

White Hat Recipes



Introduction

What You Will Learn

In the White Hat level you will learn a simplified version of the basic animation skills all animators have employed for over 100 years. We've added our own twist for the tablet app era. There are about a dozen classic core animation principles you will experience by following these recipes. You will learn new animation vocabulary, and understand the basics of animation by doing each exercise.

Why Is This Important?

These exercises will provide the beginning animator with a set of skills and vocabulary which can be applied to animate anything. This is why *Animating Kids!* isolates each foundational concept into simple steps. All other hat levels in *Animation Kids!* will draw upon this core foundation.



Recipe 1: Mobile Device Set-Up



What You Will Learn

Setting up with a mobile device is easy, especially if you are resourceful! This video shows 8 different ways to get a mobile device in position to start animating. From super cheap to super expensive, we show you inventive ways to set up for animation. Our favorite set-up? The fastest and cheapest is a stack of books or a cardboard box. Lock down your device to something and get animating!

Why Is This Important?

Animators use the term “lock-down” to refer to keeping things still. Mobile devices are difficult to lock down because they rarely come with tripod mounts. Figure out a way to lock things down to ensure shake-free animation.



Recipe 2: Frame Rates



What You Will Learn

Animating Kids! recipes are based on a playback frame rate of 15 Frames-Per-Second (15fps). You will learn the difference between different frame rates, and why we choose to work at 15fps.

You will also learn why we need to take pictures of nothing happening. You will discover the importance of pacing and timing in your movie.

Why Is This Important?

Every second of your movie must contain 15 pictures or frames. This poses a problem most new animators underestimate. The pictures you take between the animated bits are as important as the animated bits. Like music, the spaces between the notes are as important as the notes. Animations have pauses between the action. These pauses also need to play out at 15fps.



Recipe 3:

Sound Design (SFX)



What You Will Learn

You will learn how to add sound to your animation. You will synchronize sound to your animated bits. You will discover that sound is as important as your animation. You will experiment with sound to amplify the impact of any scene. You will learn to shorten the phrase "sound effects" with the acronym SFX. Most stop motion apps have a sound feature. You will learn to look for the sound button.

Why Is This Important?

The most powerful sound design app in the world is your mouth! As we complete each lesson, add SFX where it seems appropriate. It might be a “boing” or a “thump” or an engine revving. Even the smallest sounds make a big impact. Sound design can take as long as animation sometimes. Don't go too crazy with adding sounds, but have fun spicing things up.





Recipe 4: Spacing is Speed

What You Will Learn

You will learn how to animate with fast, medium, and slow-motion speeds. You will discover the spacing determines speed. Learning how to create the illusion of objects moving at different rates of speed is one of the most basic animation skills.

Why Is This Important?

The most common error a beginning animator makes is getting the spacing wrong. Getting the spacing right affects every animation you will ever do. The frame rate never changes, so a stop-motion animator needs to know how far to move their props between pictures. Move something a big space between pictures, it animates fast on playback. Move something a tiny bit between pictures, it moves in slow motion. Simple as that.

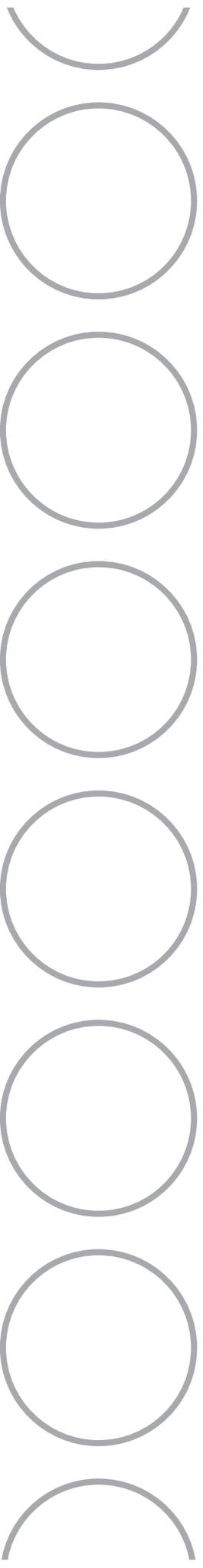


Steps

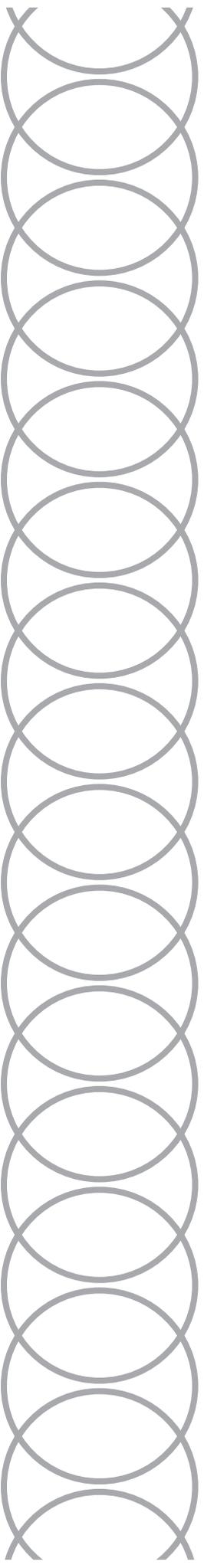
Spacing is Speed

Start at left, take 15 pictures at first circle, then take one picture per circle moving to the right.

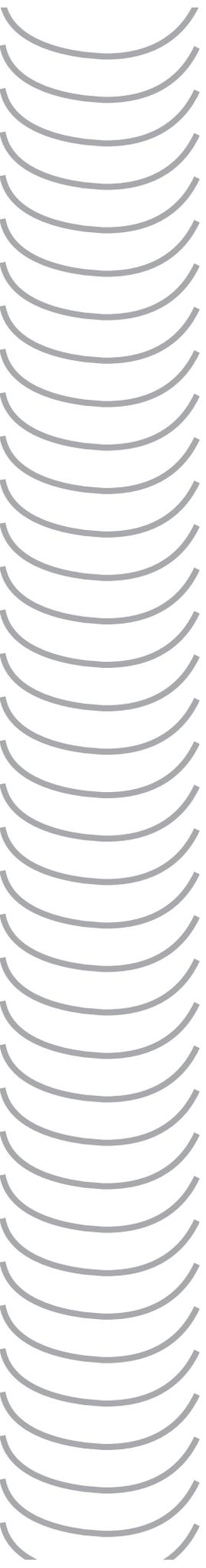
Fast



Medium



Slow





Recipe 5: Speeding Up Slowing Down

What You Will Learn

You will learn how to create a speeding up motion by gradually increasing the spacing from frame to frame. You will also create the illusion of how to make something look like it is slowing down to a stop, gradually.

Why Is This Important?

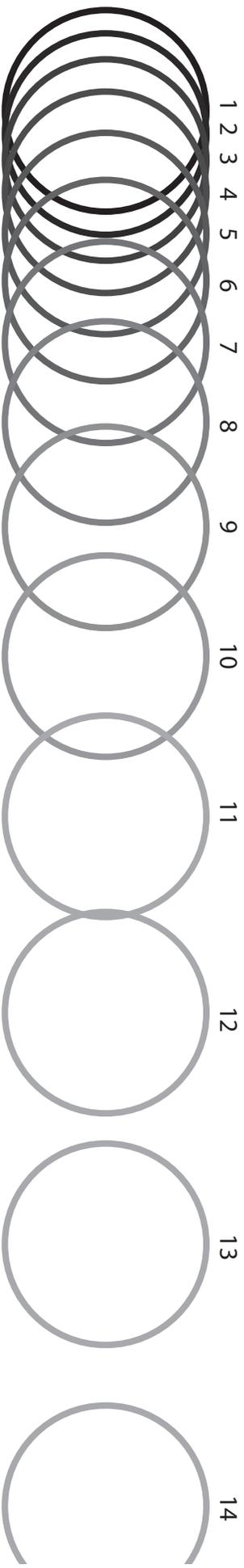
The transition from fast to slow, or from slow to fast is everywhere in animation. Cars, superheroes, fish, body parts, rockets and almost anything else that speeds up or slows down are examples of why this recipe is important. This is a very basic core concept and skill animators must master.



Speeding Up Slowing Down

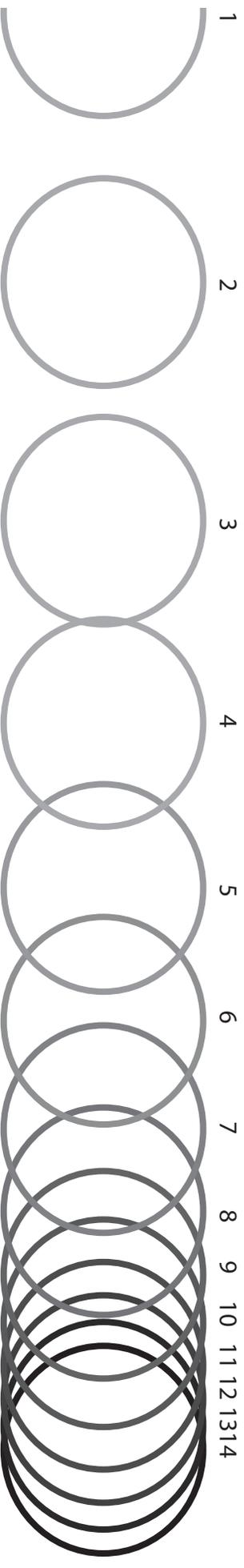
Step 1

Take 15 Pictures at the first circle position.



Step 2

1 picture per circle until off page. Then take 15 more pictures after it is gone.



Step 3

Start from off the page.
Then take 1 picture per circle moving from left to right.

Step 4

At the last circle,
take 15 pictures

Recipe 6: Bouncing Ball



What You Will Learn

You will learn to use *Speeding Up* and *Slowing Down* along a curve. You will notice how to use an impact to create a change in direction and speed.

Why Is This Important?

The bouncing ball teaches the skill of crafting the illusion of impact, changing direction, and momentum change.

The bouncing ball is a classic in animation in basic animation exercises. Mastering the bouncing ball shows the new animator is grasping the concept of spacing things out to change rates of speed.

This formula is used when animating things like a frog, a ball, a pogo stick, a kangaroo, or a grasshopper.

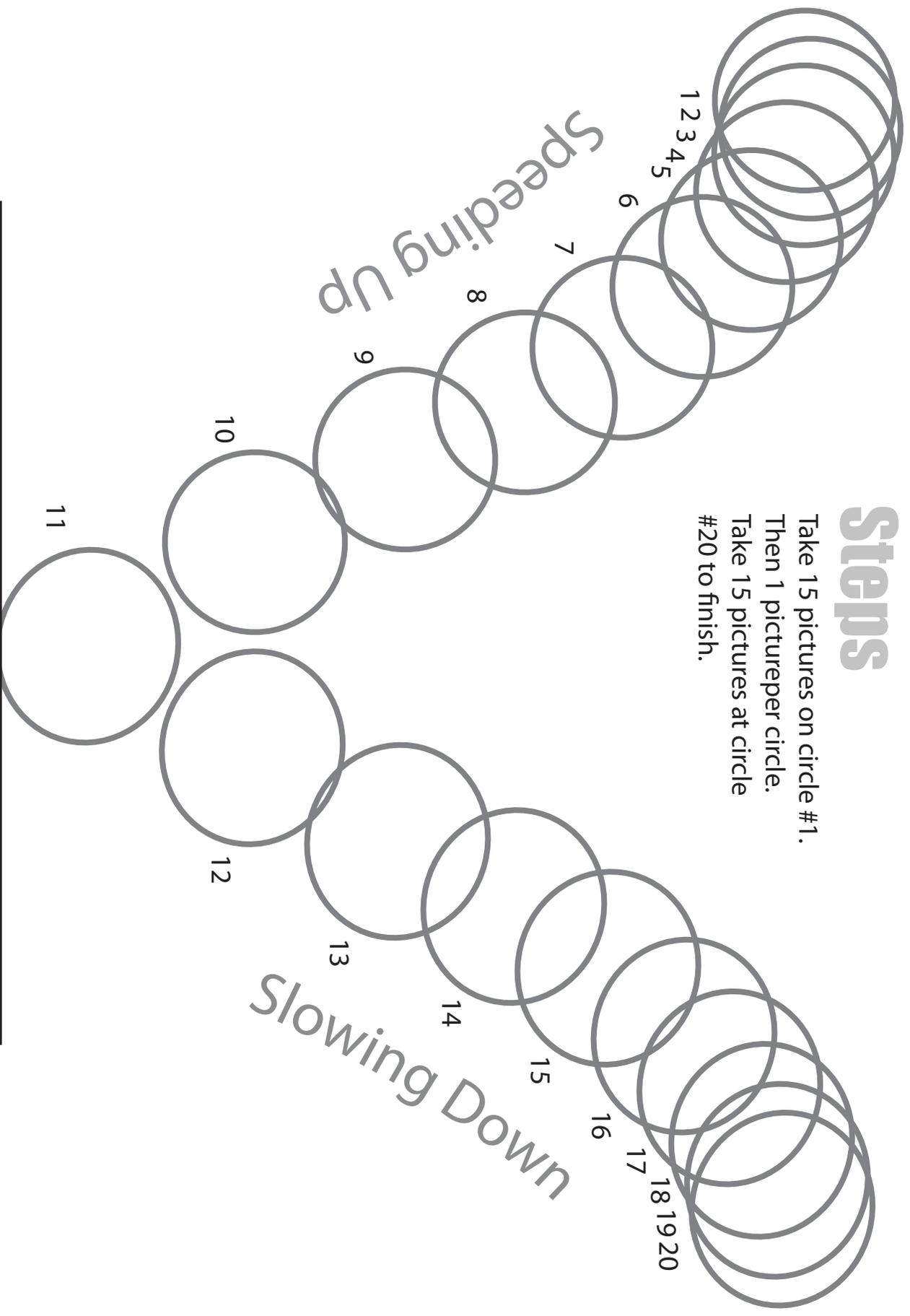


Bouncing Ball

Start

Steps

Take 15 pictures on circle #1.
Then 1 picture per circle.
Take 15 pictures at circle
#20 to finish.



Recipe 7: Squash



What You Will Learn

You will learn that *Squash* is a basic animation term. For an animator it has a very specific meaning. You will discover that *Squash* refers to that part of any animated item which flattens horizontally due to mass, gravity or momentum.

Why Is This Important?

An animator must have the idea of *Squash* as both vocabulary and a skill in animation. People squash as they walk when their feet hit the ground. Balls squash when they bounce. Frogs squash on the ground between bounces. A high-jumper squashes before the big jump. *Squash* is everywhere.



Squash

Steps for Squash

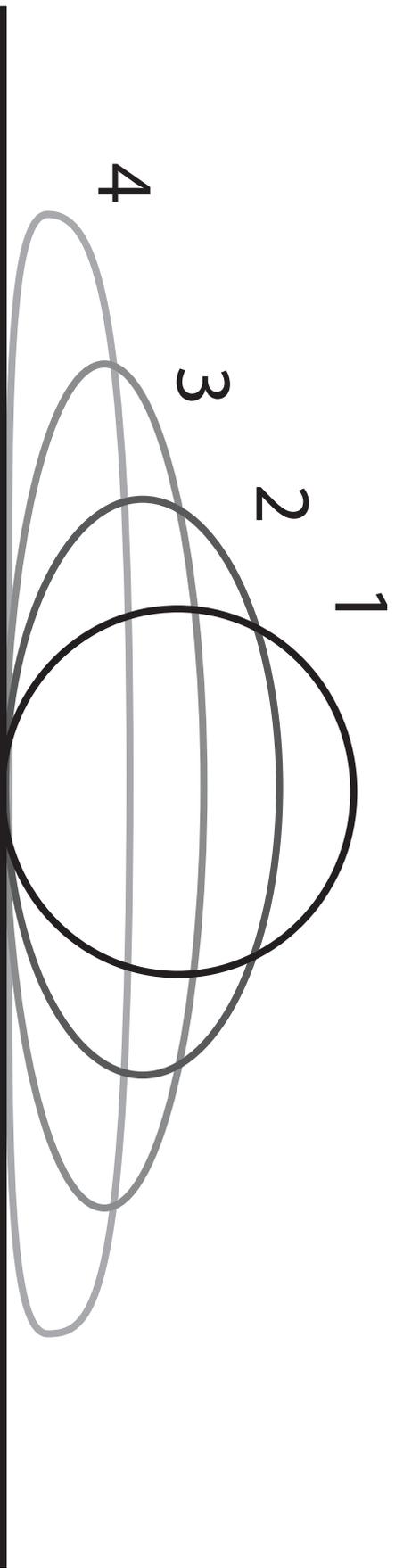
Take 15 Pictures of #1 shape. Then squash the shape into #2 position. Take 1 picture.

Squash to #3 shape. Take 1 picture.

Then take five pictures of a squash at #4 shape.

Then reverse the sequence from #3 and #2 again taking 1 picture of each squash.

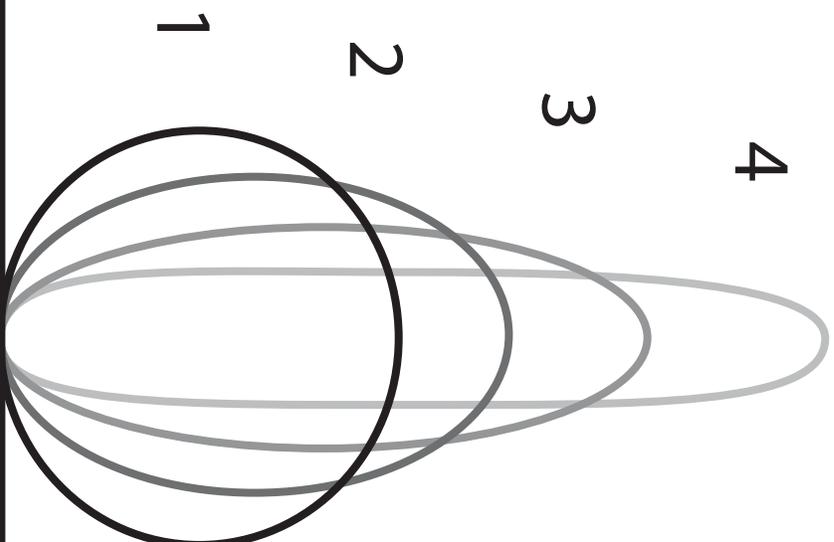
Play the animation as a loop.



Stretch

Steps for Stretch

Take 15 pictures at shape #1.
Then one picture at #2 stretched shape.
Then 1 picture at #3 stretched shape.
Take 5 pictures at #4 stretched shape.
Reverse direction with 1 picture for #3 and #2 shapes.
Repeat a few times and press play.



Recipe 8:

Stretch



What You Will Learn

Like *Squash*, you will learn *Stretch* is a basic vocabulary word in animation. *Stretch* means to make a long, vertical version of your character. *Stretch* is a basic animation vocabulary word, skill and concept.

Why Is This Important?

Newton said, “every action must have an equal and opposite reaction”. *Stretch* can be thought of as the opposite of *Squash*. *Stretch* is often used to show how a character recoils from a *Squash* by forming the opposite shape.

Understanding this basic concept will be one of the main reasons your characters and animations will seem real to your audience. We are applying a cartoon version of real world physics to the mass of an object.





Recipe 9:

Bouncing Ball

With Squash and Stretch

What You Will Learn

You will learn that moving the ball along a curve with *Speeding-up* and *Slowing-down* spacing, while at the same time squashing and stretching, requires concentration. You are learning how to apply more than one concept to an animation. Adding *Squash* and *Stretch* to the *Bouncing Ball* recipe blends three basic concepts into one animation.

Why Is This Important?

This will prepare the animator for future challenges where three or more animated things need to be happening at the same time. For the bowling ball, there will be no *Squash* or *Stretch*. For the water balloon, there will be many opportunities to *Squash* and *Stretch*.



Bowling Ball - No Squash or Stretch

Start



Steps

Take 15 pictures a circle 1,
then 1 picture per circle
until finished.

Take 15 pictures at final circle.



Final

Water Balloon - All Squash & Stretch

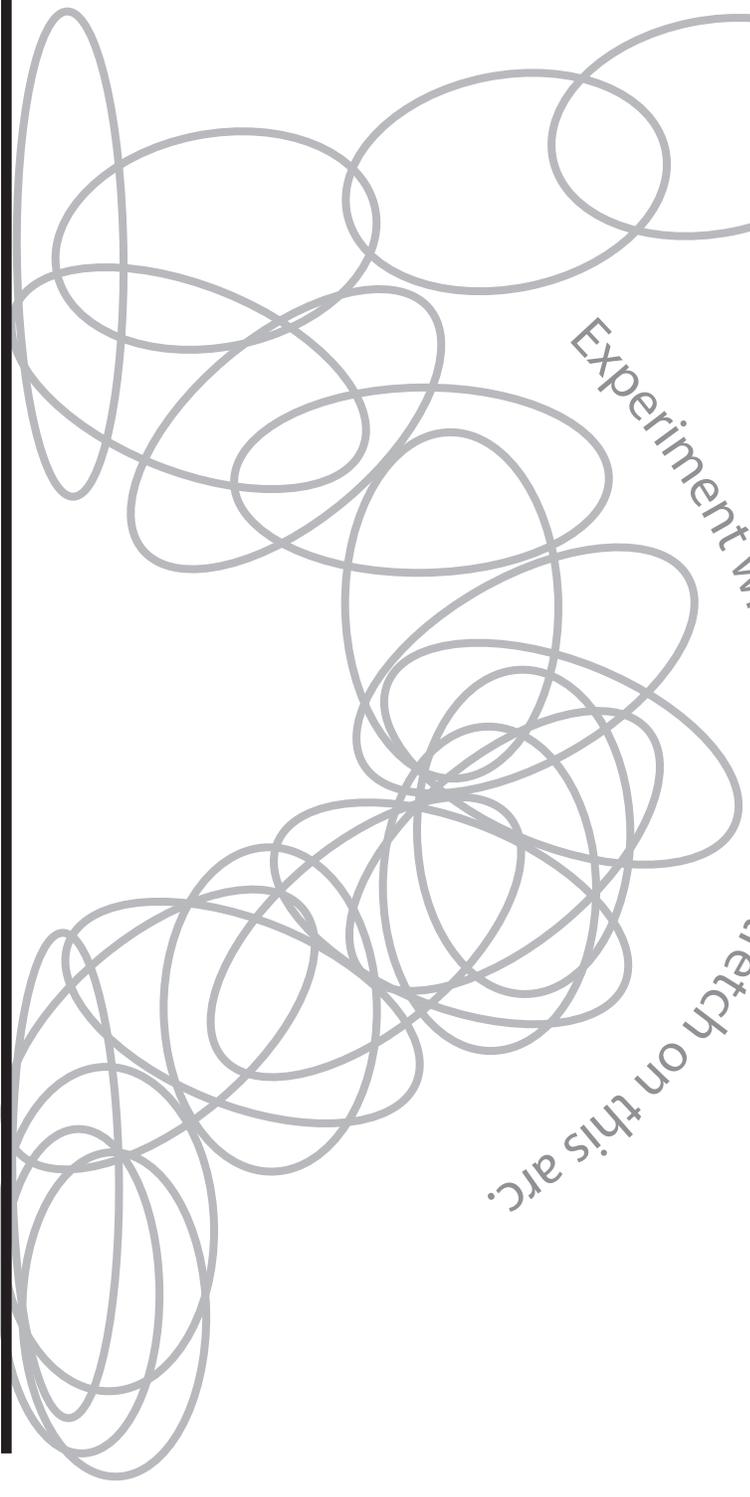
Start



Steps

- Take 15 pictures at circle 1.
- Then 1 picture per circle until finished. Experiment with squashing and stretching every other picture and see what happens.
- Take 15 pictures at final circle.

Experiment with Squash & Stretch on this arc.





Recipe 10:

Jump with a Wind-Up (with Squash and Stretch)

What You Will Learn

You will learn that a *Wind-up* happens before many animated actions. You will create a sense of getting ready to do the action about to happen. A *Wind-up* creates a sense of anticipation. You will use *Wind-up* to engage your audiences attention before something happens.

You will learn that adding a *Wind-up* is a very subtle and important skill.

Why Is This Important?

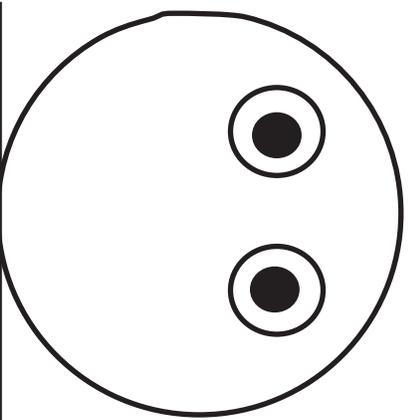
Winding up before any action is a great way to take your animation skills to the next level. Professionally this is called *anticipation*. But we simplify the idea to *Wind-Up*. *Wind-Up*, and the next lesson, *Follow-Through*, are the beginning and ending motions of an action. A super hero *Winds-up* to fly by crouching down. A baseball player *Winds-up* before throwing. A sneezer's head *Winds-up* before the sneeze. In this recipe, our little clay guy *Winds-up* before jumping with a *Squash*. Almost all motion has *Wind-up* or *Follow-through*, and sometimes both!



Jump with Wind up

Step 1

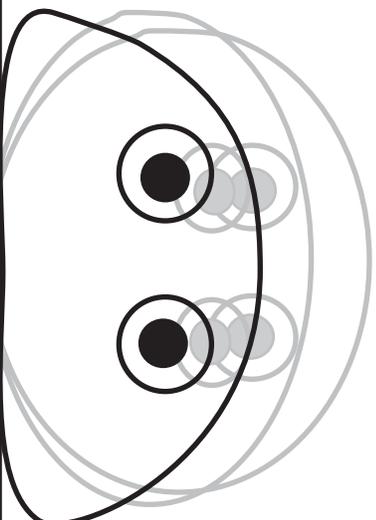
Take 15 pictures.



Step 2

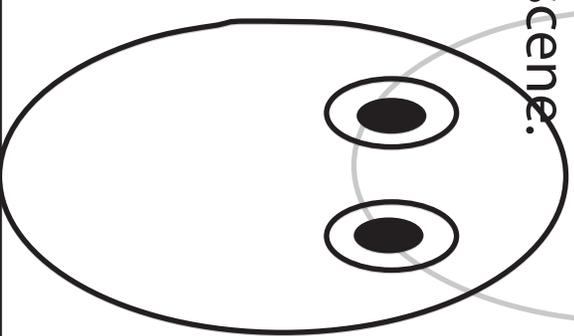
Squash down for 2-3 pictures.

Then take 3 pictures of a pause at efore jump.



Step 3

Stretch and jump up for 3-4 pictures until out of the scene.





Recipe 11:

Follow-Through

(with Squash and Stretch)

What You Will Learn

You will learn that *Follow-through* shows what happens after a basic motion. You will learn to watch for opportunities to show a *Follow-through* at the end of an animated bit. You will learn how to use *Squash* and *Stretch* as a *Follow-through*.

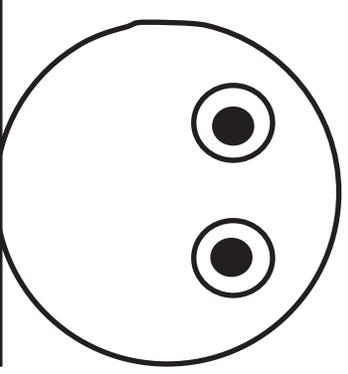
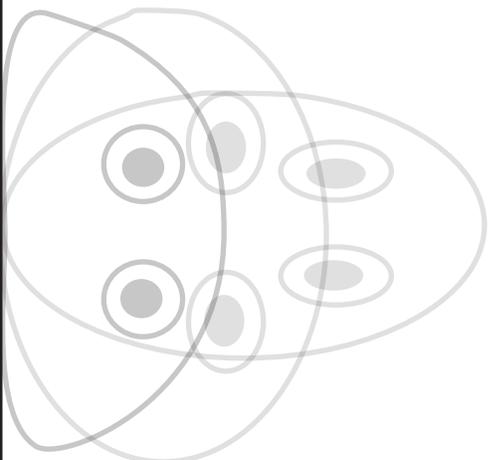
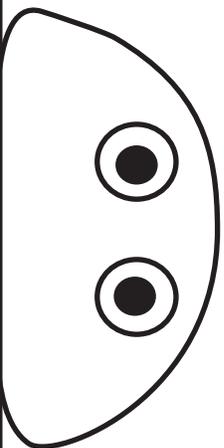
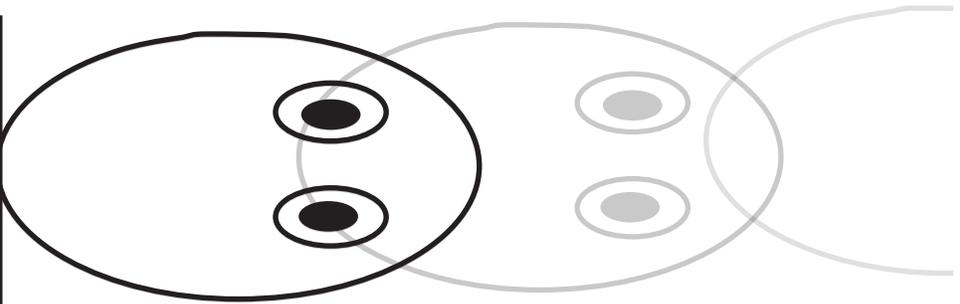
Why Is This Important?

A *Follow-through* helps your audience see that the main action is finished. In this example, our little clay guy falls into the scene, hits the ground, and *Follows-through* with *Squash* and *Stretch* when it stands up after the impact.

Think of how you follow-through in other actions. How do you *Follow-through* after a sneeze or a snore? How about after throwing a ball? *Follow-through* is everywhere.



Follow-Through with Squash & Stretch



Step 1

Drop in a stretch pose
2-3 pictures.

Step 2

Squash for 1 Picture.

Step 3

Follow through
with Squash & Stretch
for 5-6 pictures.

Step 4

Finish with
15 pictures
of nothing.



Recipe 12: Jumping

(Wind-Up & Follow-Through with Squash & Stretch)

What You Will Learn

You will use *Squash* and *Stretch* as a *Wind-up* and a *Follow-through* in this exercise. You will learn to create a simple jump animation by combining all four animation concepts.

As you layer these animation concepts together, you will create the illusion of getting ready to jump, jumping, and finishing a jump by returning to the beginning pose.

Why Is This Important?

Winding-up before any action, and following-through after the action is rarely noticed by the audience.

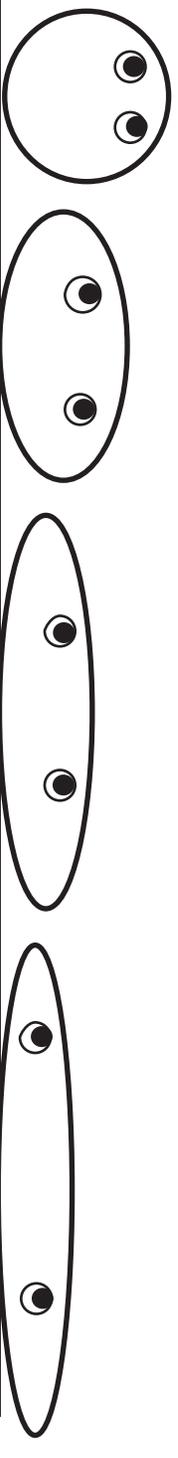
Wind-up and *Follow-through* need to be understood to the point that an animator almost unconsciously adds them to any animated bit.

Knowing and using *Wind-up* and *Follow-through* will put you on the road to animation mastery.



Jump with Wind-up + Follow-Through + Squash + Stretch

Wind Up:



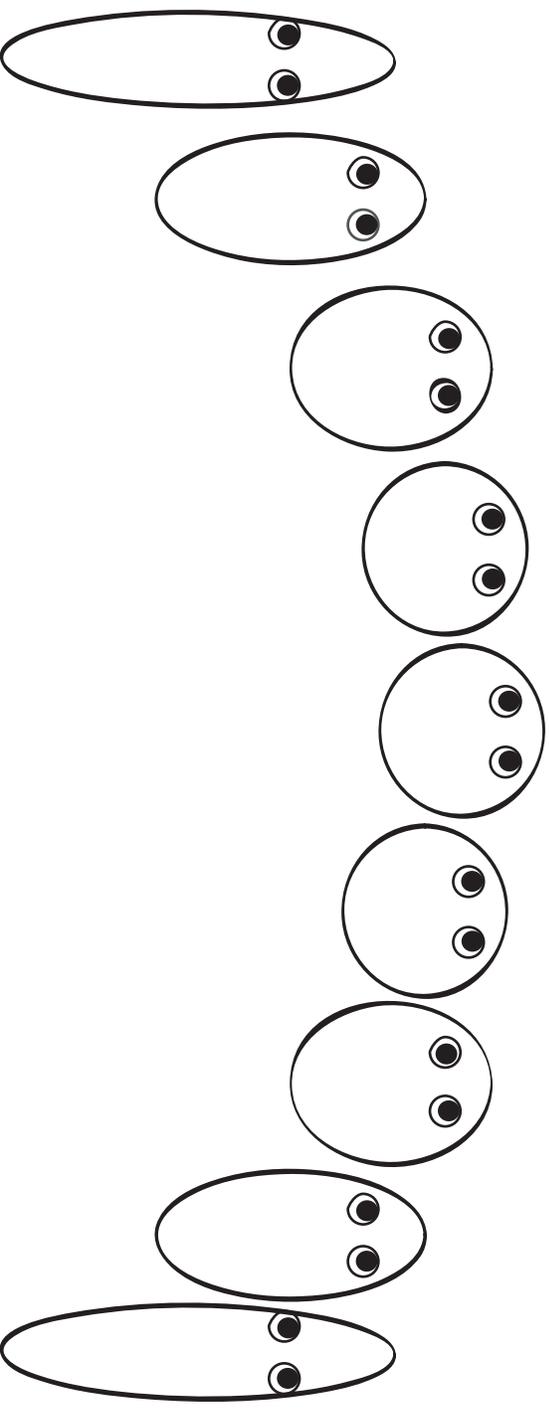
15 Pict.

1 Pict.

1 Pict.

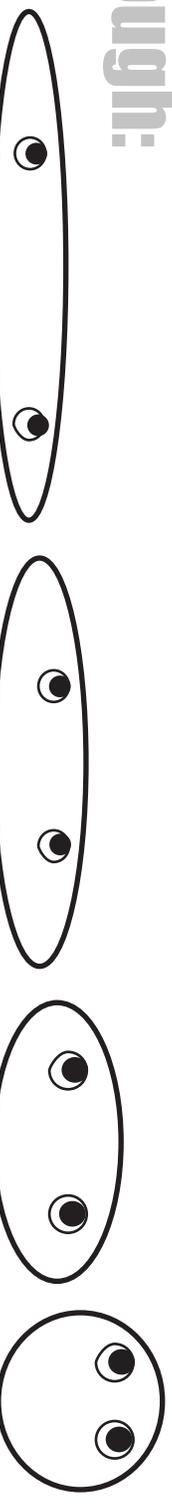
5 picts.

**Jump:
Stretch**



1 Pict.

Follow Through:



Reverse

Squash

1 Pict.

1 Pict.

1 Pict.

15 Picts.



Recipe 13:

Throw

(with Wind-Up & Follow-Through)

What You Will Learn

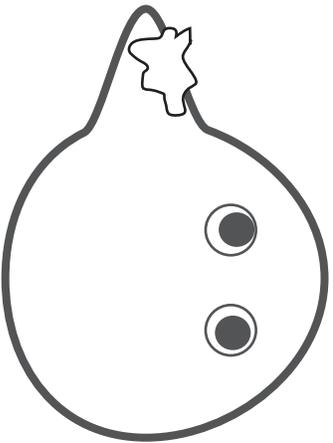
You will learn how to apply *Wind-up* and *Follow-through* to a simple throwing animation. You will discover the timing and posing to make a convincing throwing motion. You will show a character get ready to throw with a *Wind-up*. You will finish the animation with a *Follow-through*. You will start to notice opportunities for *Wind-up* and *Follow-through* in almost all animation bits .

Why Is This Important?

The audience enjoys anticipating action as a way of predicting what comes next. The tension of watching *Wind-up* before an action clues the audience in on the intentions of a character. We make them wait just a split second in anticipation of what is coming next. The *Follow-through* gives our audience a sense of relief, release, or after-ness, which cues them that the action is over.

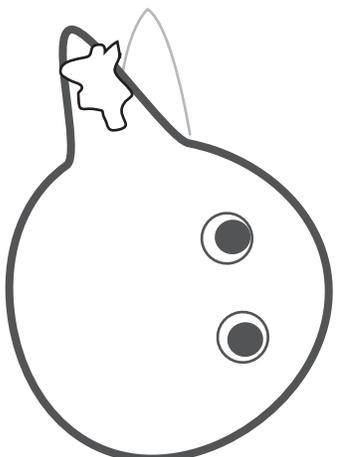


Throw: Wind-Up & Follow-Through



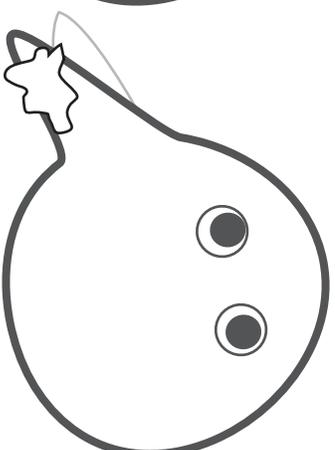
Step 1

This pose for 15 pictures



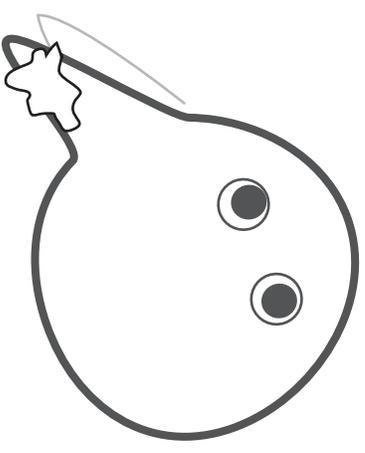
Step 2

Drop arm and tip body to the left for 1 picture.



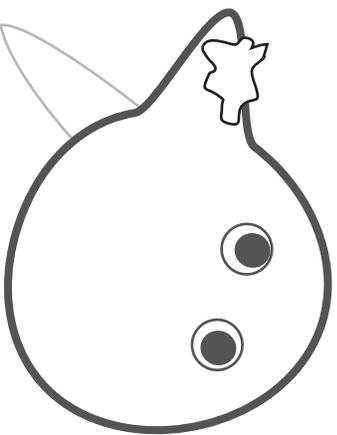
Step 3

Drop arm more and tip body to the left more. Take 1 picture.



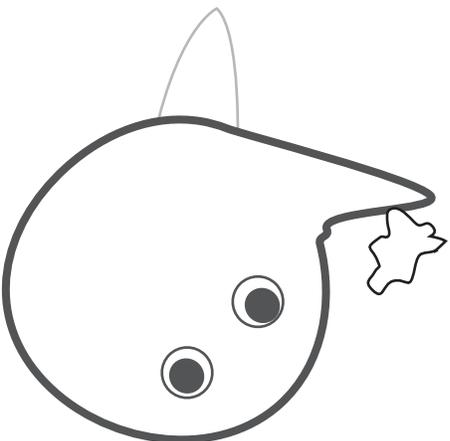
Step 4

Drop arm more and tip body to the left more, then take 10 pictures.



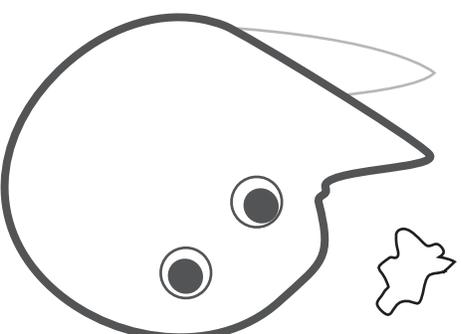
Step 5

Tip to the right and raise arm for 1 picture.



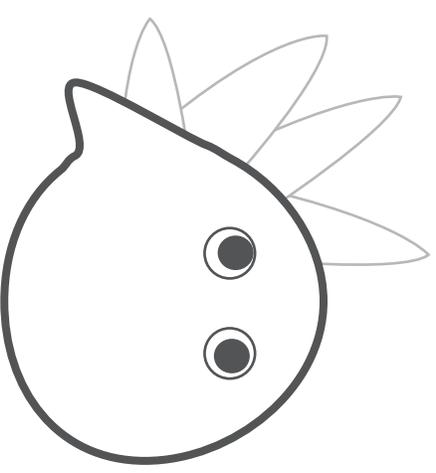
Step 6

Tip more and bend arm over head. Let paper leave hand. Take 1 picture.



Step 7

Tip a little more to the right. Hold this pose and animate the paper flying off the screen for 5 pictures



Step 8

Tip back to step 1 with 3 pictures. Return arm to side. Take 15 pictures.



Recipe 14: Sneeze

(with Wind-Up & Follow-Through)

What You Will Learn

You will learn the timing and spacing for a sneeze animation. You will use *Wind-up*, *Speeding-up*, *Follow-through* and *Slowing-down* spacing in this animation. You will be able to keep track of three or four things at the same time.

You will observe that sneezing is an animated bit where *Wind-up* and *Follow-through* are less obvious than throwing something, yet we use the same basic formula.

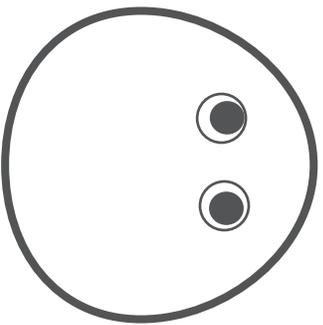
Why Is This Important?

If you can animate a sneeze, you are beginning to put animation rules together. To experiment with possible variations of sneezing styles, hold the *Wind-up* a few frames longer by taking some extra pictures before the sneeze. Add more pictures to the *Follow-through* of the sneeze to make it last longer. Tweak timing to animate fun variations.

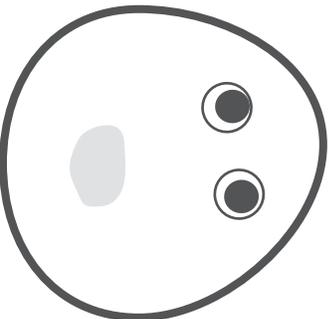


Steps

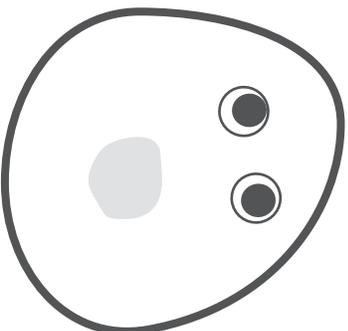
Sneeze: Wind Up & Follow Through with Spacing



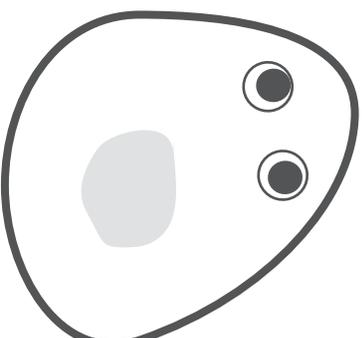
Take 15 pictures of regular face.



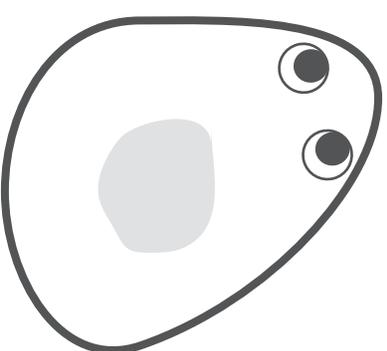
1 picture of regular face with small dent for mouth



1 picture of face leaning to the left and mouth open.



1 picture of face leaning and stretch more, with bigger dent for mouth



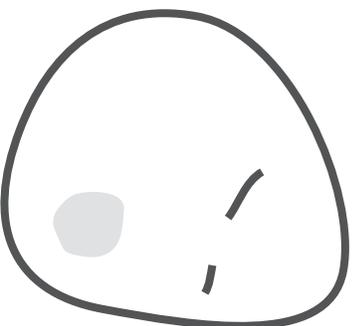
10 pictures of face in this pose for a hold before sneeze.



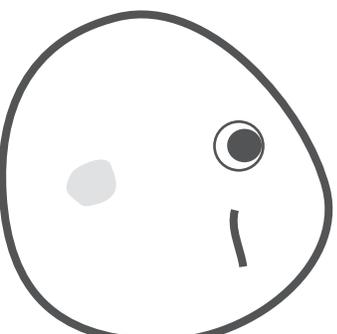
2 pictures of face bending and tipping to the right with small mouth and closed eyes.



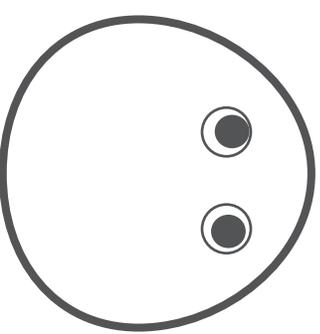
10 pictures of face bent like this.



1 picture of face tilting back to the right slightly.



1 picture of face with one eye open and titling close to the beginning pose.



Take 15 pictures of regular face.



Recipe 15: Shake

What You Will Learn

You will learn that the concept of *Shake*. You will find that adding *Shake* to your movie in the right moments increases your audience's attention. A *Shake* is a high energy move which adds impact to your animation.

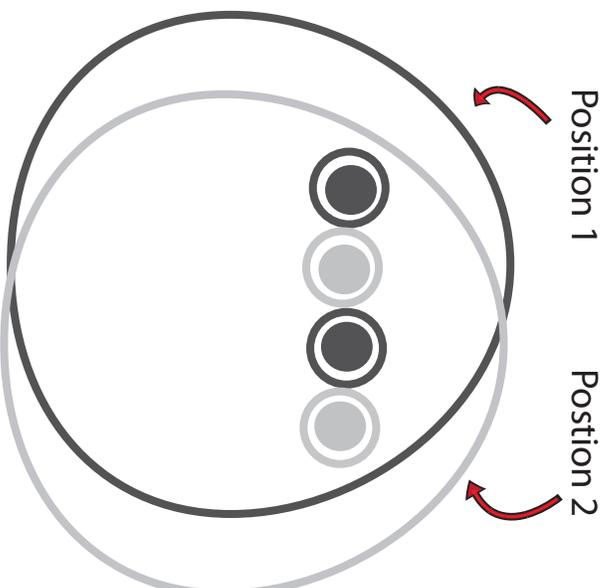
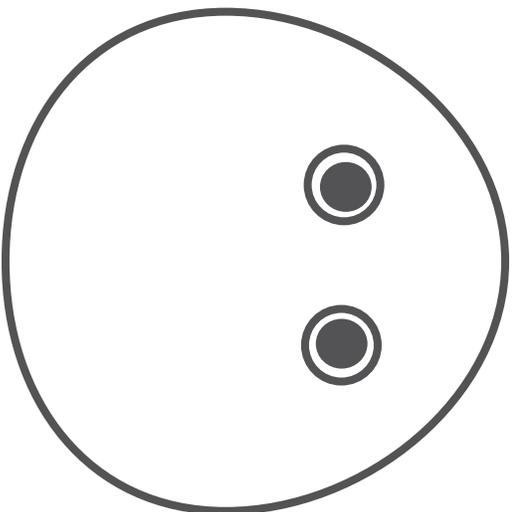
Why Is This Important?

Shake is a very simple concept, but adding *Shake* whenever you see the opportunity means you are starting to think like an animator. Little vibrations during a snore, or a shiver, or a scream draw the audience in and keeps their attention.

You want to have an impact on the emotions of your audience. It's time to *Shake* things up!



Shake



Step 1

Take 15 Pictures

Step 2

Take 1 picture at position 1,
then move to position 2
for 1 picture.
Repeat 30 times.



Recipe 16: Quiver

What You Will Learn

You will learn that a *Quiver* is much like a *Shake*, but one end of the object stays in one place while the other moves back and forth until it stops.

The ability to *Quiver* is an animation basic.

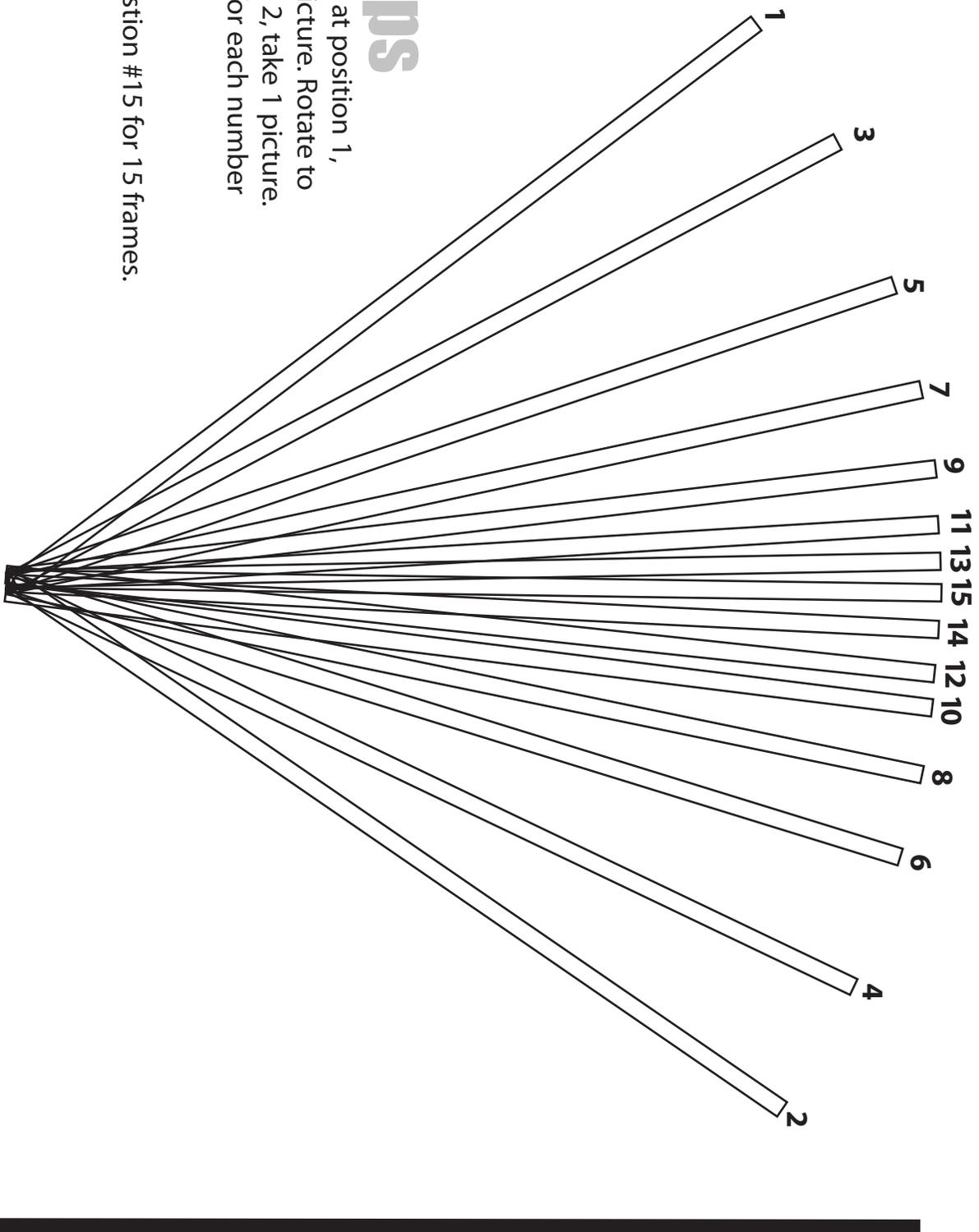
You will learn adding *Quiver* is a way to use *Follow-through*.

Why Is This Important?

Your audience is visually intelligent. They know where things quiver in the real world. If your character jumps off a diving board, and the diving board makes no quiver, your animation is less visually believable. You will also use *Quiver* when a hammer rings a bell, when a ball hits a head, when someone steps on a rake, when an arrow hits a target, etc.



Quiver



Steps

Tilt stick at position 1, take 1 picture. Rotate to position 2, take 1 picture. Repeat for each number until 15.

Hold position #15 for 15 frames.



Recipe 17:

Walking/Running

What You Will Learn

You will create the illusion of walking and running without using legs or feet. Walking and running use a zig-zag pattern. You will learn to advance your character up and forward, then down and forward to create the illusion of taking steps. You will change the spacing to change the speed. You will add the sound effect of footsteps, and discover your audience's brains will link up the zig-zag pattern with the footstep sounds.

Why Is This Important?

In traditional animation, making a character walk is one of the most difficult animation tasks.

The head is bobbing forward and backward, the body moves up and down. The hands are swinging opposite from the legs. The joints in the legs and arms are bending and straightening. And all of these moving parts are moving forward together!

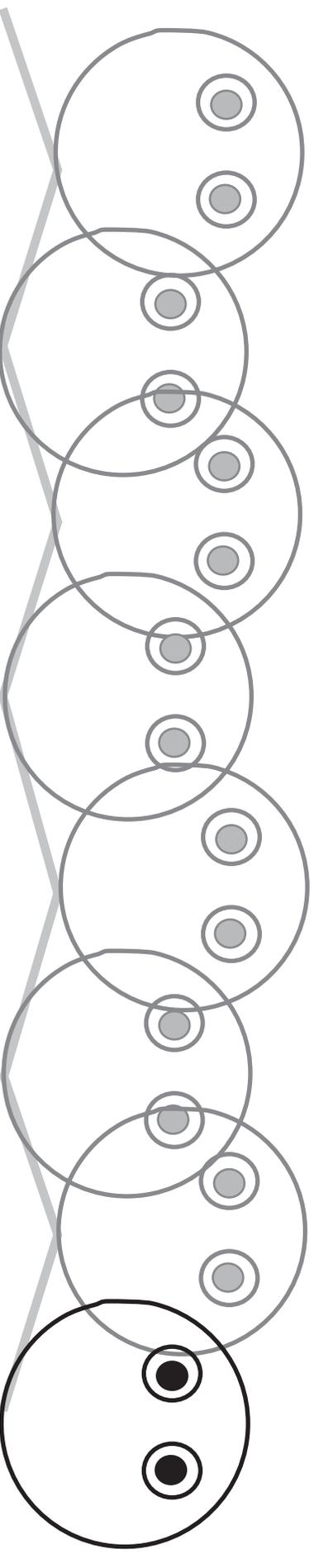
We simplify the process by using a zig-zag pattern.



Walk • Run

Steps

Take 1 picture for each zig and zag
The top pattern is a walk,
the bottom pattern is a run.





Recipe 18: In-between Blur

What You Will Learn

You will learn how to create the illusion of speeds which are too fast for 15fps to capture. You will animate one long stretched-out version of your character, it is possible to trick the eye into believing it can move from point A to point B in 1/15th of a second. It is amazing what the eyes will accept as motion. *In-between blurs* are one of our favorite animation tricks. This is for a high-speed illusion.

Why Is This Important?

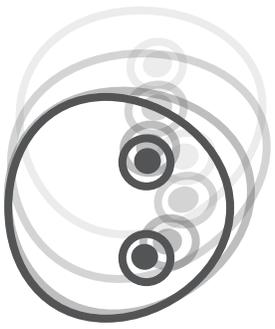
In-between blurs help us add a “snap” of speed to our movies. You might need a superhero to fly fast, a race car to speed off, or a snowball to fly fast. Use the *In-between blur*. *Speeding-up* and *Slowing-down* patterns use too many pictures for this kind of an animated effect. The audience cannot tell a long piece of clay with multiple eyes was in for 1/15th of a second, they just see a powerfully fast effect! Of course a sound helps the illusion. Add a “whoosh” SFX!



Inbetween blur with Wind-Up & Follow-Through

Step 1

15 Pictures of still face.
Then Wind-up with 3
tilting pictures to left.
Hold for 3 pictures before
step 2.



Step 2

1 Picture here with long Inbetween.



Step 3

Follow through with
3 pictures tilting to
the right. Hold for 3
pictures before step 4.



Step 4

1 Picture Here With Long Inbetween



Step 7

Follow through
with 4 pictures, tilting
to the right, then going
to regular face.

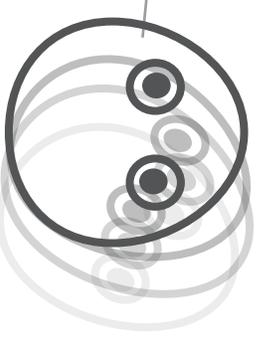
Step 5

Tilt to the left 3 pictures,
then hold for 3 pictures
before step 6.



Step 6

1 Picture here with long Inbetween.





Recipe 19: Blinking is Thinking

What You Will Learn

You will discover the power of blinking in animation. When your character blinks, your audience will become more engaged with its emotions. You will learn how to create the illusion of eye movements and blinking in a way that will make your characters seem more natural and life-like.

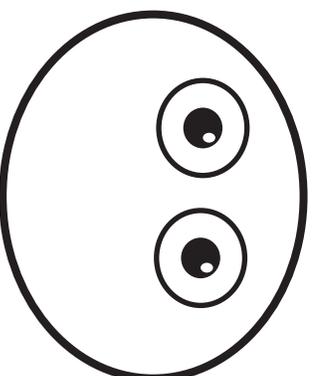
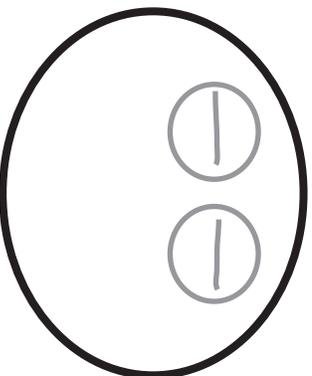
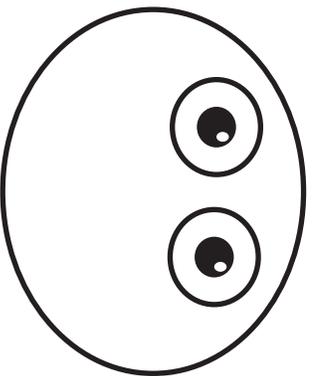
You will explore and discover the optimum timing for blinks. This will be accomplished by experimenting with the math.

Why Is This Important?

In animation we look for ways to create the illusion of life. When you master the art of blinking, along with facial expressions and talking formulas, your characters will look like they are thinking. Your audience will think right along with them. Looking at a character blinking creates a connection between your audience and your character. For some mysterious reason, blinking means thinking.



Blinking Is Thinking



Step 1

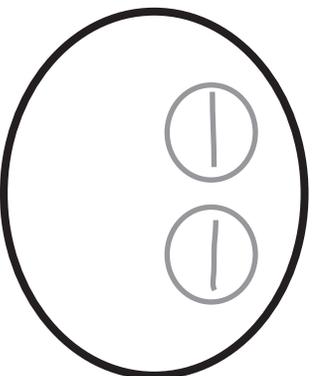
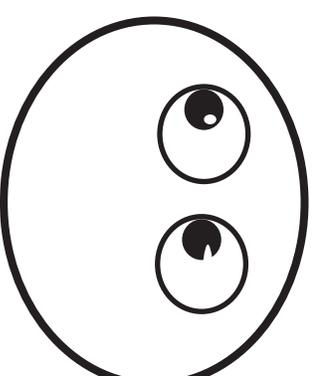
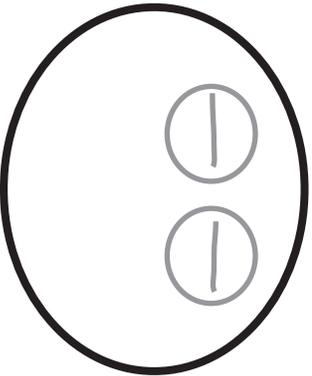
Take 15 Pictures

Step 2

Take 3 Pictures

Step 3

Take 15 Pictures



Step 4

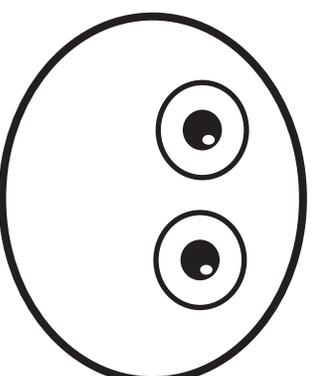
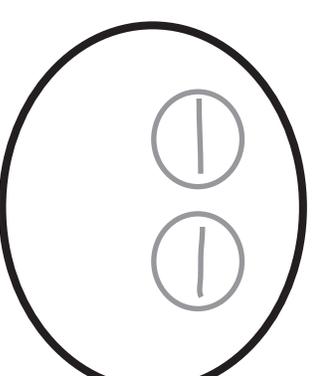
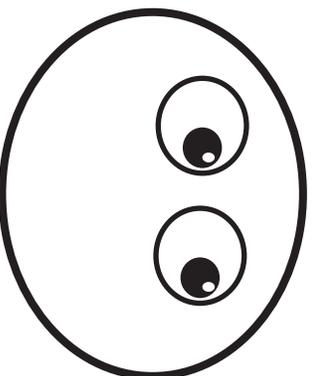
Take 3 Pictures

Step 5

Take 15 Pictures

Step 6

Take 3 Pictures



Step 7

Take 15 Pictures

Step 8

Take 3 Pictures

Step 9

Take 15 Pictures



Recipe 20:

Talking - Lip Synching

(Voice Overs = V.O.)

What You Will Learn

You will learn how to create the impression your character is speaking. By using different mouth positions in a random order, you will create a “speaking loop” which will help you synchronize your voice to the animated lip movements. You can create a short mouth animation which will be copied and pasted to match anything your character might say. This is called synchronization.

Why Is This Important?

Voicing your character may be the most important part of animated storytelling. In feature film animations, the voices are finished **BEFORE** the animation process starts. The animators match the lips of the characters to the pre-recorded voices. This takes years of work. We do V.O. last! Trust us, it will appear that the character is mouthing your words exactly. A *super-secret* recipe indeed!



Talking - Lip Synching

Step 1

Begin by setting mouth #1 on the face.

Take 15 pictures.

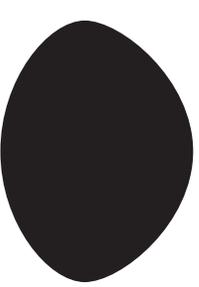
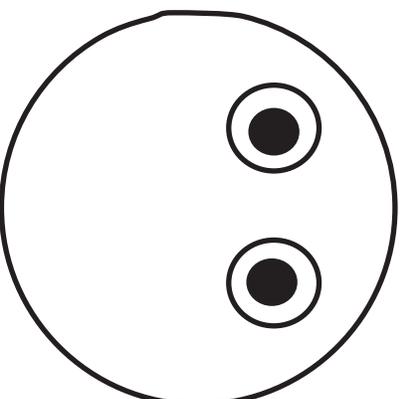
We need 15 pictures of nothing happening before the speaking begins.



Step 2

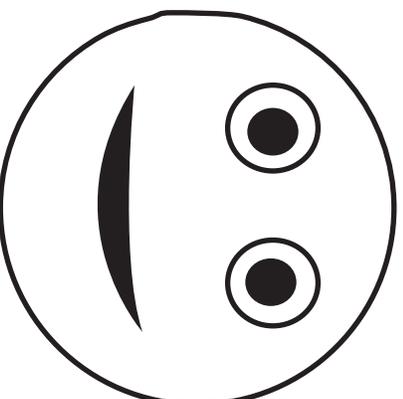
Continue to take 1 picture at a time, laying different mouth shapes on the face for each picture. Have fun turning the shapes upside down to get more variety.

Take 30 separate pictures of random mouth shapes . We will have a two second loop to use with our voices later.



Step 3

Finish by laying mouth #1 on the face and taking 15 pictures.





Recipe 21: Make a Movie

What You Will Learn

You will learn to complete a short animation using all the recipes in the White Hat area. You will use your new skills in service of a story. You will learn the importance of framing a scene. You will be introduced to shot selection too. *Close-ups* are for emotion, *Medium-shots* are for speaking, and *Long-shots* are for settings and scale.

You will improvise with your voice-overs to tweak the meaning of the story.

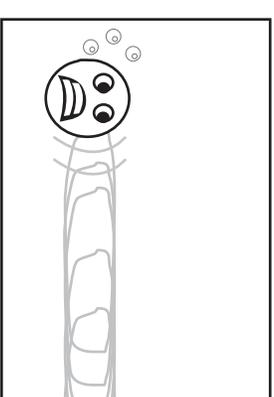
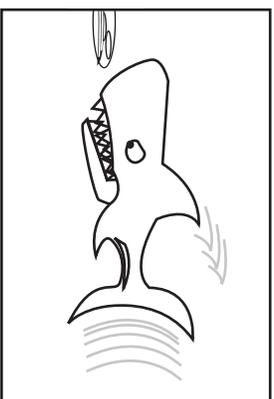
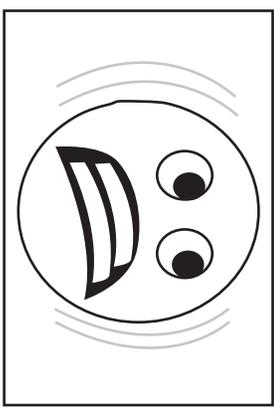
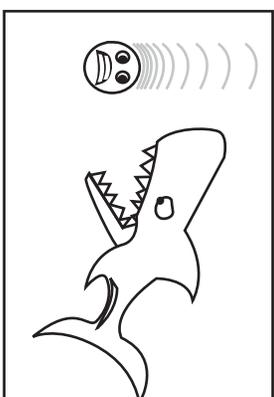
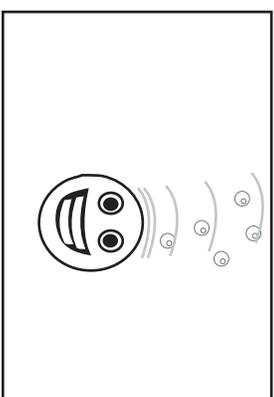
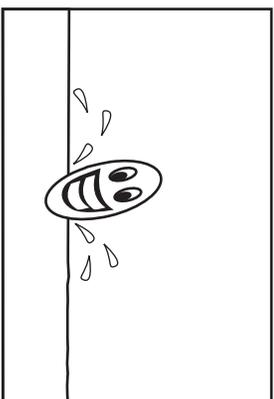
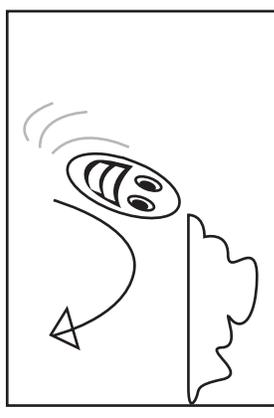
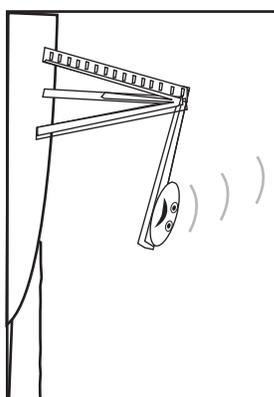
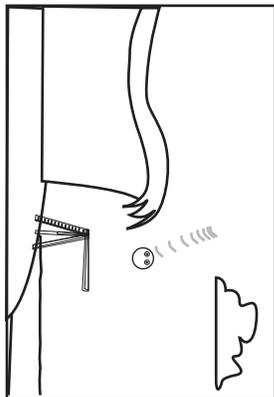
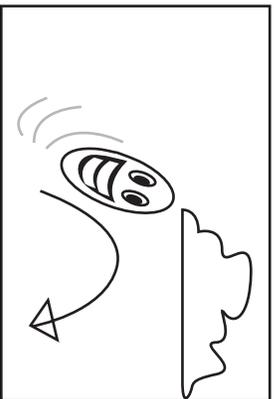
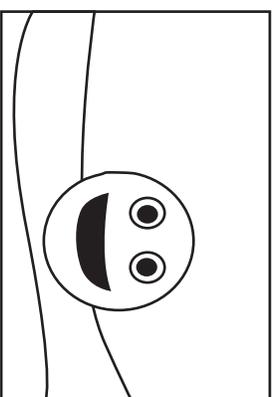
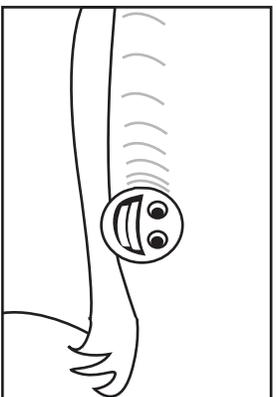
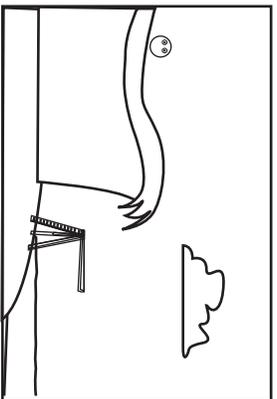
Why Is This Important?

So far we have isolated the most important skills in animation. Combining all the basic animation concepts into one movie gives us perspective on how and why we use these new skills. The introduction to scene layouts and shot selection will bring us closer to being able to compose our own original movie later. If you finish this recipe, this makes you an animator!

Bon Animate!



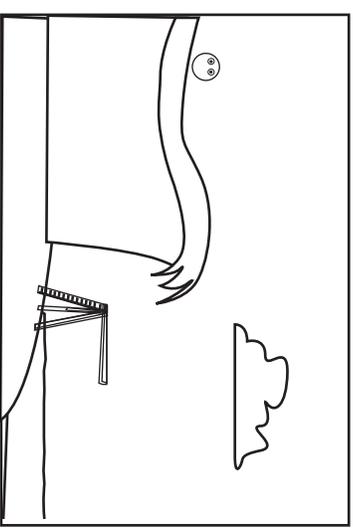
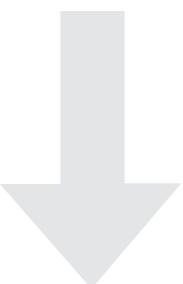
Summary: Storyboard



Summary: Camera Positions

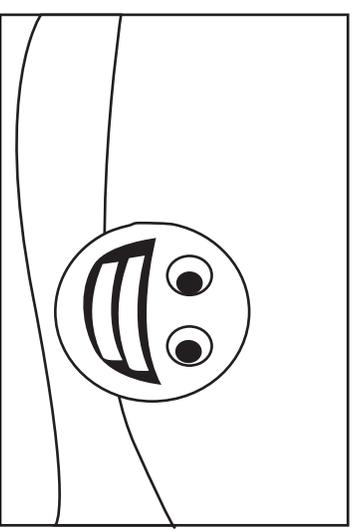
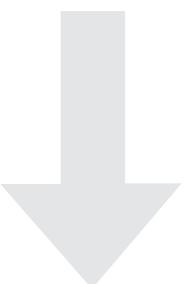
Long Shot

The camera is a “long” way from the action, so we can see the setting of our movie. It also gives us a chance to see size differences. For instance, the height of the cliff compared to the size of our character.



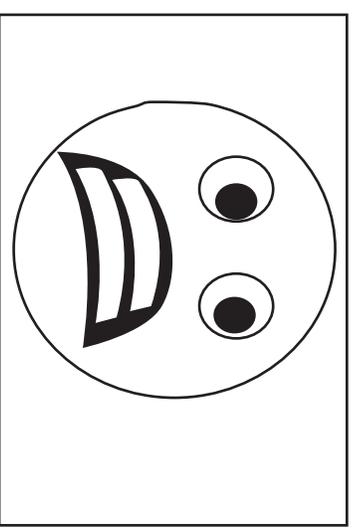
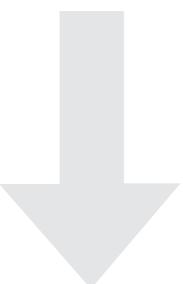
Medium Shot

Medium Shots are for getting a good look at your character. This is a great type of camera position for speaking scenes too.

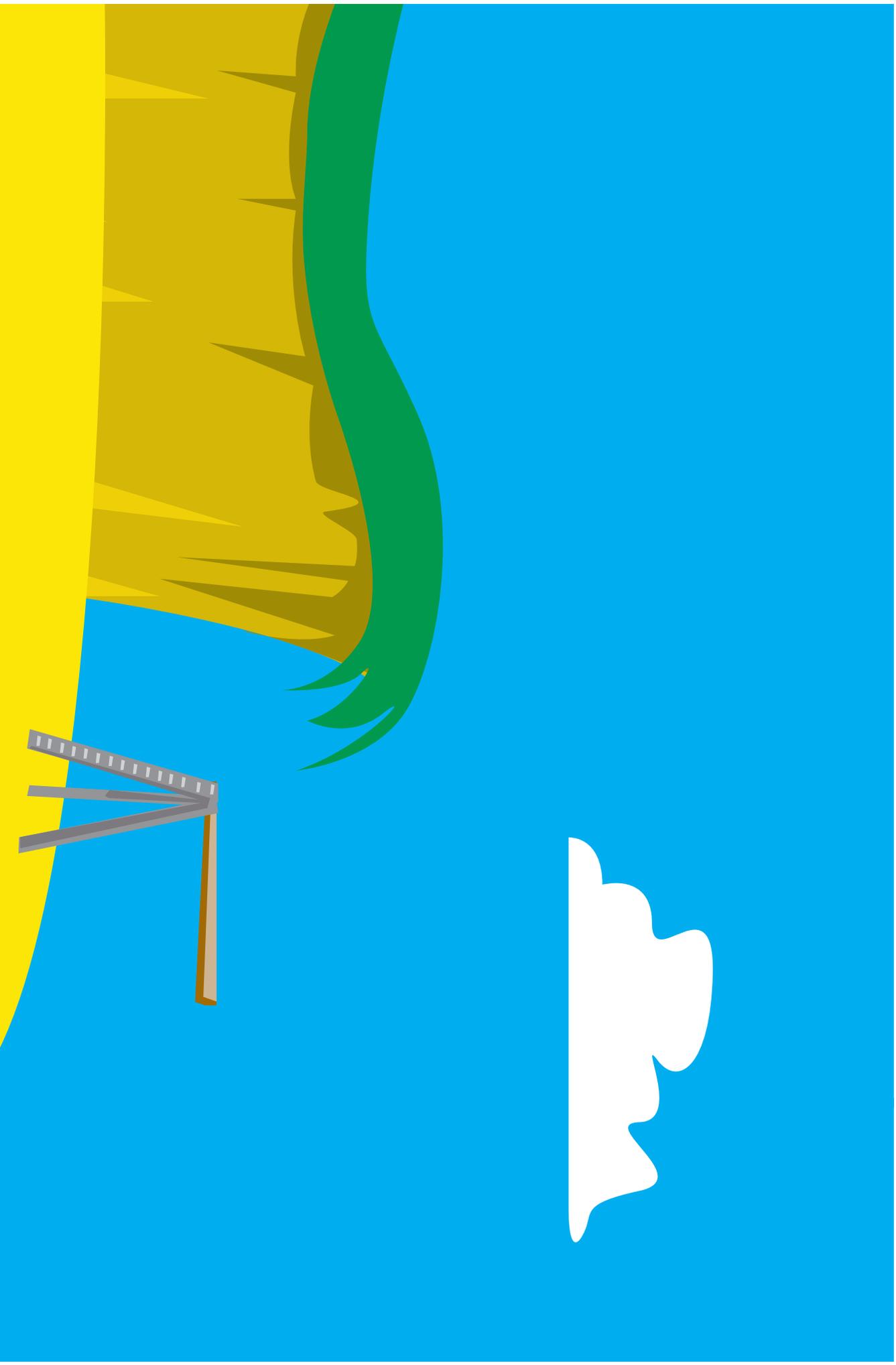


Close Up

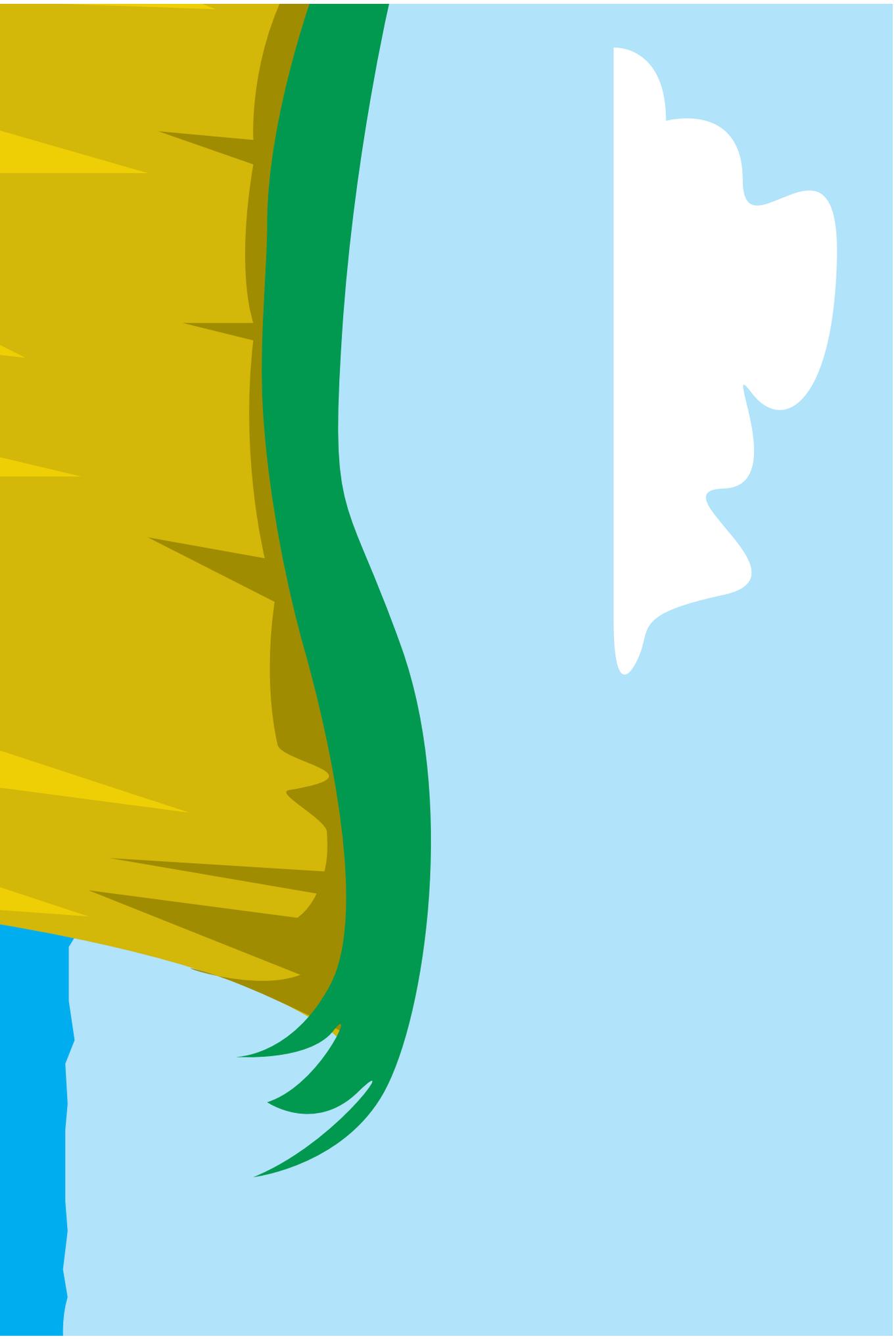
Close up shots are great for emotions. Get the camera up really close to your character's face when worry, fear, happiness, sadness, crying, or any other intense emotion happens in your story.



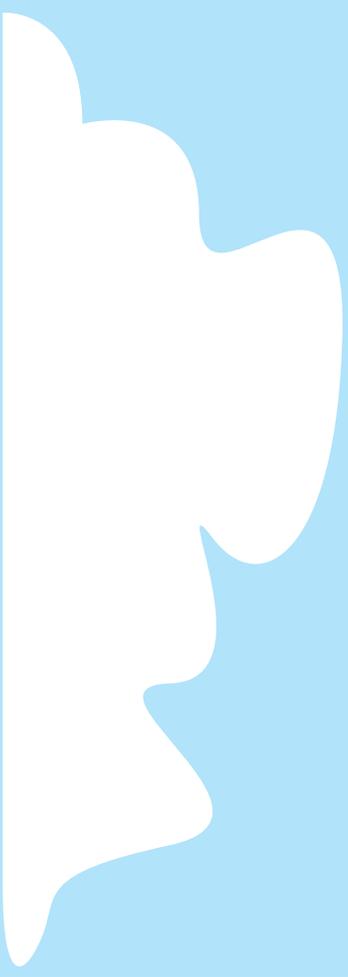
Scenes 1 & 6



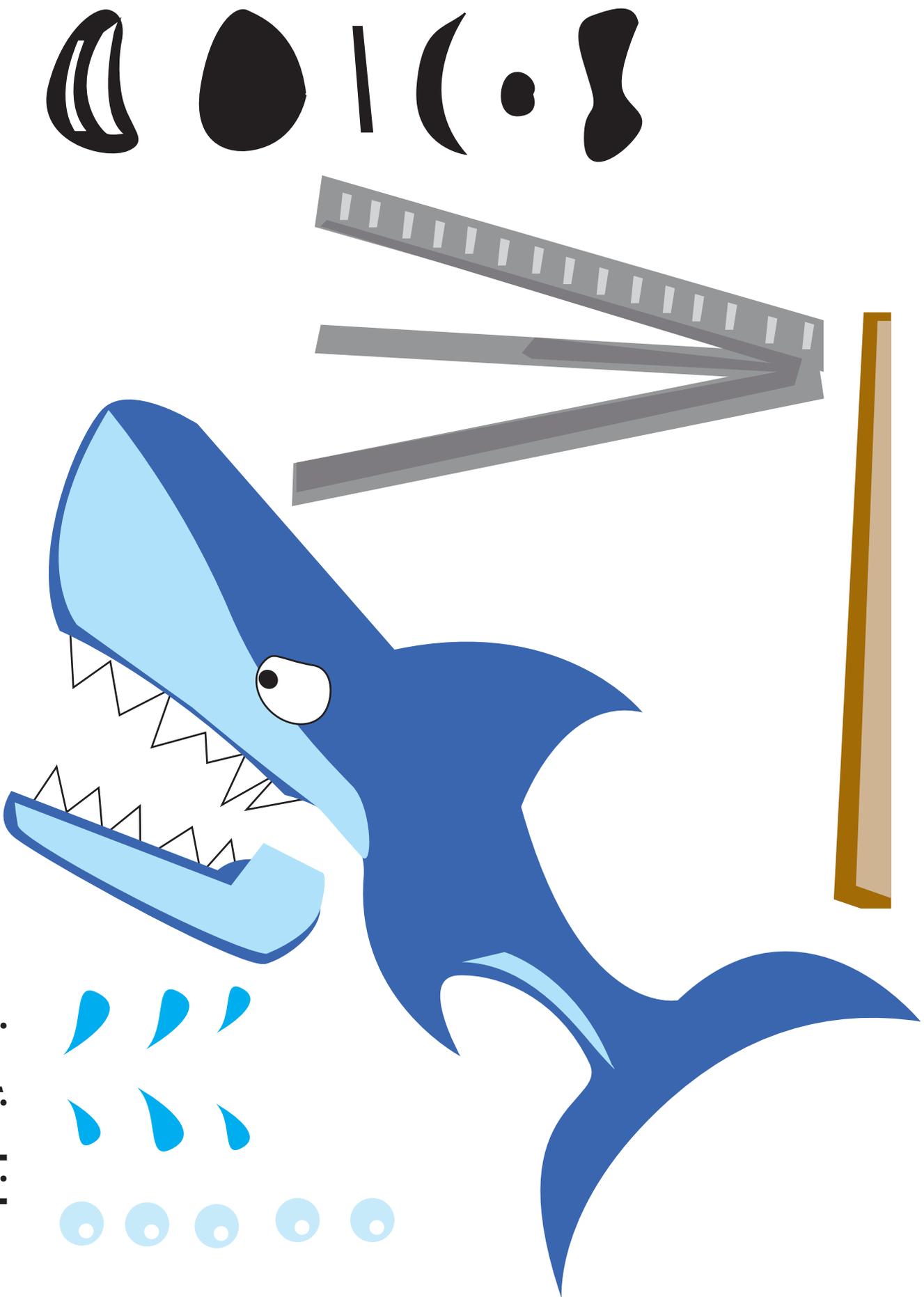
Medium Shot: Scene 2, 3, 4



Medium Shot: Scene 5, 8

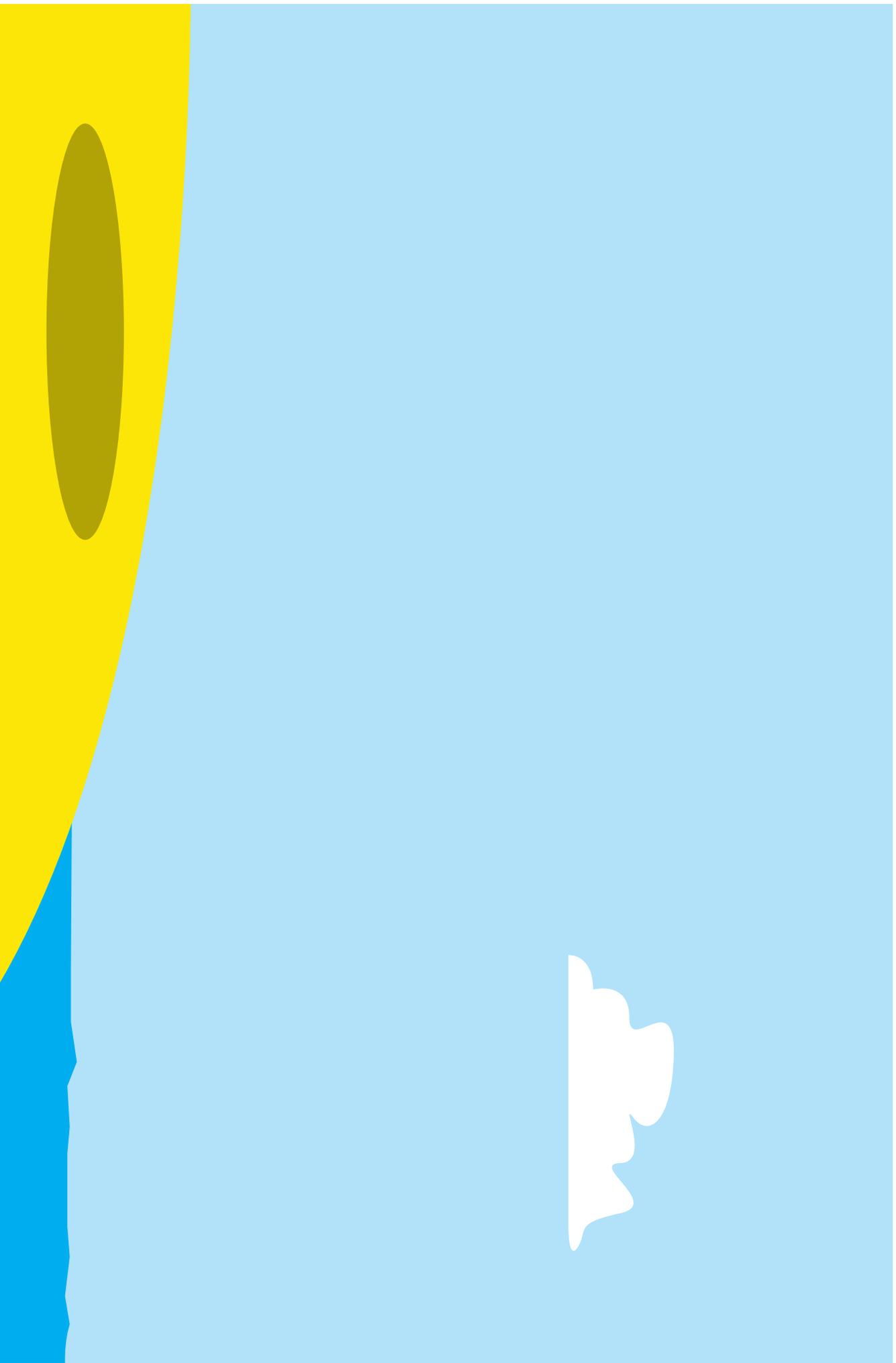


Cut-outs



Long Shot: Scene 9

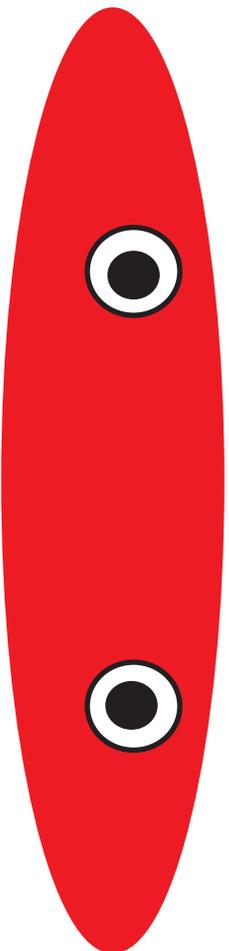
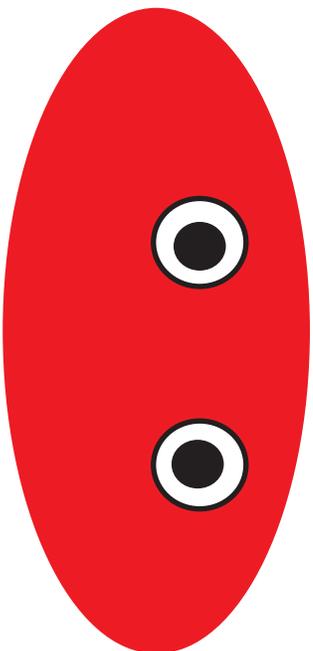
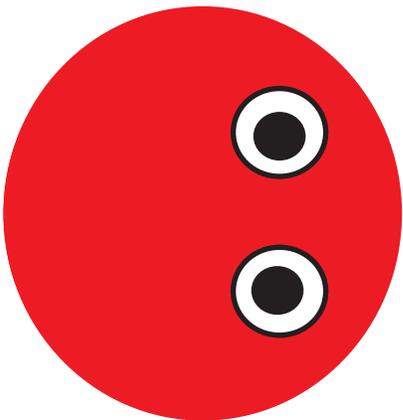
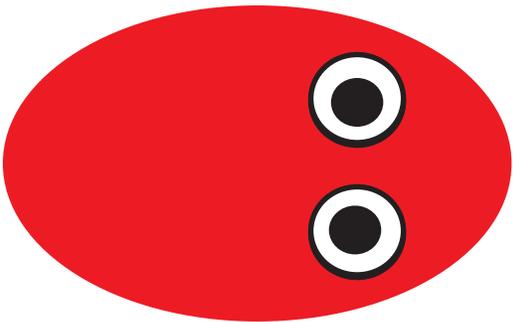
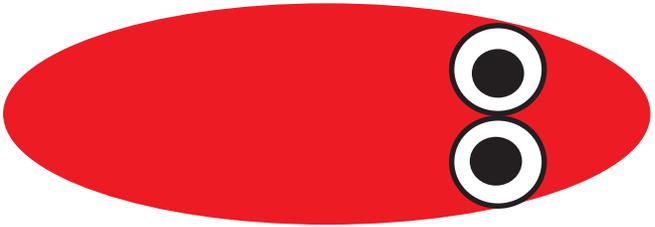
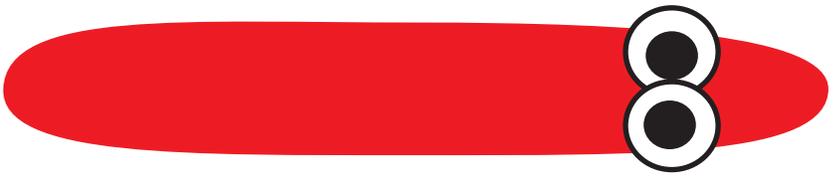
Long Shot: Scene 7



Scenes 10 - 14



Squash & Stretch Cut-outs



Blinking Inbetween Blur Bouncing Ball

