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Handout 1:
Unit 1 Overview

Think about a moment in an animated movie that really moved you—maybe you cried when Bambi lost his mother, or your heart soared at the moment in Up *when the house became airborne. You felt real emotions, maybe even cried real tears, even though there were no actors that you could see, no real house soaring through the sky—just lines and color captured on film or as pixels. That's the magic of animation. Animators create imagined worlds and bring them so convincingly to life that we believe in the characters and get lost in the story.*

In this unit, you will learn how to create some of this magic yourself. You'll learn the basic techniques of animation and the principles that animators use to create believable characters and worlds. You'll practice some classic animation exercises and analyze animated movies. For the unit project, you'll select a short work of fiction that you think would make a good animation and create an animation of a moment from the story.

Your work in this unit will revolve around the following questions:

- *How can I make the most of animation's special attributes to bring a story to life on screen?*
- *How can I create an animation that engages the audience and immerses them in the story I'm telling?*
- *What are the basic principles that animators use to create effective animations?*

Unit Project

You'll take on the role of an employee working on new movie development for an animation studio. You are given the task of selecting a short piece of fiction—a fairy tale, a folktale, a myth, or a contemporary short story—that would make a successful animated movie. Once you choose your story, you'll select a scene from the story and a moment from that scene to focus on, develop a design for one of the animation's main characters, storyboard the moment you've chosen, and create an animation of the moment. At the end of the unit, you will pitch your story idea to your classmates and, possibly, arts, media, and entertainment (AME) professionals.

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What You Will Do in This Unit

Note: According to animation industry professionals, it's a good idea to learn how to animate by hand with pencil and paper before moving on to computer-based animation. You'll learn animation fundamentals with pencil and paper, which you can then apply to the animation you create using computer software.

Animate a penny. Create a stop-motion animation of a bouncing penny to learn the basic techniques used to make animation.

Analyze animated movies. Watch clips from animated movies and analyze the way that they use essential principles of animation, as well as the elements of art and principles of design.

Write a weekly critique. Write a weekly analysis of a clip from an animated movie, short, or TV show that you view outside of class.

Draw a bouncing ball animation. Draw an animation of a bouncing ball, incorporating several principles of animation.

Create a computer-generated bouncing ball. Use software to create a 2-D animation of a bouncing ball, using the same principles you used in the hand-drawn animation.

Profile an AME professional. Begin research on a project in which you'll choose an AME professional you admire, research this person's education and career path, and critique one of his or her projects.

Choose a story to animate. Select a short work of fiction that you think would make a good animated movie, and select a scene and a moment from the scene to focus on.

Design a character. Design the main character in the moment you've chosen, creating several different drawings as part of the design process.

Practice animating a walk cycle. Learn how to animate simple walking figures in order to understand how walk cycles work in animation.

Create storyboards. Draw storyboards of the moment that you've chosen from your story.

Animate a moment. Create a short animation of the character you've designed in a moment from your story.

Pitch your story idea. Share your story idea, character designs, storyboards, and animation with an audience.

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Portfolio Requirements

You will keep a portfolio of work throughout the unit that includes the following items:

- Character designs, including a turnaround sheet, character studies showing expression, a model sheet, and a simplified design for animation
- Storyboards of a moment from the story
- An animated clip of a moment from the story

Vocabulary Used in This Unit

Animation: The process of playing a consecutive sequence of drawings, computer-generated graphics, or photographs to create the illusion of motion.

Breakdown poses: Poses located between key and extreme poses that show the path that the action takes.

Character studies: Drawings that show a character displaying a variety of actions or emotions.

Extreme poses: Poses that show changes in motion or dramatic changes in shape (such as those showing squash and stretch) between the key poses.

Frame: An individual image that, when played consecutively with other images, creates the illusion of motion in an animation.

Frame rate: The speed at which individual frames in an animation are played back to create the illusion of motion. Frame rates have a direct effect on the timing and smoothness of the animation.

Inbetween poses: Poses other than keys, extremes, and breakdowns, which are necessary to create appropriate timing and movement in an animation.

Inking in: The process of tracing over pencil drawings (with ink or with a digital tool) to create the final images for an animation.

Key poses: Poses that show the most important moments in the action, such as the beginning and end of the action or changes in the direction of the action. These are also known as key frames.

Model sheet: A page that shows a polished drawing of a character in a typical pose wearing a typical costume. May also include turnaround drawings of the character.

Pencil test: An animation of initial drawings for an animation project, usually completed before work begins on the final product.

Pose: The position of a character or object in one frame of an animation.

Primary action: The most important movement a character completes in a scene.

Secondary action: Movement made by a character in a scene that is in addition to the character's primary action. This secondary movement can add interest to a scene or provide more information about a character.

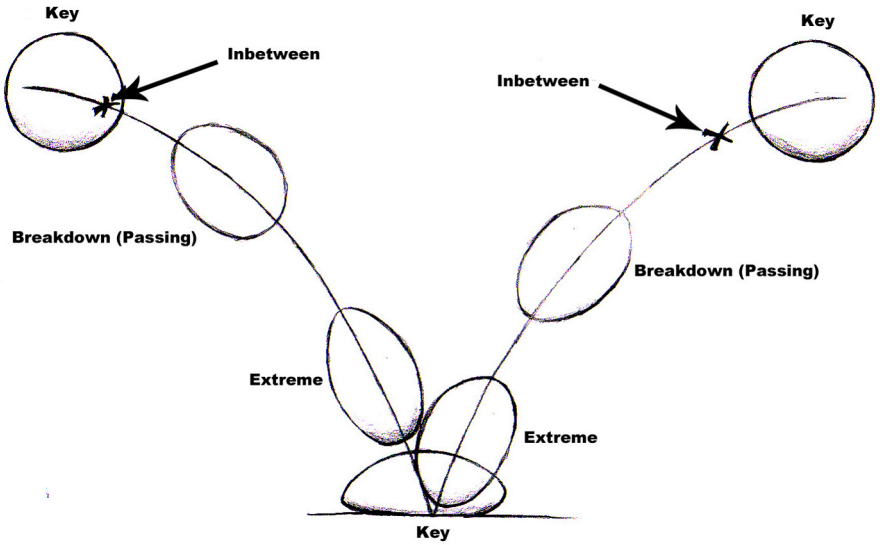
Spacing: The distance that an object or character moves between one frame of an animation and the next. The closer the spacing, the more slowly the object or character appears to move.

Stop-motion animation: A method of animation in which each frame is a photograph of real-world objects, which are then moved incrementally between frames. Played in sequence, the frames create the illusion that the object is moving.

Storyboards: Drawings of shots or frames from scenes in a media production. Used in the pre-production process to plan scenes before they are shot or animated.

Turnaround sheet: A page of drawings of a character that shows the character from all sides, often including front, back, side, and three-quarter views.

Tweening: In computer-generated animation, the process of having the software generate inbetween frames.



Poses in a bouncing ball animation. Deciding on which poses are the key, extreme, or breakdown poses is different for every animation, but all animators identify the important poses to help plan the motion in the animation. Drawing by Brock Ramirez.

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Handout 2:
Animating a Bouncing Penny

To learn how to animate, you don't need a pencil or a computer program, just a penny and a camera. You'll create your first animation using the technique known as stop motion, in which each frame of the animation is a photograph of a real-world object. You'll move the object incrementally between each frame. When the frames are played in sequence, they create the illusion that the object is moving.

First Animation

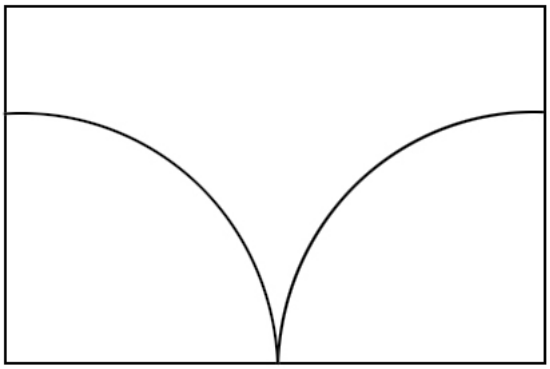
Step 1: Plan the path your penny will take.

You will move a penny along a path on a white background, taking a photograph each time you move the penny. These photographs will be the frames of your animation.

> **Note:** A *frame* is an individual image that, when played consecutively with other images, creates the illusion of motion in your animation.

The penny should appear to bounce from left to right, starting at the top left corner, moving down to the "floor" in the bottom center, and traveling up to the top right corner.

Place your background (a sheet of white paper) on a table and draw a faint pencil line to mark the path your penny will take. Your path should look similar to the following:



This path is the guide you will use to move the penny along as you take photographs.

Step 2: Plan your penny's spacing.

You also need to plan the distance you will move the penny between photographs—the *spacing*. The distance you move the penny affects the animation's *timing*. *Timing*, in part, refers to the length of time it takes something to happen in an animation. *The more closely that an object is spaced between frames, the slower the object appears to move in the animation.*

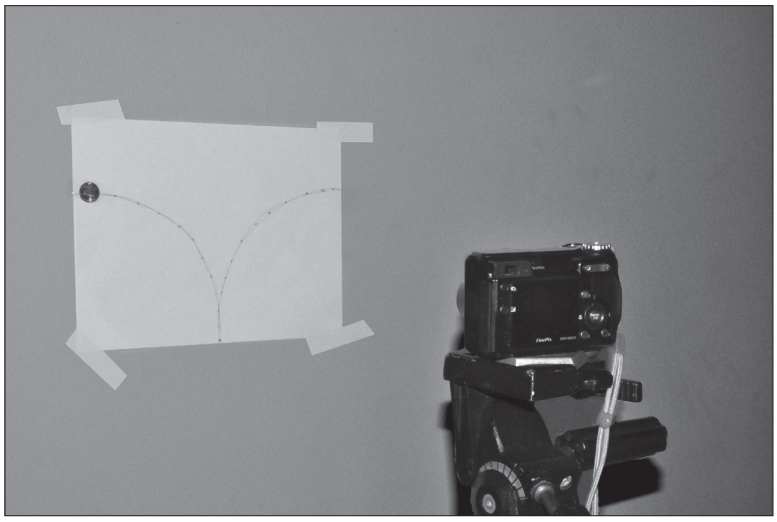
Note: In many animated movies, images are played back at 24 frames per second (fps)—this is also known as the frame rate. Although other frame rates are sometimes used, in this unit you will use 24 fps.

Plan to shoot 24 photographs of the penny moving along the path. (If you played the animation at 24 fps, you'd have 1 second of animation.) You'll take 12 photographs of the penny moving along the downward drop and hitting the ground and 12 of the penny on the upward bounce.

For this first animation, you'll move the penny the same distance for each shot. With a pencil, lightly mark small dots at each point along the path where you'll move the penny.

Step 3: Set up your camera.

Set up your camera on a tripod so that it squarely faces your white background and so that you can see the entire path you've drawn when you look through the camera. Depending on your tripod, you may be able to point the camera straight down at the table. If not, put the white paper on a wall, as shown below. (You'll need to use tape, wall putty, or another adhesive to hold the penny in place during each shot.)



Place the penny at the top left side of the path and take a test photograph to make sure that everything looks okay.

Step 4: Photograph the penny.

Have one team member be the cameraperson and another team member be responsible for moving the penny. Take a photograph of the penny at the top of the path you've drawn. Then move the penny to the first dot you've drawn and take another photograph. Move the penny again and repeat, until you have taken 24 photographs.

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Step 5: Create your animation.

Your teacher will show you how to import your photographs and use software to create an animation by playing your photographs sequentially. Create a loop of your animation, played at 24 fps, so the penny seems to bounce several times. (This will help you analyze the animation.)

Step 6: Experiment with holds.

Next, you can try experimenting with "holding" frames. Animators will often "hold" an image for two frames—meaning that the same image will play for two frames. There are two reasons to use holds: to change the timing of the animation (more frames means that the object moves more slowly) and to reduce the amount of drawing that needs to be done (if an image is held for two frames, that's one less drawing to make!).

Experiment with holding some of your frames (by creating a duplicate frame of the image in the software program) to see how the timing changes.

Step 7: Experiment with the frame rate.

You've been playing your animation at 24 fps. What would happen if you played it at 12 fps? The human eye needs to see at least 12 images per second in order for the brain to create the illusion of motion, so 12 fps is slowest frame rate you can use and still have the drawings look animated. (If there are fewer images per second, you'll feel like you're looking at one drawing following another rather than a continuous movement.)

If the software you are using allows you do to so, experiment with different frame rates. What does the animation look like when you play it at 12 fps vs. 24 fps?

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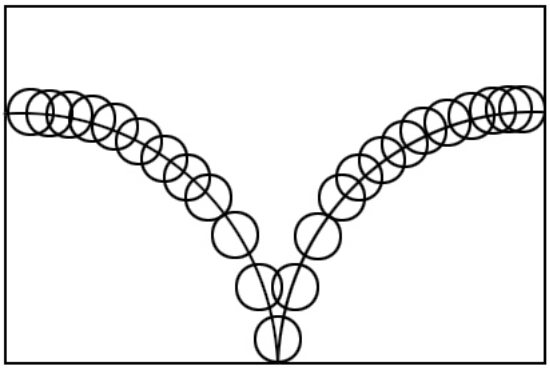
Second Animation

Now you'll learn more about timing and spacing by making a second animation. In this animation, you'll make the penny move differently than you did in your first animation.

Step 8: Plan new movements for your penny.

Using the same background and path, plan to move your penny again. (Since you'll be drawing new dots, you might want to trace the path on a new sheet of paper.) You'll shoot the same number of photographs, but instead of moving the penny the same distance between shots, you'll move the penny a shorter distance at both the beginning and end of the "bounce" and a greater distance when the penny moves toward the "floor." Your penny's movement should look something like this:



Step 9: Photograph your penny.

Set up your camera again and follow the same procedure you used in the first animation. Switch roles so that other team members operate the camera and move the penny.

Step 10: Create your animation.

Import your photographs and create your second animation. Note any differences between your first and second animations.

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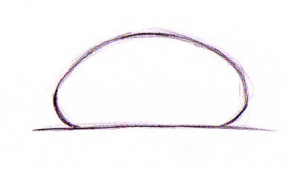
Handout 3:
Principles of Animation #1

As with most other art forms, animation has a set of basic principles. Ollie Johnston and Frank Thomas, animators who worked for Disney, laid out 12 principles of animation in their book *The Illusion of Life: Disney Animation*.

These 12 principles incorporate the techniques that Disney animators used to create more lifelike, believable animations. Although the technology has changed since Walt Disney began making animations in the 1920s, these same principles still apply.

Below is a description of four of these principles. (You'll learn about the others later in the unit.) Your teacher will assign you and a partner one principle. Take notes on how the principle is used as you watch an animated movie clip.

Squash and Stretch



A squashed ball.
Drawing by Brock Ramirez.

Think about a rubber ball bouncing on the ground. When the ball hits the ground, does it stay exactly the same shape? Although it happens so quickly you may not notice it, the ball "squashes" a little bit, compressing as it makes contact with the ground. Like the ball, many things in the world—both inanimate objects and living things, such as people and animals—change shape as they move in response to physical forces.

A stretched ball.
Drawing by Brock Ramirez.

Animators represent these physical changes by squashing and/or stretching the shapes of objects and characters as they move. Too much squashing and stretching can make the animation seem rubbery, while too little can make it seem wooden. It's important to know that when you use the squash-and-stretch principle, the volume of the object remains the same. That is, even though the ball changes shape when it hits the ground, its total size doesn't change.

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Slow In and Slow Out

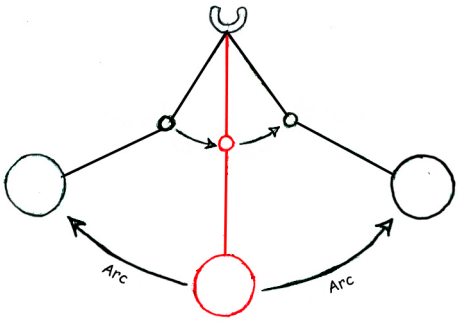
Think back to the penny animations that you created. In the second animation, the penny moved more slowly at the beginning and at the end of the bounce. This is one version of the principle of *slow in and slow out*—putting more frames at the beginning and the end of an action to make the movement appear slower at those times.

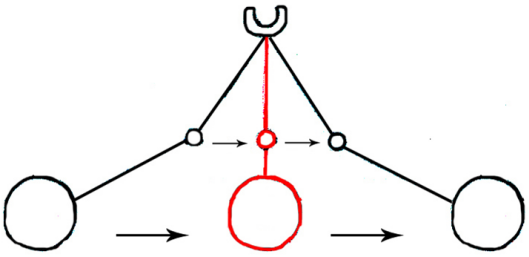
This principle is important because objects and people usually take some time to start and to stop moving and because the audience usually needs time to register the action taking place. *Slow in and slow out* can also keep animations from looking too robotic. However, as with most of these principles, you will find exceptions (i.e., there are some situations where it's better to have the action begin or end quickly).

Notes:

Arcs

Think about the trajectory (or path) of a bouncing ball, or the arm of a baseball pitcher as it moves forward to deliver a pitch. Do these objects move in a straight line? Of course not! They move in arcs. Almost all natural movement takes place on a curved or circular path, as seen here in the picture of the pendulum swinging. Animators following this principle make sure that the movements in their animations follow these natural arcing paths. The exception is mechanical movement, such as that made by machines or robots.





Wrong! The ropes shrink! Although this is an extreme example, similar problems commonly occur to varying degrees in animations that are not mindful of arcs of motion.

Drawings by Brock Ramirez

Notes:

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Timing

You already learned something about timing when you animated a penny. *Timing* refers to how quickly or slowly an action happens—for example, the length of time it takes for a ball to bounce. Appropriate timing can make an animation look more realistic—for example, a heavier object may take longer to begin moving and to stop moving than a lighter object would, just as in real life.

Timing also affects the pacing of a scene—if there are too many slow actions, a scene can drag or become boring (although there may be instances when an animator intentionally slows down a scene).

Timing can be affected by such factors as how much an object weighs and its placement in a scene. Timing can also be affected by a character's personality and body type (for example, a large man deep in thought will usually move more slowly than an excited young boy). During the animation process, timing is affected by spacing—the more closely spaced an object is from one frame to the next, and the more drawings there are of the object completing an action, the more slowly the object will seem to move.

How might the timing be different for these two characters, based on their body types?
Images courtesy of DreamWorks LLC.

Notes:

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Handout 4:
Elements of Art and Principles of Design

Just as artists who work in other visual art forms do, animators use the *elements of art*—the components used to create works of art, such as line, color, and shape—and *principles of design*—concepts relating to how the elements of art are arranged, such as balance, contrast, and rhythm.

Throughout the unit, you will analyze the ways in which animators use the elements of art and principles of design in successful animations. Definitions and descriptions that you can use as you analyze the works are given below.

Elements of Art

Color: The visual sensation dependent on the reflection or absorption of light from a given surface. The three characteristics of color are hue, value, and intensity.

Form: A three-dimensional object (such as a sphere or cube) or the illusion of three dimensions.

Line: The path made by a point moving in space. Lines can vary in width, length, curvature, color, and direction.

Shape: A two-dimensional area or plane that may be open or closed, free-form or geometric.

Space: The emptiness or open area between, around, above, below, or within objects. *Shapes* and *forms* are defined by the space around and within them. Conversely, *spaces* are defined by the shapes and forms around and within them.

Texture: The surface quality of materials, either actual (felt/tactile) or implied (visual).

Value: The lightness or darkness of a hue or neutral color (such as gray).

Principles of Design

Balance: The arrangement of visual arts elements to create a feeling of stability or an equal distribution of visual "weight" in a work of art.

Contrast: The difference between two or more elements (e.g., value, color, texture) in a composition; the bringing together of dissimilar elements in a work of art; the degree of difference between the lightest and darkest parts of a picture.

Dominance: The emphasis of one aspect in relation to all other aspects of a design.
Emphasis: Special stress given to an element to make it stand out.

Movement: The principle of design dealing with the creation of action; a way of causing the eye of the viewer to travel within and across the boundary of a work of art.

Repetition: The recurrence of elements of art at regular intervals.

Rhythm: Intentional, regular repetition of design elements to achieve a specific effect or pattern.

Subordination: Making an element appear to hold secondary or lesser importance within a design or work of art.

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Unity: The total visual effect of a composition, achieved by the careful blending of the elements of art and the principles of design.

Variety: A principle of design concerned with combining elements of art in different ways to create interest.

Vocabulary for Critiquing Use of the Elements of Art

Terms you can use to describe different elements of art are given below.

Line

- Descriptive (a line that depicts something in a drawing, helping viewers to understand what is shown)
- Expressive (a line that expresses a feeling)
- Implied (a line that is suggested but not explicitly drawn, such as the line created when one color ends and another begins)
- Curved, jagged, or straight
- Closed or open

You might also use descriptions such as *soft*, *hard*, or *smooth*.

Shape (2-D)

- Positive (figure) or negative (ground)
- Geometric (perfectly straight or round) or organic (irregular; not perfectly straight or round)
- Closed or open

You might also use descriptions such as *large*, *small*, *wide*, *narrow*, *long*, or *short*.

Form (3-D)

- Geometric or organic
- Closed or open

You might also use descriptions such as *large*, *small*, *wide*, *narrow*, *high*, *deep*, or *shallow*.

Color

- Intensity: Low (dull) or high (bright)
- Value: Tint (the lighter range of a color, such as the color mixed with white or lightened with water); and shade (the darker range, such as the color mixed with black or dark gray)
- Expression: Warm (such as yellow, orange, and red); cool (such as blue, green, and violet); or neutral (such as gray, brown, and black)
- Hue: Primary (yellow, red, and blue); secondary (orange, green, and violet); or intermediate (between primary and secondary, such as yellow-orange and blue-green)

- Arrangements: Complementary (contrasting colors, those that are opposites on the color wheel); analogous (colors that are close together); or monochromatic (different values of the same color)

Space

- Positive or negative
- Perspective in 2-D art: One-point, two-point, or three-point
- Placement in space to create depth in 2-D art: Low, high, or overlapping

Texture

- Real or simulated
- Glossy or matte

You might also use descriptions such as *coarse*, *smooth*, *sharp*, *shiny*, *bumpy*, or *fuzzy*.

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Handout 5:
Weekly Critique

Choose an animated clip to watch, analyze, and critique on your own each week.

Choose Clips

By watching a variety of clips, you can see how professional animators use the principles of animation and the elements of art and principles of design. You can observe how the principles of animation are used in different forms of animation. You can also look for differences and similarities among the forms.

Choose a brief clip (no longer than 10 minutes) from an animated movie, TV show, or short. You might want to watch a clip online or on DVD so that you can play it more than once. Your teacher can give you suggestions for where to find clips online.

Choose at least one clip from each kind of animation listed below:

- Traditional hand-drawn 2-D animation, such as classic Disney movies (*Snow White*, *Cinderella*) or episodes from *Looney Tunes*
- Stop-motion animation, such as *Wallace and Gromit* or *The Nightmare Before Christmas*
- Computer-generated 3-D animation, such as *Kung Fu Panda* or *Up*

Try to include as many animations as possible from different time periods, countries, and cultures. For example, you might choose a clip from an animation made in another country, such as *Spirited Away*, made in Japan by Hayao Miyazaki.

Describe, Analyze, Critique

Fill out the charts below for each clip. You can include drawings as well as text—for example, you might sketch out how the animators have used a principle of animation.

THE CLIP	
Title of TV show, movie, or short	
Length of the clip and where in the animation it is found (e.g., "five-minute clip starting 15 minutes into the movie")	
Date and time you watch the clip	
Date the animation was made	
Form of animation (e.g., 2-D hand-drawn, computer-generated 3-D, stop-motion)	

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DESCRIPTION	
What story is told?	
What action takes place during the clip?	
What do the characters look like, and how do they move? What are their personalities? How does the animation reinforce each character's personality?	
What does the world of the animation look like, and what is the mood like? (Dark and brooding? Happy and bright?) How do the colors and drawings convey the mood of the scene?	

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ANALYSIS AND INTERPRETATION	
How have the animators used the principles of animation? Describe at least one specific example.	
How does the animation effectively use the elements of art and principles of design? Describe at least one specific example.	
How do the animation style and the visual world reflect the story being told?	
How is the story or the look of the clip different from or similar to other clips you've watched?	

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CRITIQUE	
Was the animation successful? Why or why not?	
Describe one thing that you liked about the animation, and why.	
Describe one thing you would change about the animation, and why.	

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Assessment Checklist 1:
Weekly Critique

Use this checklist to help you plan and assess each of your weekly critiques of animated clips. Your teacher will use this checklist to help evaluate your work

Requirements	Percentage of Total Grade	Comments	
Description		**Student Comments**	**Teacher Comments**
Clearly describes the story and action that takes place during the clip.	**10%**		
Clearly describes how the characters look and move.	**10%**		
Clearly describes the world of the animation.	**10%**		
Analysis and Interpretation			
Demonstrates understanding of the principles of animation by pointing to their use in one or more specific examples.	**15%**		
Demonstrates understanding of the elements of art and principles of design by pointing to their use in one or more specific examples.	**15%**		
Clearly explains how the visual world and style of the animation reflect the story.	**10%**		

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Critique			
Makes a convincing case for why the animation is or is not successful.	**10%**		
Identifies convincing reasons why one element of the animation is successful.	**10%**		
Identifies convincing reasons why one element of the animation could use improvement.	**10%**		
Total	**100%**		

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Handout 6:
Bouncing Ball Straight-Ahead Animation

Straight-Ahead Animation and Pose-to-Pose Animation

Another principle of animation is called *straight-ahead action* and *pose-to-pose*, which refers to two different ways of creating animations. Both styles of animation can be useful, and some animators use a combination of the two. (Stop-motion animation uses only straight-ahead techniques.)

In *straight-ahead animation*, the animator works "straight ahead," drawing frames in sequential order until the scene is complete. This allows the animator to work in a free, creative style, but it can be difficult for the animator to maintain proportions and accuracy throughout.

In *pose-to-pose animation*, the animator first creates the most important drawings in the scene (called *key poses*), then goes on to create *extreme poses*, *breakdown poses*, and *inbetween poses*. This allows the animator to have better control over composition and timing.

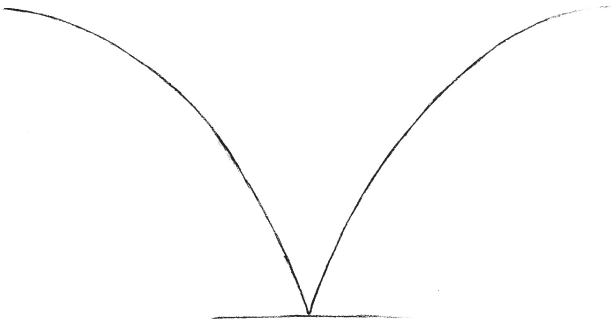
Follow the steps below to draw an animation of a bouncing ball, using straight-ahead techniques. You'll draw the first frame, then the second frame, then the third frame, and so on, in sequential order.

Step 1: Think about the path your ball will take.

For this animation, your ball will bounce in the same way that your penny bounced—starting at the left top side, dropping down, and then bouncing up to the top right side.

> **Note:** If an animator were to create an animation of a bouncing ball, the ball would not bounce up to the same height after it hit the ground (because of friction and gravity). However, because you are going to create a loop of the bounce, the ball needs to reach the same height so that the loop looks right.

The path of your ball should look something like this:



Drawing by Brock Ramirez

This will allow you to create a loop of the animation so that the ball appears to be bouncing. Draw the arc that represents the ball's path on a sheet of paper. You'll place the sheet of paper underneath each frame and use it as a guide for your drawing.

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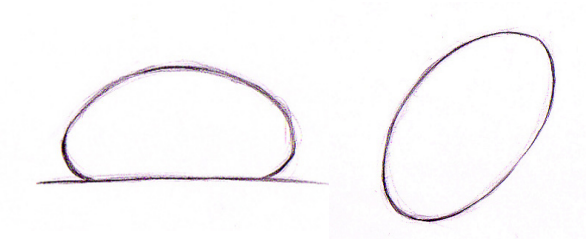
Step 2: Plan for squash and stretch.

Before you start drawing, think about how you'll use the principle of squash and stretch in your animation. Sketch how the ball might look when it's squashed or stretched.



A squashed ball and a stretched ball.
Drawings by Brock Ramirez.

Step 3: Think about timing.

Think about the principle of timing that you learned about when you animated the penny. The ball moves faster at the bottom of the bounce—when it nears the ground, and when it begins to bounce up again. The ball moves more slowly at the top of the bounce as the force of gravity overcomes the upward force of the bounce.

Remember, the more closely spaced the ball is from one drawing to the next, the more slowly the ball will appear to move. So you'll need to create more drawings, with the ball spaced more closely at the top of the bounce, in order to slow down the timing. (You can look back at the illustration in Step 8 of **Handout 2: Animating a Bouncing Penny** to see how this might look.)

Step 4: Start drawing your animation.

Take a sheet of paper. (If you are working with a stack of sheets, begin with the sheet at the bottom of the stack—animators work from bottom to top so that they can flip the drawings and check the animation as they work.)

Draw the ball in the first frame of the animation. In one corner of the paper, label the drawing with the number "1."

Put a sheet of paper on top of your first drawing. You should be able to see the outline of the ball underneath. Draw your second frame. Remember to think about your spacing—closer together at the top and farther apart at the bottom. In one corner, label this drawing with the number "2." (Be sure to number each of your drawings from now on.)

Put another sheet of paper on top of your second drawing and draw your third frame. Continue to draw a few more frames.

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Step 5: Roll or flip your drawings as you work.

Once you've done four or five drawings, you can see what your animation looks like by rolling or flipping your work. (Your teacher will show you how.)

Step 6: Do a pencil test.

Capture your drawings with a camera or scanner (your teacher will tell you which) and import them into a computer.

Use software to create a pencil test of your work—an animation of your drawings to see how well they work together. (Traditionally, animation studios did pencil tests before any work began on the final animations.)

You can experiment with holding frames to change the timing of the animation. If you feel the animation works better when a frame is held for three or more frames, you'll need to draw additional frames to fill in the gaps so that your finished animation has no holds that are more than two frames.

As you watch your pencil test, think about the following questions:

- How believable is the ball's bounce? How might you change the spacing and timing the next time you animate a ball?
- How smooth is the animation? Do you need to modify your drawing technique for your next animation?

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Handout 7:
Bouncing Ball Pose-to-Pose Animation

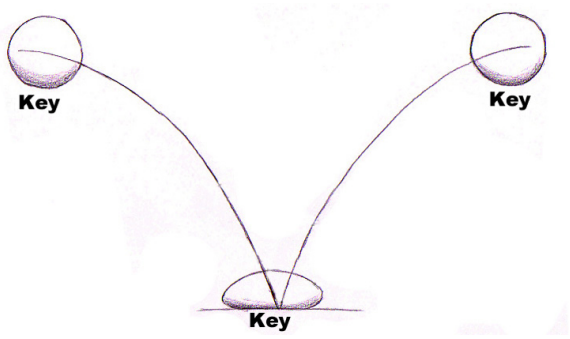
Follow the steps below to draw an animation of a bouncing ball, using pose-to-pose techniques.

Step 1: Draw the path your ball will follow.

Take a sheet of paper and draw the ball's path. You will use this sheet as a master sheet to guide your animation. The path will be the same as the path you used for your straight-ahead animation.

Step 2: Identify and draw the key poses.

In animation, the *key poses* are the poses that, as the name suggests, are most important to the action—they show the beginning and end of the action and the most significant changes in the motion (such as changing directions). Key poses are the positions of the action that best define the object's movement. There are three key poses for a bouncing ball—the top of the bounce on the left-hand side, the bottom of the bounce in the middle, and the top of the bounce on the right-hand side:



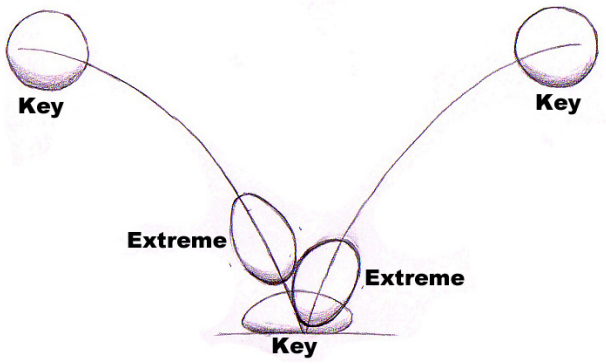
Drawing by Brock Ramirez

Note that the ball is squashed at the bottom of the bounce.

Step 3: Identify and draw the extreme poses.

Extreme poses are those that show changes in motion or dramatic changes in shape (such as those showing squash and stretch) between the key poses. For a bouncing ball, there are two extreme poses—the moments of stretch just before and after the ball hits the ground.

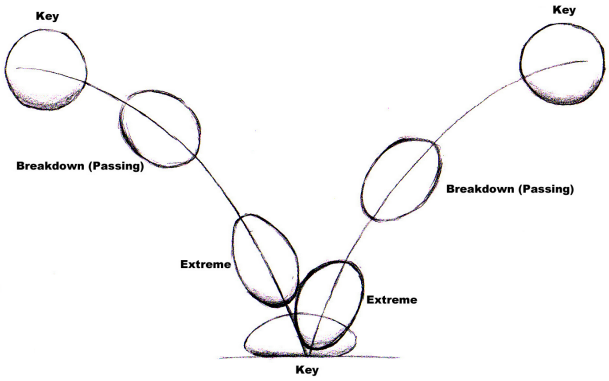
Note: Some animators use the terms *extreme pose* and *key pose* interchangeably.



Drawing by Brock Ramirez

Step 4: Identify and draw the breakdown poses.

Breakdown poses, also known as *passing poses*, are located either between two extreme poses, between two key poses, or between an extreme and a key pose. They show the path that the action should take (for example, the arcing path of the ball) and how shapes should retain their volume. Breakdowns are also important for creating the proper spacing and timing between keys and extremes. Draw two breakdown poses between the key poses on the left and the right sides of the arc:



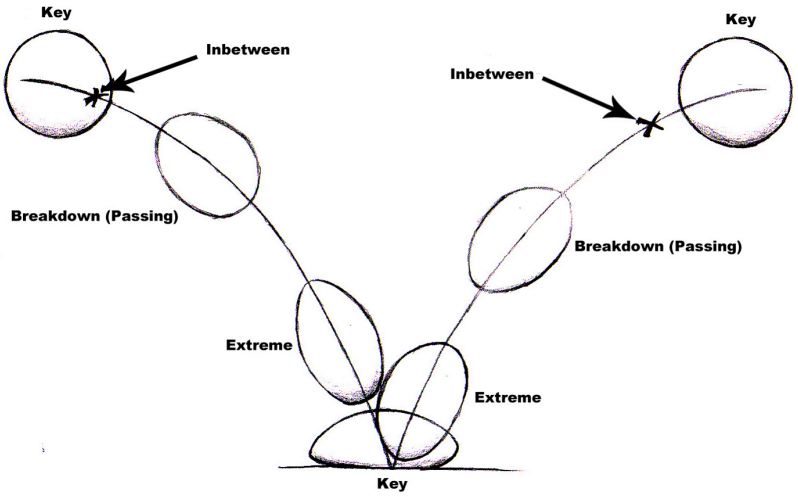
Drawing by Brock Ramirez

Step 5: Identify and mark your inbetween poses.

Inbetween poses, or *inbetweens*, are any additional poses that need to be drawn to create the appropriate timing and spacing in the animation. These poses are drawn between key poses or between extreme and breakdown poses.

For the bouncing ball, one option is to have two inbetweens, one each near the top of the bounce on each side. These inbetweens will slow down the action at the top of the bounce, because more drawings equal slower timing. You can play around with the number of inbetweens to change the animation's spacing and timing.

Mark the place for your inbetweens with an "x." (Animators used to use x's on timing charts to indicate to people drawing the inbetweens—known as *inbetweeners*—how the inbetweens should be spaced.) Your master sheet of drawings is now complete.



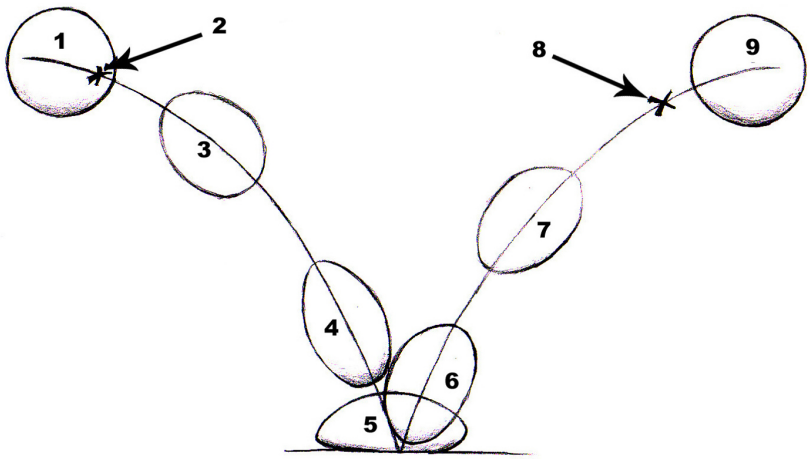
Drawing by Brock Ramirez

Step 6: Create a chart to show the timing of the animation.

For pose-to-pose animation, you'll create a chart that is a visual representation of the spacing (and therefore the timing) of the animation. Start by numbering the drawings on your master sheet:

- The first ball on the left is your first frame, so, inside that ball, write the number "1."
- Your last frame is the ball on the right, so label that "9."
- The key pose at the bottom of the bounce is the middle pose, so label it "5."
- Number the rest of the drawings.

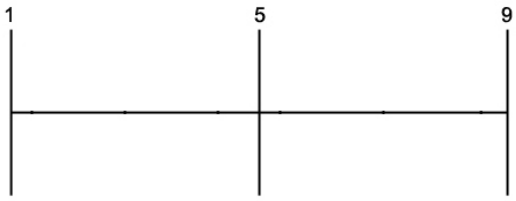
Your master sheet should look something like this:



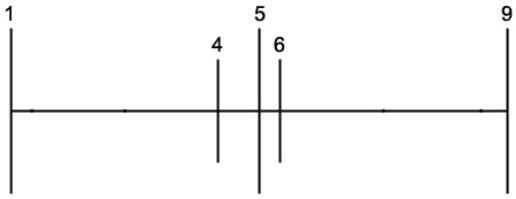
Drawing by Brock Ramirez

You can then use this information to create a chart showing the spacing and timing for the scene. First, draw a horizontal line, which represents time (you could also think of it as a flattened-out version of the arc you drew to guide your ball's bounce). Then draw two vertical lines at either end of the line, labeling them "1" and "9." These are your first and last frames. Draw a vertical line in the middle and label it "5." These are your three key frames.

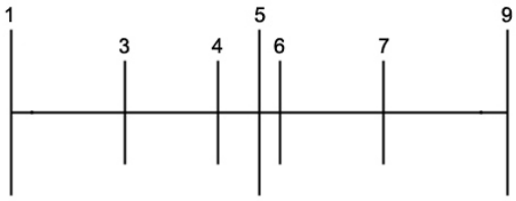
The lines for key frames should be longer than the lines for other frames, and you may also want to circle the numbers of the key frames.



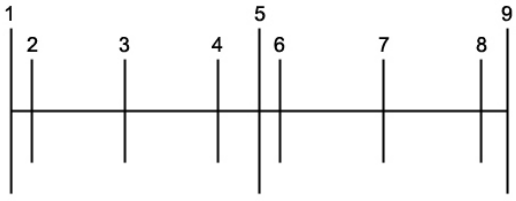
Draw and label vertical lines for your extreme poses. The spacing of the lines should reflect the spacing of the drawings in the animation. In this example, that means the extreme pose labeled "4" is farther away from the key pose "5" than the extreme pose labeled "6."



Next, draw and label vertical lines for your breakdown poses. Make sure the lines reflect the spacing of the drawings.



Now draw and label vertical lines for the inbetweens. Your chart should look like this:



As you can see, the chart shows how closely together the drawings of the ball will be spaced on the different frames, and thus how the timing of the animation slows down at either end (when the ball is at the top of the arc). You can use this chart as a reference as you create your animation.

Animators often use timing charts to plan their drawings and to share information about timing in a simple way with others who may be working on the animation.

Step 7: Do a pencil test.

Use the techniques you've learned to do a pencil test of your animation, creating a loop of the bouncing ball. You can experiment with holding frames to play with the timing of your animation.

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Handout 8:
The Critical Response Process

There are many different ways to give and receive feedback. One method that artists, performers, and other creators sometimes use is the Critical Response Process, which creates a safe and supportive environment in which to receive feedback on completed work or work in progress. You will use this process throughout the course with your classmates.

Steps in the Critical Response Process

The Critical Response Process comprises three key steps:

- Audience members comment on something interesting they notice in the work. These comments should not judge or criticize the work. (For example, as you look at the work, think about what your find stimulating, surprising, memorable, touching, or meaningful for you.)
- The creator(s) asks the audience open-ended questions about something specific in the work. (For example, a creator wouldn't ask, "Do you like the way I've used squash and stretch in my animation?" but would ask instead, "What did you think about the use of squash and stretch in my animation?")
- The audience asks neutral (i.e., judgment-free) questions of the creator. (For example, the audience doesn't ask, "Why is your timing so slow at the bottom of the bounce?" but rather, "What were you trying to achieve with the use of timing in your animation?")

As you provide feedback, try to start sentences with phrases such as the following:

- I notice . . .
- I'm curious about . . .
- I'm interested in . . .
- I wonder . . .

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Handout 9:
Unit 1 Journal Assignments

Journal 1

Now that you've animated a rubber ball, think about how two other kinds of balls might look and behave in the same kind of animation:

- A small, hard, very bouncy ball
- A cannonball

Write a few sentences describing how the timing, spacing, arcs, and movement might be different for these two balls. Sketch the arc of each ball bouncing. Have each ball start at the top of the page and then bounce to a stop. (It should bounce two or three times, with the height of the ball decreasing with each bounce.) If you want, you can also create an animation of one of these bouncing balls.

Journal 2

Make a list of two or three short stories, fairy tales, or myths that you really like. Write your answers to the following questions:

- Which of these stories do you think would make a good animated movie? Why?
- What about this story makes it a good candidate for animation?

Journal 3

Look at Steps 2 and 3 on Handout 12 and use these questions as a guide to help you choose a scene and a moment to focus on. Write a paragraph about why you have chosen this scene and this moment. Be prepared to discuss your choices with a classmate.

Journal 4

Conduct research on a visual aspect of your character. For example, if your character is in a story from an earlier time period, research the clothing worn at that time. If your character is an animal, find out how that animal looks and moves. Print or copy images to use as a reference as you work on your character design, and then add these images to your journal.

Journal 5

If there is an important object that your character interacts with during the scene you've chosen, you'll need to design that object.

Create a design for the object, drawing it from all angles, as you did with your character. (If there's no object in the scene, you can design another object that's important in the story, even if it is not in your scene.) Make sure that the object is drawn in the same style as your character.

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Journal 6

Reflect on your work during this unit by writing about the following questions:

- What did you learn about the process of adapting a story for animation?
- What's the most important thing you learned about creating successful animations?
- What did you find most surprising about the animation process?
- What was your favorite part of the unit project to work on, and why?
- What would you do differently if you were to do this project again?

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Handout 10:
Unit 1 Career Information

Range of Careers Related to Unit 1

Below are some of the AME careers that make use of the skills you are learning in Unit 1:

- **Animation Supervisor**
- Art Director
- Compositor
- Director
- Editor
- Effects (FX) Artist/FX Animator
- Layout Artist
- Lead Animator
- **Lighter**
- Matte Painter/Digital Matte Painter
- Modeler
- Production Designer
- Rigger
- Set Dresser
- **Storyboard Assistant**
- Texture Painter/Surfacing Artist
- Visual Effects Supervisor

Key Careers

Three key AME careers that make use of the skills that you are learning in Unit 1 are *storyboard assistant*, *animation supervisor*, and *lighter*.

Storyboard Assistant

Job Description

The storyboard assistant, also sometimes called the *production assistant for the storyboard department*, helps storyboard artists illustrate a plan for a live-action movie or animation on storyboard panels. *Storyboards* are panels of drawings that visualize the story and convey the director's vision. They communicate characters' emotions, show actions and camera movements, and keep continuity between shots. On movies, storyboard artists work closely with the director, cinematographer, and creative director. In advertising and video games, storyboard artists work with art directors and creative directors.

The storyboard assistant cleans up or fills in partially completed storyboard panels created by storyboard artists. Storyboard assistants must be able to follow artists' styles.

Because animation is expensive and time-consuming, creating an early outline that is close to final is important. Storyboard assistants scan the panels into a computer program that is used to produce the first working version of a film, called the *story reel* or *animatic*. Storyboard assistants perform any other tasks needed by the department. As deadlines near, they may need to work long hours.

Skills

Storyboard assistants need to have excellent drawing skills, be able to sketch figures and backgrounds, and have an understanding of perspective and composition. They should have good computer skills and know how to use relevant software. As assistants, they are expected to take direction from the storyboard artist. They also need to be able to communicate clearly, work well as part of a team, and also

work independently to complete assignments in a timely manner.

Storyboard assistants may sometimes work on confidential projects, so trustworthiness and good judgment are critical. Maintaining trust is important in order to build good working relationships, which may lead to job advancement.

Pathway

There are no formal requirements to become a storyboard assistant (although some companies require four-year art degrees even for entry-level positions). A candidate with passion and a portfolio demonstrating strong drawing skills can sometimes land a job. Most storyboard assistants have formal training in art, filmmaking, or animation. Technical artistic skills and an understanding of storytelling and film theory are ideal.

Storyboard assistant, like other production assistants, is an entry-level job. Storyboard assistants may go on to be storyboard artists (a position that typically requires at least two years of experience) or to work in other areas of movie production.

Animation Supervisor

Job Description

Animation supervisors oversee a team of animators. They may work on 2-D drawn, 2-D computer-generated (CG), or 3-D CG projects for animated or live-action feature films, video games, or the Web. Animation supervisors are more common on larger projects with many animators (such as feature films).

Animation supervisors set the creative direction of the team. They work closely with the art director or director, the Visual Design/Art Department (which develops the overall style and design of the environments and characters), and other departments to understand the vision for the project, which they then communicate to their team.

An animator working on CG projects is like a puppeteer. On 3-D CG projects, animators follow the final layout and voice recordings for each scene and then manipulate 3-D computer models of the characters (already built and rigged with digital joints) to create a movable skeleton. On 2-D CG projects, animators compose digital drawings and position them in a sequence.

Animation supervisors oversee the completion of the project. They approve or reject scenes from team members and are responsible for quality control, making sure that all work is "on model" (done in the correct style) and setting the standard for the team's work. They make sure that their team meets all deadlines. In addition, animation supervisors solve creative and technical problems. They may also animate their own shots in addition to overseeing others' work. They communicate with departments working on other aspects of production, such as layout and lighting.

Skills

The work of an animator requires creative and artistic skills, such as understanding perspective, movement, and composition, and the ability to draw in a variety of styles: cartoon-like or realistic, fluid or mechanical. Animation supervisors working on CG animation must also have strong technical skills and should be familiar with the most current 2-D and 3-D art and animation software (such as Autodesk®

Maya®, Autodesk 3ds Max®, Autodesk MotionBuilder®, Adobe® Photoshop®, Adobe Flash®, and CelAction™).

Leadership skills are essential, including the ability to manage work flow, communicate clearly, and motivate others. Animation supervisors must also be collaborative workers.

Pathway

A degree in animation or computer science is preferred, though not required. A background in drawing and/or acting is also a plus. Many jobs require an animation supervisor to first work as a character artist or animator for several years in order to demonstrate technical ability. Employers also look for past experience managing a team.

Most animation supervisors work their way up, first as a junior animator or assistant and then as an animator, finally becoming an animation supervisor. Sometimes their initial experience is in another related area, such as character rigging.

Experience and demonstration of talent are the most important components of job growth. All animators produce examples of their work, called show reels, that they use to demonstrate their talents to prospective employers. As in many parts of the entertainment industry, jobs are often found through personal recommendations and informal networks of colleagues, so building a reputation for good work is very important.

Lighter

Job Description

The lighter, also known as a *lighting technical director* or *lighting animator*, is responsible for adding light to a scene, adding realism, and setting the mood and tone. Lighters work in animated movies (and live-action movies that use special effects or animation), TV programs and commercials, and video games and other interactive media. At some studios and on smaller projects, lighting might be done by technical directors, generalists who might perform other jobs, such as *modeling* (creating 3-D skeletons of characters and environments on the computer), *shading* (changing colors based on their angle toward the light), and rendering (turning computer data into a final image).

The job of a lighter is much like that of a cinematographer or director of photography. A lighter must understand the ways that light behaves in the natural world, such as how light reflects off water. Lighters use light to help tell the story by indicating important events, such as a change in the time of day or the weather. Through light, they communicate the style and "look" of the film and maintain continuity between shots. When working on a live-action film, lighters also make sure that the light and shadow match up between the live and the animated portions of the scene.

To light a scene, lighters use a computer animation program to place *key light* (which provides the main illumination), *fill light* (which softens and extends), and *back light* (which creates a bright line around the object). Lighters may also use scripts (created with computer programming languages that are designed to allow manipulation of software) to automate the process, especially to solve a problem or to speed up work.

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Skills

A solid working knowledge of many computer software packages is very important. Lighters must know computer animation packages, such as Audodesk Maya or Audodesk 3ds Max, as well as rendering programs, such as Pixar RenderMan®. It's also useful to know compositing programs. To complement their technical skills, lighters should also have a strong artistic sense and an understanding of the basic principles of lighting used in photography and film.

Lighters need to be able to work both as part of a team and independently on assignments. They should be organized and able to complete tasks under a deadline.

Pathway

Because the position combines artistic and technical skills, lighters generally hold degrees in many different disciplines, including art, photography, computer graphics, animation, computer science, engineering, math, and physics. People with a background in photography can excel as lighters. While there are junior-level positions in lighting, there are fewer entry-level positions. Many lighters first work in other departments. Lighters may also transition from more traditional lighting work on films or in the theater.

Lighters might move from being junior lighters to lighting supervisors. Some may eventually move on to become VX (visual effects) supervisors. Experience and talent are the most important criteria for moving forward. As in other animation careers, to showcase their technical skills, lighters should produce a lighting reel with examples of both CG-only scenes and CG integrated with live-action shots.

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Handout 11:
Career Profile Project

What's it really like to have a career working in the AME industry? What education and training path gets you there? And what does the work of a talented AME professional look like?

For this project, you'll answer these questions by focusing on a successful professional who works in audio, video, animation, or gaming. You'll research the professional's career, education, and training, and analyze a clip from a production that this person has worked on. Your final step will be to present what you've learned to your classmates.

Step 1: Choose an AME professional.

Pick an AME field that you are interested in, such as audio, video, animation, or gaming, and select a professional working in that field. You can take one of three approaches to choosing this person:

- **Think of a media production that you like** (e.g., a movie or game) and choose someone who worked on it—the director, animator, lead artist, cinematographer, level designer, or producer.
- **Choose a professional whose work you admire.** Be sure to choose someone who works on media production, rather than a performer.
- **Choose someone you know personally or someone in the community** who works in this field.

Start with two or three professionals and conduct research to see how much information you can find—work samples, education and career paths, or interviews. Check to see if there are Web sites with clips of their work. (This is especially important for gaming and animation, since it can be hard to pick out an individual's contribution to finished games and animated movies.)

Narrow your choice to one professional by asking yourself the following:

- Does this professional work on media productions that I admire and want to watch, play, or listen to?
- Is there enough information available about this professional's career for me to complete the project?
- Has the professional had an interesting or instructive career path?

Step 2: Find out about the professional's education and training.

Look online or in books or magazines to find out:

- What college (if any) did this person attend?
- What other training has this person pursued (e.g., technical training)?

Write a short paragraph about your professional's education and training.

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Step 3: Find out about the professional's career path.

Conduct research to learn about the path your professional has taken:

- How did your professional begin his or her career?
- What jobs or education has your professional taken or completed to get to his or her current position? Does your professional have further work or career goals?
- What media productions has your professional worked on, and what role did he or she play on each? List them in chronological order.
- Has your professional been interviewed or has he or she written about what it's like to work in this field? If so, what has your professional said?

Write a paragraph describing your professional's career path. Create a timeline that includes the following:

- Major career milestones
- Media productions the professional worked on

Step 4: Analyze a media production.

Choose a successful media production that your professional has worked on. Try to find a good example of your professional's contribution—for example, an animator or gaming professional's reel or a scene with a character designed by your professional.

Analyze a short (10-minute or less) clip from the production:

- What makes this production successful? What visual and/or audio elements work well? What principles (such as the principles of animation or cinematography) are used effectively?
- How does the production make effective use of the elements of art and principles of design? (Disregard this question if you are analyzing an audio production.)
- What role did your professional play in contributing to the success of the production?
- Is there a particular style that can be attributed to your professional? (For example, some animators have a clearly identifiable style.) How is that style expressed in this work?

Write a paragraph analyzing the clip you've selected.

Step 5: Share your profile with your classmates.

Share what you've learned with your classmates and learn about the professionals they profiled.

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Assessment Checklist 2:
Career Profile Project

Use this checklist to help you plan and assess your project. Make sure that you include all the required components. Your teacher will use this checklist to help evaluate your work.

Requirements	Percentage of Total Grade	Comments	
Written Career Profile		**Student Comments**	**Teacher Comments**
Describes AME professional's education and training background.	**20%**		
Describes how the professional's career began and the career path that led to his or her current position.	**20%**		
Lists the media productions the professional has worked on and the role that she or he played on each.	**10%**		
Includes a timeline of major career milestones and media productions.	**15%**		
Includes an analysis of a clip from one of the professional's media productions, pointing to visual and/or audio elements that contribute to the work's success.	**20%**		
Describes the role the professional played in making the media production successful.	**15%**		
Total	**100%**		

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Requirements	Percentage of Total Grade	Comments	
Career Profile Presentation		**Student Comments**	**Teacher Comments**
Clearly outlines the AME professional's education and training.	**30%**		
Succinctly describes the professional's career path.	**30%**		
Describes and analyzes a media production and explains the professional's role in its creation.	**30%**		
Successfully addresses the audience's questions.	**10%**		
Total	**100%**		

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Handout 12:
Unit 1 Project Description

What kind of story makes a good animated movie? How exactly do you turn a written story into an animation? How can you convince others to believe in a story that you're passionate about?

For your unit project, you will take on the role of an employee in an animation studio who has been given the task of coming up with an idea for a new animated movie.

You will choose a short work of fiction that you think would make a good animated movie. You'll design a character, create a storyboard, and animate a moment from the story. You'll pitch your idea to your classmates and, possibly, AME professionals.

Developing the Project

You will complete tasks related to animation *pre-production* (the process of preparing to make the animation) and *production* (the process of making the animation).

Step 1: Choose and describe your story.

Choose a short work of fiction that you think would make a good animated movie. The story could be a:

- fairy tale
- folktale
- myth
- short story
- narrative poem

For example, you might choose the story of Icarus, one of the Raven tales from the Native American tribes of the Pacific Northwest, or a short story you've read in English class. Try to choose a story that hasn't already been made into an animated movie.

If you do choose a story that's already been animated, you'll need to alter it in some way. For example, you can set the story in another culture or in a different time period. You could also change the characters in a way that makes your animation original and fresh. For example, you could change human characters in a fairy tale into animals.

Ask yourself:

- How does the story benefit from the medium of animation and the visual freedom that animation provides?
- Is the story fun, action-packed, or interesting for another reason (for example, does it have a strong message or moral)?
- What kind of audience would find the story engaging? Keep in mind that most animations are made for kids, although some also have crossover appeal to adults (which is good for the parents taking their kids to see it!).

- Does the story have a clear arc—a beginning, a conflict in the middle, and a resolution at the end? (Animations, like other story forms, usually follow this story arc.)
- Are there characters that audiences can connect with?
- Are there aspects of the story that would translate well into a visual format? For example, does the story take place in another world or are the characters fantastical or stylized?

Once you've chosen your story, describe it on **Handout 13: Story Description**.

Step 2: Choose a scene from the story.

Your project is going to focus on one scene. Think about the following questions:

- What role does the scene play in the story? (For example, does something happen in the scene to develop a character's personality? Does the scene introduce the conflict in the story? Does it show the resolution of the conflict?)
- What is happening emotionally to the characters in this scene?
- What is happening with the plot?
- Is a conflict resolved or is a character changed in some way (or both)?
- Is there an obstacle the character needs to overcome?

Step 3: Choose a moment from your scene to animate.

Because animation is time-consuming, you won't be able to animate the whole scene you've chosen. Instead, you'll animate just one moment of the scene. The moment should involve no more than two characters (and having just one character is ideal). It should not include any dialogue, as you won't be animating speaking characters during the unit.

The moment will be brief—only 10–12 seconds long. Remember that for each second of animation you need at least 12 frames. So, 10 seconds of animation means at least 120 drawings!

Your moment could center around something like the following:

- A conflict being resolved
- A character having an important emotional reaction
- A crucial action taking place
- A character having a change of heart or a change of mind
- Something interesting happening visually
- Something funny happening

As you choose your moment, answer the following questions:

- Would I enjoy animating this moment? (Remember, you'll spend a lot of time drawing it!)
- How challenging will it be to animate this moment?
- What does this moment tell viewers about the story?
- Will this moment be visually engaging for viewers?

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Step 4: Design and draw a character.

Design the main character. Before you begin, decide on the animation style you'll work in.

Choose a style that matches your story and the audience. For example, if you're telling a goofy story aimed at young kids, you might draw in a more cartoon-like style. A more serious story may require a more polished look. If you're telling a myth or folktale from a specific culture, you might draw the animation in the style of art from that culture.

Once you choose your style and design your character, you'll create several drawings:

- *A turnaround sheet:* One sheet of paper with drawings of a character from different views—for example, the front, back, and side views of a character. This can be a relatively loose drawing, as long as it shows accurate proportions.
- *Character studies showing expression:* A set of drawings that show the character expressing different emotions—happiness, sadness, surprise, and so on. Choose emotions that the character feels in your scene. Some drawings can be heads only, and others can be whole-body poses.

Character studies for Po from *Kung Fu Panda*.
Image courtesy of DreamWorks LLC.

- *A model sheet:* A polished, cleaned-up drawing of your character in a typical pose. The drawing should show the character's personality and how the character carries his or her body. Model sheets often include turnaround drawings. However, yours will just include the polished drawing of your character.
- *A simplified design for animation:* A drawing that reduces the character to some simple shapes and one or two defining features. When you create your animation, it would be very time-consuming to draw your polished character for each frame—so instead you'll create a simplified version of the character.

Simplified character design for Po from a *Kung Fu Panda* storyboard.
Image courtesy DreamWorks LLC.

Note: If your character interacts with objects during the scene, you'll need to design those, too.

Step 5: Storyboard your moment.

Storyboards are drawings of individual frames or shots from a scene in the production. You'll create a storyboard of the moment you are animating, and use the storyboard to help you plan and draw your final animation.

Step 6: Animate the moment.

First, you'll draw the frames of your animation by hand. Your next step is to capture them digitally. You'll then use software to create the final animation.

You'll also use the software to ink in your drawings—tracing over the drawings digitally to create the final images for the animation. The term *ink in* comes from the early days of animation, when artists would trace over an animator's drawings using ink on celluloid or acetate (plastic sheets).

Step 7: Pitch your story idea.

At the end of the unit, you'll pitch your animated movie idea to classmates and, possibly, to AME professionals as well. You'll describe the story, share your artwork and animation, and explain why your story would make a great animated movie.

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Assessment Checklist 3:
Unit Project—Character Design

Use this checklist to help you plan and assess your project. Make sure that you include all the required components. Your teacher will use this checklist to help evaluate your work.

Requirements	Percentage of Total Grade	Comments	
Technical Knowledge and Skills		**Student Comments**	**Teacher Comments**
Turnaround sheet shows the character from the front, side, back, and three-quarter profile views, and character is drawn consistently in all four views.	**10%**		
Model sheet depicts a detailed, polished rendering of the character in a typical pose.	**10%**		
Simplified character design is appropriate for animation.	**10%**		
Character design includes features that make the character easily identifiable.	**5%**		
Character design includes features that lend themselves to follow-through and overlap.	**5%**		
Students' drawing and animation techniques demonstrate skill, effort, and perseverance.	**10%**		

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Content			
Character's appearance (e.g., clothing and facial features) reflects the character's personality and is appropriate for the story.	**10%**		
Style in which the character is drawn is appropriate for the story.	**10%**		
Character studies show several emotions, and the emotions expressed are appropriate for the character's personality and the student's chosen scene.	**10%**		
Creative Expression			
Character design makes effective use of the elements of art and principles of design.	**10%**		
Character is visually interesting and incorporates features that will make it appealing when animated.	**10%**		
Total	**100%**		

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Handout 13:
Story Description

Briefly describe the story you've chosen by answering the questions below.

What is the title of your story (or the movie that will be based on the story)?	
What is the arc of the story?	
Who is (are) the main character(s)?	
What are the goals of the main character(s)? How is the character transformed (emotionally or physically) during the story?	
Describe the setting of the story. What kind of world does the story take place in? What does it look like?	
Why do you think this story would make a good animated movie?	
What style will you draw your animation in? Why is this style a good match for the story?	

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Handout 14:
About Review Groups

As you work on your unit project, you will meet with a small team of students to discuss your work in progress. This team is your review group. Your review group members will give you feedback on your work in progress, offer advice, and support you as you work—and you will do the same for them.

Your review group should provide a safe, supportive environment for giving and receiving feedback. Think about the best experiences you've had giving and receiving feedback with other students—how did the giver of feedback behave? How did the receiver of feedback behave? Below are some tips to keep in mind.

As a giver of feedback:

- **Be considerate of your fellow review group members.** Be as thoughtful in your responses as you would like others to be in responding to you.
- **Speak up.** Your team members are depending on you for feedback, so don't be afraid to give your opinion.
- **Focus your comments.** For some critique sessions, you will be given a series of questions to focus on (see *Questions for Critique*, below). Focus your feedback on responses to these questions or to questions that the team member has generated.
- **Give honest but constructive criticism.** It won't help your team members in the long run if you tell them that their piece is perfect when it still needs some work. Be honest about areas that could use improvement and provide specific suggestions for how the work should change.
- **Point to visual evidence.** If you are making an observation about a team member's work, point to specific visual evidence rather than just offering general criticism. For example, instead of saying, "Your timing is off," say, "The timing seems too even—the ball doesn't speed up at the bottom of the bounce."
- **Be positive.** Comment on strengths as well as areas needing improvement.

As a receiver of feedback:

- **Ask for specific help.** Tell team members what you're having difficulty with and what issues you'd like feedback on.
- **Ask for clarification.** If you don't understand a team member's comment, ask him or her to explain it further.
- **Be open to suggestions.** Listen to team members' suggestions with an open mind and try not to be defensive about the work.

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Questions for Critique

For some of the critiques in your review group, you'll have a set of questions to use to guide your feedback. For your reference, these questions are listed below.

Scene and Moment Choice

- Does this scene seem like a good choice to focus on? Why or why not?
- How challenging will it be to animate the student's chosen moment?
- Will the animation be visually interesting to viewers?
- Does this moment seem like a good choice to focus on? Why or why not?

Initial Character Designs

- What can you tell about the character's personality and story by looking at him or her?
- How does the character's visual style support and reflect the story?
- Is the character appealing? Why or why not?
- Does the character's clothing and posture reflect the character's personality?
- What aspects of the character's look are successful? How does the use of the elements of art and principles of design contribute to that success?
- What aspects of the character could use further development? How might the animator change or improve his or her use of the elements of art and principles of design? What other suggestions do you have for improvement?

Model Sheets and Simplified Characters

- Does the model sheet clearly convey the character's personality?
- Will the character be appealing for an audience once it's animated?
- Does the character have attributes that make it easily identifiable?
- Does the character have features that lend themselves to follow-through and overlap when they are animated?
- Will the simplified version of the character be easy to animate?
- Can you see any potential challenges the animator may face when animating this character? If so, what changes might you make to avoid those challenges?

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Storyboards

- Is it clear what is happening during the moment? If not, how can the animator make it clearer?
- Does the action in the storyboard seem believable and interesting? If not, what can the animator change?
- Is the animator incorporating the principles of animation? If not, what should the animator change in order to do so?
- Do the drawings on the storyboard make effective use of the elements of art and principles of design? Point to visual evidence and, if necessary, provide suggestions for how the frames can be redrawn in order to do so.
- Do you see any potential challenges the animator may face when animating this character? If so, what changes might you suggest to avoid those challenges?

Animated Moment Pencil Test

- Does the animation look believable? Does the animated character have appeal? If not, what changes can the animator make?
- How is the animator making effective use of the elements of art and principles of design to convey the mood of the scene and engage the viewer? How might the animator revise drawings to more effectively make use of the elements and principles?
- Is the animator using squash and stretch effectively? What about the other principles of animation, such as timing and anticipation? If not, what changes can the animator make?
- Does the character seem to have weight and to move in a way that makes sense?
- Has the animator incorporated a secondary action into the animation? If so, does it support the primary animation? Why or why not?
- Are there any other changes that you would suggest?

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Assessment Checklist 4:
Unit Project—Review Group

Use this assessment to assess your performance and the performance of members of your review group.

	Comments	
	In my review group, I . . .	**My review group team members . . .**
Act in a considerate and respectful manner		
Speak up to offer critiques and advice		
Focus the critique on specific questions		
Point to visual evidence during critiques		
Give honest, constructive criticism		
Focus on the positives in the work as well as the areas in need of improvement		
Ask for help on specific areas of the work		
Ask for clarification when necessary		
Listen to others' suggestions with an open mind		

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Handout 15:
Scene and Moment Worksheet

Partner's Name: _____

Partner's Story: _____

The Scene

Why did your partner choose this scene?

What action happens during the scene? How does this scene move the story forward?

Who are the characters in the scene? What are their goals? Are there obstacles to those goals? Do the characters change (emotionally or physically) during the scene? If so, how?

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The Moment

Why did your partner choose this moment? What does this moment tell viewers about the story?

What happens during the moment?

How long is it? (Hint: If you or your partner aren't sure, act it out.)

Who is the main character in the moment? Are there any objects the character interacts with that your partner will need to animate? (For example, if the character picks up and eats an apple, your partner will need to draw an apple as part of the animation.)

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Handout 16:
Principles of Animation #2

Below is a description of two more principles of animation: *follow-through and overlapping action* and *appeal*. These principles will be helpful for you to think about as you work on your character design.

Your teacher will play an animated movie clip. Take notes on the principles as you watch the clip.

Follow-Through and Overlapping Action

Think about a dog turning around quickly to look at something. Do all of its body parts move at the same time or at the same rate? No—its head may turn around first, followed by its body, and its tail may still be whipping around after the rest of its body has settled down. Follow-through and overlapping action pertain to the fact that different body parts move at different rates and times.

Follow-through means that the body doesn't come to an abrupt stop at the end of a motion. Try turning your head to look at something. Does your head stop abruptly at the end of the turn? Or does it travel a little farther than where you intended to look, and then you have to turn back, slightly? This is what follow-through represents in animation—a part of the body continues to travel for a few frames at the end of the movement.

Overlapping action means that parts of the body move at different rates—a bobbing ponytail may move at a different rate than the head, for example—and that some parts lag behind when a character changes direction or moves. Incorporating this principle creates visual interest for the audience, because characters are rarely perfectly still—some part of them is almost always in motion.

Dr. Cockroach's antennae lend themselves to overlapping action.
Image courtesy of DreamWorks LLC.

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Appeal

The principle of appeal doesn't just mean creating likable characters—even bad guys whom people don't like can have appeal.

Animated characters who are appealing draw the audience in. Appealing characters are well designed, have clearly developed personalities, and move and act in a way that makes sense and is truthful to who they are.

Three characters from *Monsters vs. Aliens* whose personalities are reflected in their appearance and expressions.
Image courtesy of DreamWorks LLC.

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Appealing characters are the ones that the audience wants to watch on screen—even if they're the villains! Tai Lung from *Kung Fu Panda*. Image courtesy of DreamWorks LLC.

Notes:

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Handout 17:
Character Description Worksheet

Part 1: Personality and Backstory

An important part of developing a believable character is thinking about the character's personality and backstory—where the character comes from, the character's goals and desires, the kind of world the character inhabits.

Answer the questions below to help create your character's backstory. Some of your answers will come from the story you're basing your animation on. You'll need to develop the answers for other questions yourself, as part of the process of fleshing out your ideas for the character.

- What role does your character play in the story?

- What is the world of the story like? What people or creatures live there?

- How old is your character?

- How would you describe your character's personality at the beginning of the story (e.g., happy-go-lucky, serious, anxious)?

- How has your character's personality changed by the end of the story?

- What are your character's goals?

- What obstacles might be in the way of your character reaching those goals?

Part 2: Sketching the Character

Your character's physical appearance should be driven by the story and by your character's personality. For example, a happy-go-lucky character who makes people laugh will look different from a mean-spirited character who wants to take over the world.

Create sketches of your character's design, keeping the following questions in mind:

- How does the style you are using reflect and support the story?
- How does the character's appearance (including clothing or jewelry) reflect the character's personality or story?
- What does the world of the story look like? What about the character's appearance tells us that he or she is part of this world?
- What is your character's general facial expression (e.g., sad or happy, expressive or withdrawn)?
- How does your character move—quickly or slowly? Gracefully or clumsily?
- How can you make sure that your character has appeal?

As you sketch, be sure to think about how you are using the elements of art and principles of design in your drawings.

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Handout 18:
Animating a Walk Cycle

A *walk cycle* is a series of frames that depict a character's movement as it walks. Creating walk cycles is a common, yet challenging, task in animation.

A full walk cycle shows the character taking two steps—one with the right foot and one with the left foot. Once a walk cycle is created, it can be looped, or played over and over again, so that the character appears to take as many steps as is required.

Follow the numbered steps below to draw a walk cycle for a simple figure. This walk cycle is a generic cycle. If you were creating a walk cycle for a heavy or a light character or to show a character's personality, you would change the motion and timing, but the principles remain the same.

Step 1: Draw a simple figure.

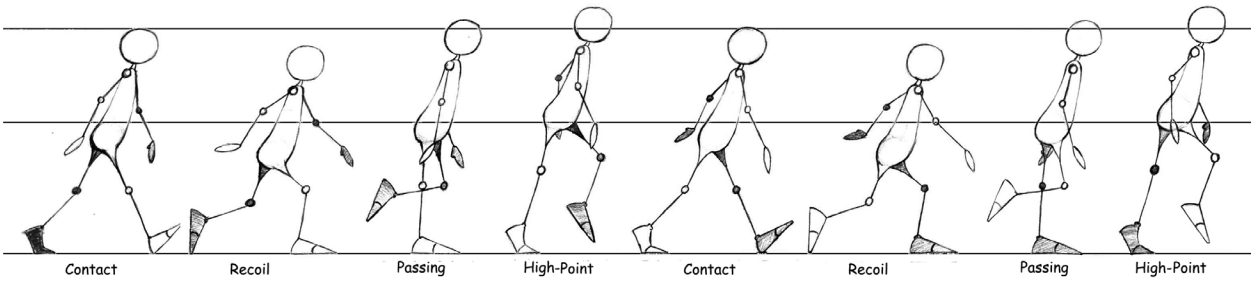
Before you start to work on your walk cycle, you need a figure that you can make walk! Draw a simple human figure made of basic shapes—don't include any facial features, hair, or clothing. The simpler the better! However, you shouldn't draw a stick figure either—you'll be able to apply what you're learning to your own character more easily if the figure has some volume. (See the picture below for an example.)

Step 2: Draw guidelines for the figure's walk path.

Lightly draw horizontal guidelines at the bottom of a page and at the height that will be at the top of the figure's head when both feet are contacting the ground. (See the drawing below for an example.) These lines will be a guide you can use for your character's walk. If the paper you are using is thin enough, you can place the guide underneath each sheet as you work. Alternately, you can copy the guidelines, or just the bottom guideline, on each sheet.

Step 3: Sketch the key, extreme, and breakdown poses.

There are four important poses in a walk cycle: contact, recoil, passing, and high-point. These poses are shown below:



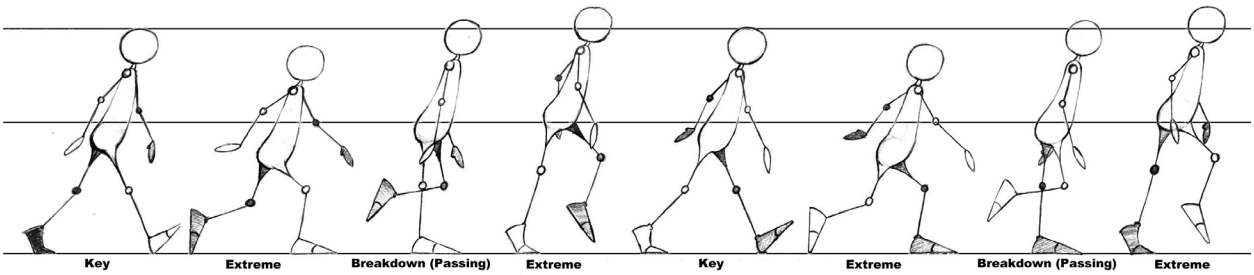
Drawing by Brock Ramirez

- The *contact* pose shows the heel of the front foot hitting the ground, with the arm on the same side of the body swung in the opposite direction from the foot. (In the drawings above, the left arm and left leg are shaded to distinguish them from the right arm and right leg.)
- The *recoil* position shows the foot flat on the ground with the knee bent, while the opposite leg (back leg) starts to lift off. Notice that the head and the rest of the body are at their lowest point in this position.
- The *passing* position shows the leg with the foot on the ground straightening out, the arms in toward the body, and the opposite leg lifting and bending. The head has come back up, slightly above where it started.
- The *high-point* position shows the foot on the ground lifting off, while the opposite leg begins to come down. The head is at its highest point in this position of the walk cycle.
- Next, the opposite leg comes down, and the body is again in a contact pose. This time the legs and arms are reversed from the original position.

Notice that the figure in each drawing is leaning forward slightly. When we walk, our bodies aren't straight up and down—they lean.

In the walk cycle:

- The *contact poses* are the key poses.
- The *recoil* and *high-point poses* are extreme poses.
- The *passing pose* is a breakdown pose.



Drawing by Brock Ramirez

Sketch your figure in these four poses as a rough guide for your drawings.

> **Tip:** To help you keep track of which leg and arm is which, shade in the left leg and arm. (Animators often shade the leg and arm farthest from the viewer to make them visually distinct from the other leg and arm.)

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Step 4: Create a timing chart.

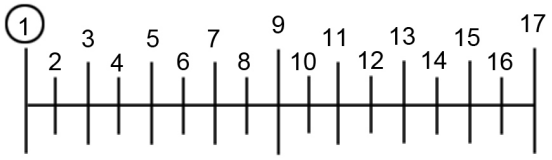
Create a timing chart with the nine poses listed below (for a walk cycle starting on the right foot):

- Contact pose, right foot
- Recoil pose, right foot
- Passing pose, right foot
- High-point pose, right foot
- Contact pose, left foot
- Recoil pose, left foot
- Passing pose, left foot
- High-point pose, left foot
- Contact pose, right foot

You will create an inbetween pose between each of these poses, for a total of 17 poses on your chart. These 17 poses should be evenly spaced.

This is a complete walk cycle. Once you animate it, you can play the cycle in a loop to have the figure walk continuously.

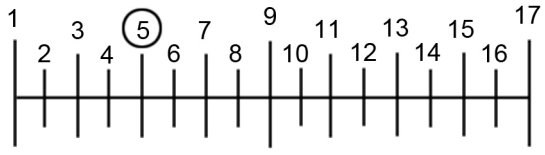
Step 5: Draw the first key (contact) pose.



Number each corner of your sheets of paper from 1 to 17. Put a circle around the numbered pages that will have the three key poses: 1, 9, and 17.

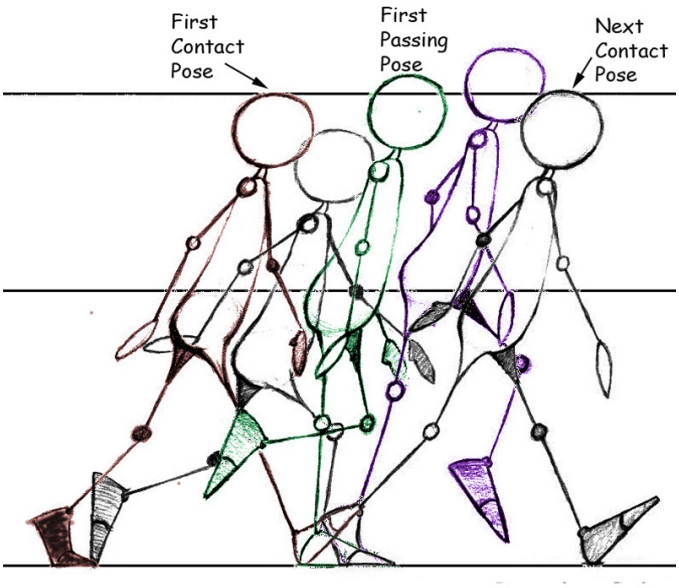
Start with page 1 and draw your figure in the first key pose (the contact pose), using the sketches you made in Step 2 as a guide.

Step 6: Draw the first breakdown (passing) pose.



Next, you're going to draw the first breakdown pose—the passing pose in the middle of the contact poses. You'll draw this pose on page 5.

Be sure to position the passing pose on the paper so that the heel of the figure's right foot is in the same place as the heel of the right foot in the contact pose. If you stack your drawings, the right heel should be in the same place on each sheet of paper—just as if the figure were walking, as shown below:

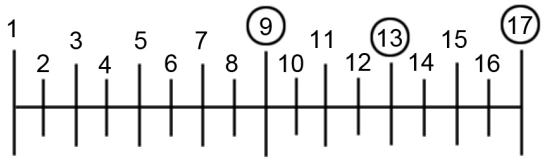


Drawing by Brock Ramirez

Draw the breakdown pose on page 5, using the sketches you made in Step 2 as a guide. Draw the figure so that the heel of the contact foot (the right foot) is in the same place on the ground as it was in the drawing on page 1.

> **Note:** You can take your paper off the pegs (or out of the clips) and use your first drawing (page 1) as a guide to make sure that the volume and proportion of your figure are consistent from pose to pose.

Step 7: Draw the remaining key and breakdown poses.



Draw the remaining contact poses and passing pose in the following order:

- Key pose (contact pose) (page 9)
- Breakdown pose (passing pose) (page 13)
- Key pose (contact pose) (page 17)

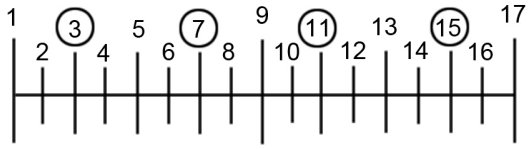
Note: The final key pose (page 17) should look exactly the same as the first key pose (page 1). You can use page 1 as a guide to trace it.

As you draw, move the figure forward on the page as it shifts from the right foot to the left foot.

Note: The poses for the right and the left foot are almost exactly the same—the only difference is which leg or arm is forward.

As you work, flip or roll your drawings to check your progress and make corrections.

Step 8: Draw the extreme poses.

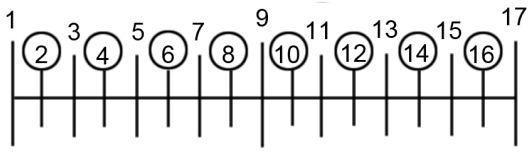


You should have five poses drawn (pages 1, 5, 9, 13, and 17). Now go back and draw the extreme poses between the poses you've already drawn. These are the recoil poses and high-point poses. Draw them in the following order:

- Recoil pose (page 3)
- High-point pose (page 7)
- Recoil pose (page 11)
- High-point pose (page 15)

Roll or flip your drawings to check your progress and make corrections.

Step 9: Draw the inbetween poses.



Look at your key poses on pages 1 and 3 and then draw the figure on page 2 in a position that's between those two poses. Flip or roll your drawings to make sure that the inbetween drawing looks right.

Follow the same process to create the rest of your inbetween poses on pages 4, 6, 8, 10, 12, 14, and 16.

Step 10: Create a pencil test.

Capture your images and use software to create a pencil test of your animation. Create a loop of the animation and play it back.

As you look at your animation, answer the following questions:

- Does the animation look smooth?
- Is the walk believable?
- Are there any parts of the walk cycle that don't look right? (For example, does the figure seem to be limping, or is its head bobbing up and down too much?)
- Do you feel the character's weight as it takes a step, or does it seem to be "floating"?
- What changes can you make to address any problems or issues you noticed?

Step 11: Sketch poses for a walk cycle for your own character.

Now think about a walk cycle for your own character. Sketch the four important poses in a walk cycle (contact, recoil, passing, high-point) for the simplified version of your character. If you identified any changes you would have liked to make to your first walk cycle, be sure to incorporate those.

Step 12: Draw the key poses and breakdown poses.

Number each corner of your pages from 1 to 17 and circle the key poses.
Draw the contact poses and passing poses for your character's walk cycle, following the same process as you did in Steps 5–7. Roll or flip your drawings as you work.

Step 13: Draw the extreme poses.

Now go back and draw the recoil and high-point poses for your character, following the same process as you did in Step 8.

Step 14: Draw the inbetween poses.

Finally, draw the inbetween poses for your character, following the same process as you did in Step 9. Roll or flip your drawings as you work.

Step 15: Create a pencil test.

Capture your images and use software to create a pencil test of your character's walk cycle. Create a loop of the animation and play it back.

As you look at your animation, answer the same questions as before:

- Does the animation look smooth?
- Is the walk believable?
- Are there any parts of the walk cycle that don't look right?
- Do you feel the character's weight as it takes a step, or does it seem to be "floating"?

- If you were to do this activity again, what changes would you make to address any problems or issues you noticed?

Step 16: Experiment with animating only 12 different frames per second.

So far, you've mostly animated 24 distinct frames per second (sometimes fewer, if you included holds in your animation). However, as you know, the illusion of motion can be created in as few as 12 frames per second. Traditional animators often used this fact to their advantage when working under tight deadlines and budgets (for example, when creating animations for TV) by using a process called "shooting on twos." If an animation was shot on twos, each drawing was played twice in a row—the same process as using holds, but applied to every image in the animation. This way, only 12 distinct images were drawn for every second of animation (as opposed to "shooting on ones," when 24 distinct frames are played for every second of animation).

When you create your final animation, you may, to save time, shoot on twos for at least part of the animation—drawing only 12 distinct frames for every second of animation. To see what effect this will have on your animation, create a pencil test of a walk cycle that is shot on twos:

- Make a pencil test using only the key, extreme, and breakdown poses (frames 1, 3, 5, 7, 9, 11, 13, 15, and 17).
- To create the effect of shooting on twos, insert a duplicate frame of each image (as you did when you experimented with holds) and play the animation at 24 fps.

Observe the differences between the new walk cycle shot on twos and the original walk cycle shot on ones. What do you see?

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Handout 19:
Principles of Animation #3

As you work on your unit project, think about how to incorporate the remaining principles of animation, as well as the other principles you've learned, to make your animation believable and engaging.

Your teacher will play an animated movie clip and assign you and a partner one of the principles below. Take notes on how the principle is used as you watch the clip.

Anticipation

Think about baseball pitchers when they are getting ready to throw the ball. Do they throw the ball from a regular standing position? No—pitchers first wind up and pull their throwing arm back. They do this in order to prepare physically for the throw, but this movement also creates *anticipation*—it prepares the spectators (and the batter) for what's coming next.

Po looks at the dumplings as his arm reaches forward, creating anticipation for the audience that he will try to pick one up and eat it. Image courtesy of DreamWorks LLC.

Animators create anticipation to prepare the audience for an action that is about to occur. For example, a character might crouch down slightly to prepare for a jump or look in the direction of an object before picking it up.

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Staging

Think about a crowded street scene in a movie. How do you know what is important on the screen? How do you know where to look or what the emotional tone of the scene is?

Dramatic staging in Po's dream sequence, *Kung Fu Panda*.
Image courtesy of DreamWorks LLC.

In animation, just as in the movies and in plays, *staging* directs the audience's attention and keeps the focus on what's important in the story.

Staging in an animation can include many elements, for example:

- Lighting
- The placement of characters and objects in the frame
- The angle and position of the scene within the frame
- The use of line, color, and texture

For effective staging, these elements must work together to tell the audience what's important, what the mood of the scene is, and what action or character is the central focus of the scene.

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Secondary Action

Secondary actions are moves that a character makes in addition to the character's primary action. They add interest to a scene and provide more information about the character or story. For example, as a character walks down a street (primary action), you can tell that she is bored because she sighs (secondary action) or puts her hands in her pockets (secondary action). If she is happy, she may whistle or snap her fingers.

Secondary action should enhance the main idea of the scene and support the primary action. It should not take the focus away from the primary action. Secondary actions reveal a character's uniqueness, how the character feels, and what the character thinks.

Notes:

Exaggeration

Exaggeration is a technique that makes a scene, character, or action more pronounced or extreme than it would be in real life. Exaggeration can help make a point about a character or event and often makes the scene more interesting and lively.

Animators exaggerate facial expressions (for example, making a character's eyes seem to pop out of its head), movements, objects, or backgrounds. However, animators need to be careful not to take exaggeration too far or a scene might look cartoon-like or distorted.

Notes:

Solid Drawing

Solid drawing refers to the principles and skills that fine artists use to make the objects in a 2-D drawing look like objects in the real, 3-D world. These principles and skills include good composition, use of perspective, and an understanding of both anatomy and the principles of physics. (In this usage, *solid* means "high quality" or "technically skilled.")

For animators, *solid drawing* also means understanding how to maintain proper mass and volume of shapes and characters when they move, squash, and stretch. Solid drawing helps to create a believable world for the audience, one in which characters and objects move and act in realistic ways. Even though some computer-generated animation does not involve much "drawing," the same principles of solid drawing apply.

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Handout 20:
Making Storyboards

Storyboards, which are used in the pre-production phase of movies, TV shows, and other media products, are drawings of individual frames or shots from a scene in the production. When you look at these drawings sequentially, you can preview how the action plays out, the setting where the action takes place, and the kinds of shots (such as close-up or wide) that will be used.

Storyboards are frequently used in animation because it's important to know exactly what a scene looks like before work begins on the final animation. Unlike live-action movies, in which it's possible to choose from different takes or to re-shoot scenes, animation is so time-consuming and expensive that each scene must be finalized before production begins. In fact, storyboarding in the form it is used today was developed at the Walt Disney animation studio in the 1930s!

You will create a storyboard of the moment you've chosen to animate.

Tips for Drawing Your Storyboard

- Create as many drawings as necessary to convey all the important action that takes place in the moment. For example, you may need only one drawing to show a character watching another character walk away, but you may need several drawings to show the acrobatic action of a character jumping over an obstacle.
- For each frame, include a drawing and set aside a space where you can write information, for example:
  - Camera directions (e.g., "Camera pans to follow Mary as she walks" or "Camera close-up on Mary's face")
  - A short description of what's happening in the shot (e.g., "Billy stands in a park with his dog Spot," "Billy gets ready to throw the ball," "Billy tosses the ball into the air.")
  - Note that because you are creating a storyboard for a very short interval of time, you may not need written information for each frame.
- The drawings shouldn't be *too* polished or *too* detailed—at this point, you're still just planning for the animation, not creating the animation itself!
- Refer to your simplified character design and other character drawings as you draw. Although your drawings will be rough, they should still be "on model"—that is, following the character's established design.
- Think about staging and shot style—when do you want a close-up of a character's face? When do you want a wide shot that shows more of the action?
- Think about the moment from your character's point of view. Where has she come from and where is she going? What state of mind is she in? What is her motivation? How do these factors affect how she looks and acts in this moment?
- The storyboard should show how your animation will incorporate the principles of animation (for example, using good staging or showing how a character's shapes will squash and stretch in different frames).

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Sample Storyboard

The storyboard below from *Kung Fu Panda* is one example of how a storyboard can be used to visualize a moment from a movie. Note the use of simplified character designs, especially for Po the panda.

Images courtesy of DreamWorks LLC

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Storyboard Model

You can use the model below as a guide to creating your storyboard. Decide on the size of each frame—you may want to have several frames on a page or one page per frame. Note that the frames in this model are in a widescreen format (used for movies and for high-definition television) rather than a 3:4 format (used in classic television).

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Assessment Checklist 5:
Unit Project—Moment Storyboard

Use this checklist to help you plan and assess your project. Make sure that you include all the required components. Your teacher will use this checklist to help evaluate your work.

Requirements	Percentage of Total Grade	Comments	
Technical Knowledge and Skills		**Student Comments**	**Teacher Comments**
Drawings clearly convey the action that takes place during the moment the student plans to animate.	**15%**		
Drawings show how the student plans to incorporate the principles of animation (by, for example, showing squash and stretch).	**15%**		
Storyboard includes written information, such as explanations of the action and camera directions, as necessary.	**10%**		
Character drawings reflect the established character design.	**10%**		
Content			
Character's poses and emotions are appropriate for the character's personality and physical features.	**10%**		
Action taking place in the moment clearly reflects the story the student has chosen.	**10%**		

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Creative Expression		Student Comments	Teacher Comments
Drawings make effective use of the elements of art and principles of design.	**10%**		
Drawings reflect student's understanding of how to use shot styles and staging effectively to tell a story.	**10%**		
Action depicted in the storyboard will be engaging for viewers.	**10%**		
Total	**100%**		

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Assessment Checklist 6:
Unit Project—Completed Animation

Use this checklist to help you plan and assess your project. Make sure that you include all the required components. Your teacher will use this checklist to help evaluate your work.

Animation	Percentage of Total Grade	Comments

Technical Knowledge and Skills		Student Comments	Teacher Comments
Clearly depicts the action that takes place during the moment.	10%		
Makes effective and appropriate use of the principles of animation.	10%		
Uses the student's simplified character design, and the character stays "on model" (follows the established design).	5%		
Drawings maintain appropriate volume and shape.	5%		
Makes effective use of timing and spacing to create smooth and believable motion.	5%		
Demonstrates technical proficiency in using animation software.	5%		
Students' drawing and animation techniques demonstrate skill, effort, and perseverance.	5%		

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Content			
Character moves and expresses itself in a way that makes sense, given its personality.	**10%**		
Animation's drawing style reflects and supports the story.	**10%**		
Action taking place in the moment clearly reflects the story the student has chosen.	**5%**		
Creative Expression			
Makes effective use of the elements of art and principles of design.	**10%**		
Is engaging and enjoyable for viewers.	**10%**		
Reflects student's understanding of how to use shot styles and staging effectively to tell a story.	**5%**		
Includes a character with appeal.	**5%**		
Total	**100%**		

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Handout 21:
The Pitch

You've found your story, designed your character, and created your animation—now it's time to share your idea! You will design and deliver a pitch for your animated movie concept.

Design your pitch to convince your classmates—and others in the audience—that the story you've chosen would make great use of the medium of animation. Your animated moment should be a good preview of what your movie might look like.

Look over the information below to see what to include in your presentation.

Story Description

Briefly describe your story, answering the following questions:

- What is the basic plot of the story?
- Who are the main characters?
- Why do you think the story would make a good animated movie?
- What audience would the movie appeal to?

Character Information

Present your character design, including turnaround sheets, character studies, and model sheet, answering the following questions:

- What role does this character play in the story?
- What is the character's personality?
- Why will this character be appealing for an audience to watch?
- Why is your character designed in the animation style that you've chosen?

Scene and Moment Description

Show your storyboard of the moment and describe the scene and moment you've chosen, answering the following questions:

- What happens in the scene you've chosen, and why did you choose this scene?
- What role does this scene play in the story's arc?
- How does the moment you've chosen fit into the scene?
- What happens during this moment, and why did you decide to animate it?

Screening of the Animated Moment

Play the animation you created and answer any questions the audience has.

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Assessment Checklist 7:
Unit Project—Pitch

Use this checklist to help you plan and assess your project. Make sure that you include all the required components. Your teacher will use this checklist to help evaluate your work.

Requirements	Percentage of Total Grade	Comments	
Pitch		**Student Comments**	**Teacher Comments**
Clearly describes the story.	**15%**		
Convincingly explains why the story would make a good animated movie.	**15%**		
Clearly describes the character and the character's role.	**10%**		
Clearly describes the scene and the role it plays in the story's arc.	**15%**		
Clearly describes the moment and how it fits into the scene.	**15%**		
Effectively uses visual materials to support the presentation.	**20%**		
Successfully addresses the audience's questions.	**10%**		
Total	**100%**		

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Appendix D: Interviewing Techniques

Interviewing is a great way to meet people and to learn information that you couldn't learn in another way. You may conduct your interviews in person, over the telephone, or using e-mail. Whichever method you choose, it's important to prepare in advance. Know what you plan to do during the interview and be prepared for any follow-up.

The following techniques, for use before, during, and after the interview, will help you get the most out of the experience.

Preparing for the Interview

Contact the interviewee. Get in touch with the person you'd like to interview. Describe the purpose and length of your interview. Arrange a time to meet in person or to talk on the phone. If you plan to record your interview, ask for permission to do so in advance. If you plan to conduct the interview by e-mail, let the person know your timeframe for sending questions and receiving a response.

Conduct research. Do your homework! Look for information about the interviewee's company and the kind of work he or she does. Background information helps you focus and ask questions you might not have thought of.

Think about topics. Decide what information you want to get out of the interview. Remember, an interview is a chance to get information that you may not be able to find anywhere else. Make a list of the important points.

List your questions. Write a list of questions to ask, and ask your teacher or someone else to review them. Ask open-ended questions, rather than ones that can be answered with yes or no. For example, instead of "Do you like your job?" ask, "What parts of your job do you like most?"

Order your questions. Ask your questions in a logical sequence, from basic questions (for example, "Can you tell me about your experiences with 2-D animation?") to more specific questions (for example, "What do you think are the benefits of this new animation software?").

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During the Interview

Dress appropriately. If you're interviewing someone in person, dress for the situation. Always be clean and neat, and avoid clothes with logos, graphics, or sayings. To interview a businessperson, wear a nice pair of pants or a skirt and a button-down shirt or blouse.

Arrive (or call) on time. Don't keep your interviewee waiting. If you are using e-mail, be sure to send the questions on the day you arranged.

Have the right gear. Be prepared with a notebook and a pen or a pencil. If you are using a tape recorder or video camera, learn how all the controls work before you arrive and give yourself a few extra minutes to set up the equipment.

Warm up. Always begin by thanking the person for his or her time. If your interview is in person or on the phone, spend a few minutes to get acquainted before you ask your questions. (For example, you might ask whether the person has been interviewed about his or her career before, or briefly explain this research project.) However, in an e-mail, after thanking the person for his or her time, it's best to get right to the point.

Let the interviewee do the talking. Don't interrupt, and be sure to give the person time to answer each question. Use pauses as a chance to take notes, rather than moving straight to the next question. You should also practice active listening—make eye contact and show your interest by nodding your head and making appropriate comments, such as "Uh-huh" and "I see."

Take notes. If you're not recording the interview, take detailed notes on your interviewee's responses, writing down key information. Be sure to note important or interesting phrases that you may want to quote. The notes are for you to remember the interview later; you do not need to use full sentences or write down every word. You may want to practice taking notes before your interview.

Ask follow-up questions. If an answer makes you think of another question, go ahead and ask it. Don't be afraid to ask questions to clarify your interviewee's answers or to get more information, such as "Can you give me an example?" or "Does that mean that ____?" For e-mail interviews, you may send a second message with follow-up questions based on the interviewee's responses.

Wrap up. At the end of the interview, thank the interviewee again. Ask if it would be OK to call or e-mail if you have any further questions. Offer to send a copy of your final report or product—and be sure to follow through!

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After the Interview

Thank your interviewee. Send an e-mail or a card thanking the person for the information he or she shared.

Review your notes. As soon as possible after the interview, read your notes and add any information you remember from the interview but didn't write down at the time. (The sooner you do this the better, as your memory of the conversation will help you make sense of your notes.) You may want to type them and organize them. Write down any additional questions that you have.

If necessary, follow up. If your interviewee has agreed, ask follow-up questions in a phone call or an e-mail. Thank the interviewee for this additional time.

Evaluate the interview. Reflect on the interview process. What went well? What didn't go well? What will you change the next time you conduct an interview? Write down your reflections in your journal.

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Appendix E:
Sample Character Designs

You can share the following character studies and model sheets with students.

Character studies of Po from *Kung Fu Panda*. Image courtesy of DreamWorks LLC.

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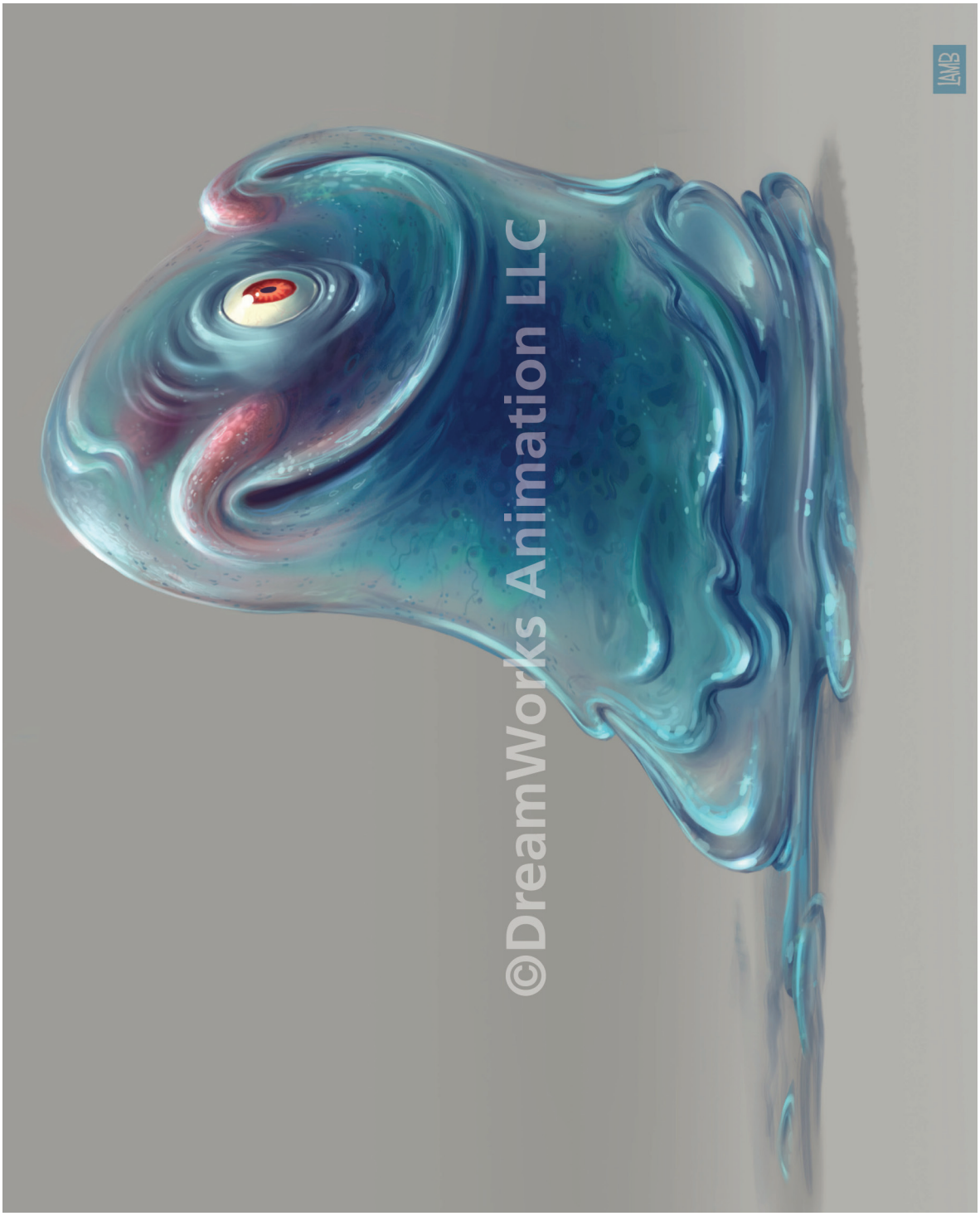
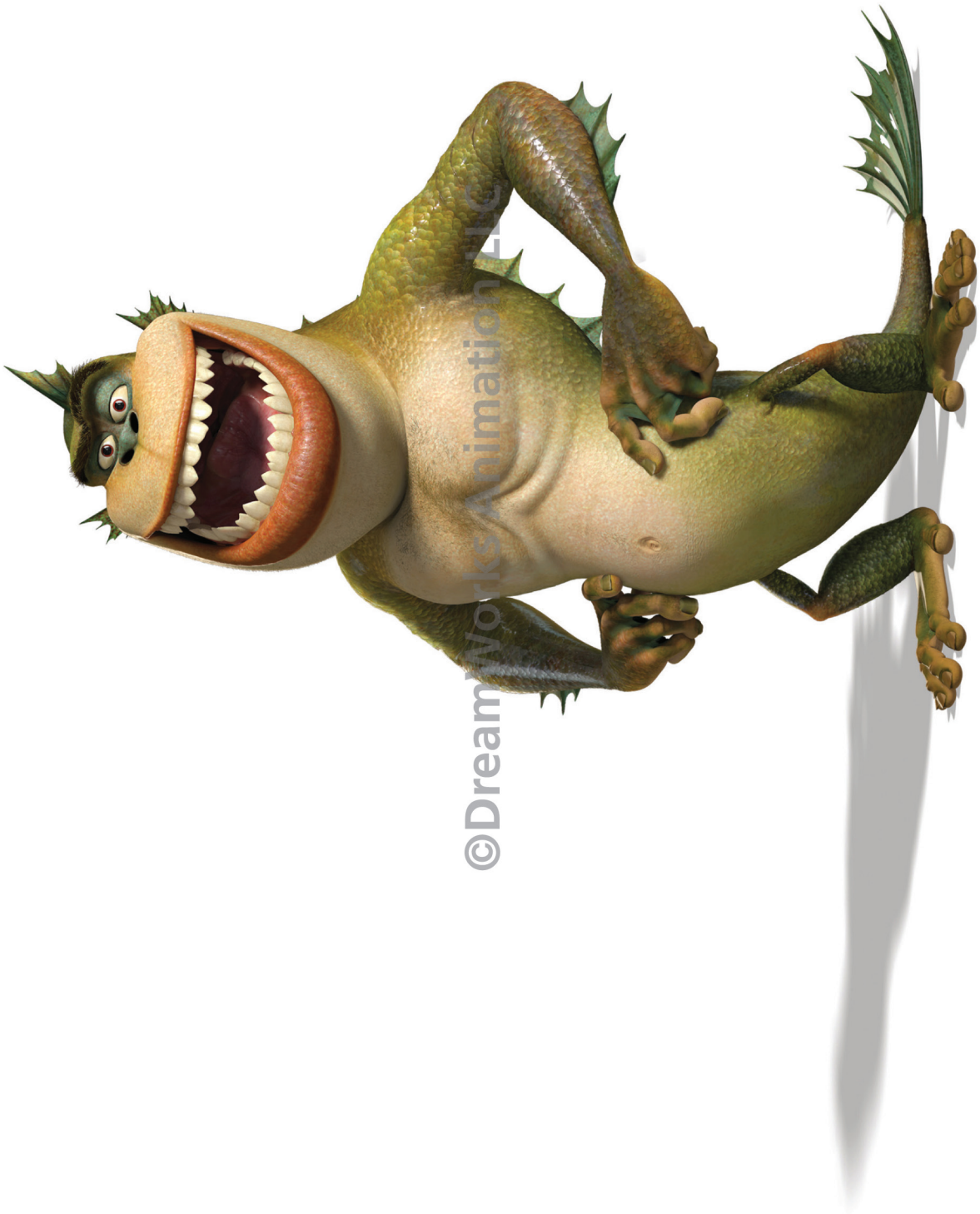
Character studies of Po from *Kung Fu Panda*. Image courtesy of DreamWorks LLC.



Model sheet of B.O.B. from *Monsters vs. Aliens*. Image courtesy of DreamWorks LLC.



Model sheet of The Missing Link from *Monsters vs. Aliens*. Image courtesy of DreamWorks LLC.