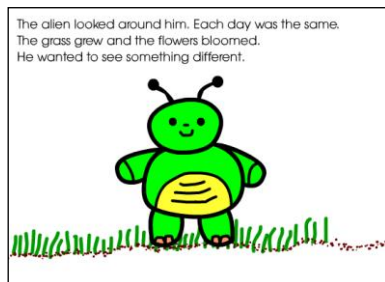
View two sample videos created using frame by frame animation. One is of an alien landscape with an animated planet surface. The second is of a flying hover craft. Afterwards, answer the questions about frame by frame animation.

- ▷ Access the *Animate* folder. Open the *Scenes* folder.

### The Alien

- ▷ Double click the *Scene 2* file to watch the animated scene.

3. What different events occur in each frame of the animation?



- ▷ Close the file.

### The Hover Craft

- ▷ Double click the *Scene 3* file to watch the animated scene.

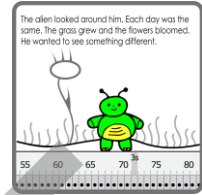
4. How would you describe the animation of the hover craft in this scene?



- ▷ Close the file.

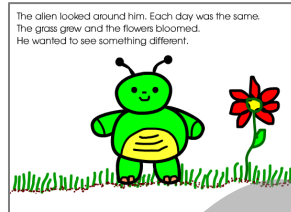
## Assignment 12 Create Scene 2 – The Planet

In this assignment, you will create Scene 2 in your space adventure using frame by frame animation. Use your skills to draw the planet surface. Follow the instructions to animate the ground appearing, grass growing, and flower blooming.



### View a Sample Scene

- ▷ Access the *Animate* folder. Open the *Scenes* folder.
- ▷ Double click the *Scene 2* file to watch a sample from an animated story.



Please note, the sample includes sound, which is a feature that will be added to the Timeline in Session 6.

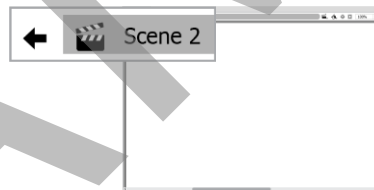
### Open the Animate Document

- ▷ Open the document in the *Animate* program. The document opens to show the last scene you were editing. In this case, the scene in view should be Scene 1.

### Insert a New Scene

When making an animated story with the *Animate* program it is a good idea to divide the events into scenes. Each scene has its own stage, Timeline, and layers.

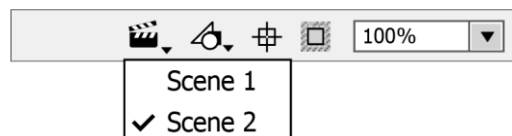
- ▷ From the *Insert* menu, select *Scene*.
- A new stage opens in the window. It has an empty Timeline. You will notice that the Scene Number reads Scene 2.



If you cannot see the Scene Number, select *Edit Bar* from the *Window* menu.

### View Each Scene in the Story

- ▷ Scene 1 has not been deleted. It is still part of the animated story. You can easily switch from Scene 2 to Scene 1 and back again. Try it!
- ▷ Click *Edit Scene* on the *Edit Bar*. From the list click *Scene 1*.
- ▷ Click *Edit Scene* again and this time select *Scene 2*.



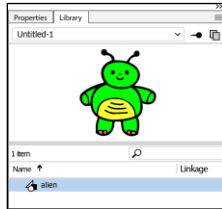
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## Insert the Alien Symbol from the Library

In the previous session, you created an alien and placed it into the Library. The Library lets you use the same object repeatedly without needing to redraw it. Insert the alien from the Library.

- ▷ From the Window menu, select *Library*.
- ▷ Click on the alien symbol and drag it onto the stage.



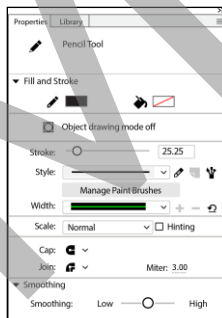
- ▷ Deselect the alien by pressing ESC on the keyboard.

## Animate the Ground Using Frame by Frame Animation

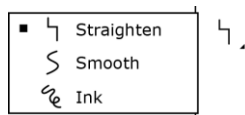


You are going to have the ground gradually appear underneath the alien using frame by frame animation. Unlike the previous session when you used blank keyframes, you are going to use keyframes. The difference between the two is that a keyframe copies the content of the previous frames into the new one. This means everything you drew before the keyframe remains on the stage, whereas a blank keyframe is empty.

- ▷ From the Tools Panel, select the *Pencil Tool*.
- ▷ From the *Properties* tab, select a stroke color, weight, and style.

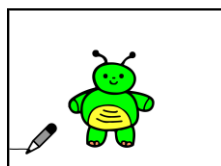


- ▷ Turn object drawing mode **OFF**.
- ▷ Pick the type of line from the Tool Options in the Tools Panel. HINT: Try Smooth.



- ▷ Starting from the left side of the stage, draw a short line.

Draw a short line  
for the ground.



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# Assignment 13 Create Scene 3 – The Hover Craft

In this assignment, you will create Scene 3 in your space adventure using frame by frame animation. Use your skills to draw a hover craft. Follow the instructions to animate it driving over bumpy terrain.



## View a Sample Scene

- ▷ Access the *Animate* folder. Open the *Scenes* folder.
- ▷ Double click the *Scene 3* file to watch a sample from an animated story.



Please note, the sample includes sound, which is a feature that will be added to the Timeline in Session 6.

## Open the Animate Document











- ▷ Open the document in Animate CC. The document opens to show the last scene you were editing. In this case the scene in view should be Scene 2.

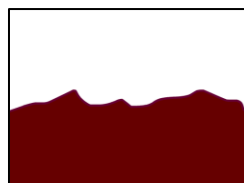
## Insert a New Scene and Rename Layer 1

- ▷ From the Insert menu, select *Scene*.
- ▷ A new stage opens in the window. It has an empty Timeline. You will notice that the Scene Number reads Scene 3.
- ▷ Double click *Layer\_1* and name it **Hover\_Craft**. Press ENTER.

## Draw a Bumpy Planet Surface

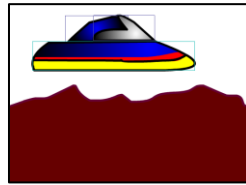
On the Hover Craft layer, draw a bumpy planet surface. Be creative! If you need help, follow these instructions:

- ▷ From the Tools Panel, select the *Rectangle Tool*. 
- ▷ Turn object drawing mode OFF.  
- ▷ Select the SAME stroke   and fill color.  
- ▷ Draw a rectangle.
- ▷ From the Tools Panel, select the *Pencil Tool*. 
- ▷ Turn object drawing mode OFF.  
- ▷ Change the stroke color to the SAME color as the rectangle.
- ▷ Place the pencil on the edge of the rectangle and start to draw a bumpy line. End the line by touching the edge of the rectangle.
- ▷ From the Tools Panel, select the *Paint Bucket Tool*.  Select *Close Large Gaps*  as the gap size in the Options Tray. Fill the area with color.



## Draw a Hover Craft and Group All the Objects Together

- ▷ Use your skills to create a vehicle that drives across the planet surface.
- ▷ From the Tools Panel, click the *Selection Tool*. ▶
- ▷ Click and drag around the hover craft.





The object must be grouped to move it across the stage.

- ▷ From the Modify menu, select *Group*.

## Animate the Hover Craft Using Frame by Frame Animation

- ▷ Drag the hover craft to its starting point on Frame **1**. Put it slightly off the stage.
- ▷ Right click on Frame **2** in the Timeline. From the menu select *Insert Keyframe* or press F6 on the keyboard.
- ▷ Click on the stage to deselect all objects.
- ▷ Click on the hover craft to select it. Make sure the terrain is not selected.
- ▷ Use the arrow keys on the keyboard to move the hover craft a little up and towards the other edge of the stage.
- ▷ Add a keyframe to Frame **3**. Click on the hover craft to select it. Move it slightly down and towards the other edge of the stage.
- ▷ Continue to add keyframes and move the hover craft slightly until it is off the other side of the stage. It should look as if it is driving over the bumpy terrain.
- ▷ Use your skills to view the animation.

## Add Words on a New Layer to Describe the Action

- ▷ Click *New Layer*  at the bottom of the Layers area of the Timeline. Rename the new layer **Words**.
- ▷ On the Words layer, click on Frame **1**.
- ▷ Use the *Text Tool*  to type the words:

**He got into his hover craft and drove to the launch pad.**



## Test the Scene

- ▷ From the Control menu select *Test Scene*. Watch the hover craft fly across the planet surface.
- ▷ Click the *Close* button on the Test window pane to exit the preview.

## Save the Animate Document and Close the Program

# Assignment 14 Frame by Frame Animation Challenge

You have learned how to animate objects using frame by frame animation. In this assignment are two animation challenges. You can add a flashing sign or a waving rock creature to Scene 3. Pick a challenge to practice your new skills.




## Animate a Flashing Sign



1. Access the *Animate* folder. Open the *Challenges* folder. View the *Sign* file to watch a sample video.

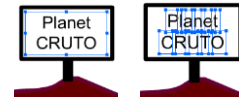


The animated sign has letters that change color one letter at a time.

2. Open the space adventure in Animate CC. View Scene 3.
3. Click *New Layer*  at the bottom of the Layers area. Rename the layer **Sign**.
4. Draw a sign using the drawing tools.

**TIP:** The landscape, hover craft, or words might be in your way. You may want to temporarily hide  a layer, such as the Hover Craft or Words layer, while drawing.

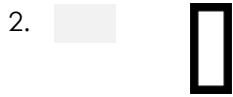
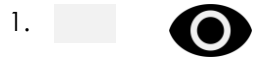
5. Use the *Text Tool* **T** to add the planet name to the sign.
6. Right click on the text box. Select *Break Apart* to ungroup the name into individual letters.
7. Place a keyframe in Frame 2 of the Sign layer. Select Frame **2**. From the Insert menu, select *Timeline* and then *Keyframe*, or press F6 on the keyboard.
8. Change the first letter to another color:
  - a. Click on the stage to deselect all objects.
  - b. Select the first letter using the *Selection Tool*. 
  - c. Select a color from the *Fill Control*. 
9. Place a keyframe in Frame **3** of the Sign layer.
10. Deselect all objects. Change the next letter to another color.
11. Continue to add keyframes and change the letter color until all letters have changed.
12. Copy the animation you have just created to have it repeat itself:
  - a. Click on the **last** keyframe in the Sign layer. Hold the SHIFT key and click Frame **1**.
  - b. Right click on the selected frames and select *Copy Frames* from the menu.
  - c. Right click inside the next blank frame in the Sign layer. Select *Paste Frames*. Click away from the frame or timeline to see the pasted frames.
  - d. You can keep pasting the frames, by right clicking on the next blank frame and then selecting *Paste Frames* from the menu.



**TIP:** Does the sign display longer than the Hover Craft and Word layers? To solve this problem, select the frames in the Sign layer. Right click on the selection and select *Remove Frames*.

## Session 2 Review: About Frame by Frame Animation

Match the tool to its function.



A. Display objects on a layer as solid or an outline.

B. Add a layer.

C. Select a scene to edit.

D. Show or hide a layer.

E. Lock or unlock a layer.

/5

Match the term to its definition.

6.  frame by frame animation

A. A gallery of stored objects

7.  scene

B. Animation that has a keyframe in every frame

8.  Timeline

C. A part of an Animate document that contains its own stage, Timeline, and layers

9.  keyframe

D. A frame in an animated sequence that contains drawn objects

10.  Library

E. Made up of layers and frames, it organizes and controls a document's content over time

11.  frame

F. A single unit in a Timeline

12.  layer

G. A division of the Timeline into parts that allow objects to be stacked on top of each other

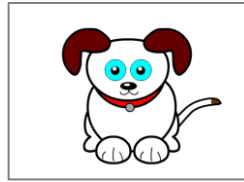
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## Session 2 Skill Review: Animate a Dog's Tail Wagging

Frame by frame animation can be used to animate objects one frame at a time using keyframes. In this assignment, you apply your knowledge to create a dog with a wagging tail.

1. Access the *Animate* folder. Open the *Skill Reviews* folder.  
View the *Tail* file to watch a sample video.



Animate the tail to move back and forth. Use your skills to copy and paste frames to make it repeatedly wag.

2. Open Animate. Select *ActionScript 3.0*.
3. Rename Layer\_1 to **Dog**.
4. Draw a creature using the drawing tools. DO NOT INCLUDE A TAIL.
5. Group the creature:
  - a. Select the *Selection Tool*. Click and drag to draw a box around the dog.
  - b. From the Modify menu, click *Group*.
6. Position the dog on the stage.
7. Draw a tail. If the parts of the tail are not grouped, group them.
8. Position the tail so it looks like it is attached to the creature. If necessary, change the object order. Right click the tail. From the menu, select *Arrange*. Click *Send to Back*.
9. Place a keyframe in Frame 2 of the Dog layer. Select Frame **2**. From the Insert menu, select *Timeline* and then *Keyframe*, or press F6 on the keyboard.
10. Move the registration point to set how the tail pivots:
  - a. Click the *Free Transform Tool*.
  - b. If necessary, click on a blank area of the stage to deselect all objects.
  - c. Click on the tail to select it. Click on the registration point - it is the round circle inside the bounding box.
  - d. Drag it to the point where the tail should pivot. (at the body)
11. Rotate the tail slightly.
12. Place a keyframe in Frame **3**.
13. Deselect all objects. Rotate the tail a bit more.
14. Continue to add keyframes until the tail has moved in one direction.
15. Copy the animation you have just created to have it repeat itself:
  - a. Click on the **last** keyframe in the Dog layer. Hold the SHIFT key and click Frame **1**.
  - b. Right click on the selected frames and select *Copy Frames* from the menu.
  - c. Right click inside the next blank frame in the Dog layer. Select *Paste Frames*.
  - d. You can keep pasting the frames, by right clicking on the next blank frame and then selecting *Paste Frames* from the menu.
16. View the animation. IF you find the tail moves too fast, adjust the frames per second. In the Properties panel, click FPS (frames per second). Change the number to **12 fps**.
17. Save the file as **tail**.
18. Close the Animate Program.



## Session 2 Extension Activity: Using Layers

In this extension activity, you will explore the Layers area. Learn how to insert, rename, move, hide, lock, view, and delete layers.

### What Is a Layer?










The Layers panel is part of the Timeline. A layer is a row in a Timeline. It is used to organize parts of a scene. By placing objects on different layers, it is possible to have several animations appear at the same time.

Layers are used to:

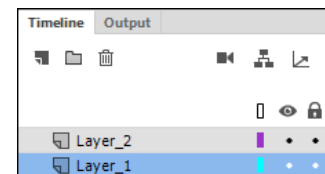
- organize a scene into manageable parts
- adjust the stacking order of objects on the stage
- display objects as outlines
- temporarily hide objects to declutter the stage
- structure animated sequences
- navigate to a keyframe quickly
- add a camera view
- create depth on the stage

### About the Layers Panel

The layer area of the Timeline has tools for managing layers. Read to learn about each part:

-  **New Layer:** Insert a new layer on the Timeline.
-  **New Folder:** Create a folder to group layers.
-  **Delete:** Remove a layer from the Timeline.
-  **Add Camera:** Add a camera layer to pan and zoom the stage.
-  **Layer Depth Panel:** Create depth on the stage.
-  **Parenting View:** Connect layers or objects to control movement.
-  **Show or Hide Layers:** Display or temporarily remove a layer from view.
-  **Lock or Unlock Layers:** Permit or prevent edits to a layer.
-  **Show Layer as Outline:** Display objects as solid or black and white line drawings.

1. Open Animate. Select *ActionScript 3.0*.
2. Rename a layer:
  - a. Double click on Layer\_1.
  - b. Type **Circle**. Press the ENTER key.



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