Describe each principle of animation and what it is used for/why it is important for making animations come to life

1. Squash and Stretch

Animated objects will get longer or flatter to emphasize their speed, momentum, weight, and mass.

More S&S = softer object (water balloon), Less S&S (stiffer object)

Applies to characters (When landing, stretch, then squash once touchdown)

Facial Expressions can have it too

Keep volume of the object consistent (as ball gets longer, it gets flatter, and as it gets wider, it gets shorter)

Do not overdo

1. Anticipation

Character prepares for an action (gives the audience a clue and makes it look more realistic)

Before jumping, crouches down to build energy, before punching, wind up, before running, the wind up.

Prepares audience for the next action

Multiple levels of anticipation (windup for the windup)

1. Staging

Presentation of ideas so that it’s clear

Controlling the audience’s eyes (look at this, now this, and finally this)

Camera is important in staging (far away = big actions, close up is good for expressions

Let one action of one character finish before starting the next action, so that the actions are not competing

Middle of the shot or within the middle third

Sometimes its good to insert pauses to let the viewer handle some actions

When text is shown, it should remain on screen long enough to read it three times.

Conveying ideas (over the top exaggeration)

1. Straight Ahead/Pose to Pose

Two methods use to animate drawing

Straight ahead is when you draw all of the frames one after another

Pose to pose is when you draw the key frames and fill in the rest afterwards.

Pose to pose is better for actions because you have a better idea of the action earlier (can decide where they end up and work backwards)

Straight ahead can change character size

Straight ahead is good for animation that is unpredictable (ex fire, water, dust, explosions)

Hard to predict pose to pose

Ears, tails, hair, and other unpredictable things could be used by straight ahead.

Pose to pose: Keys, extremes, breakdowns, in battening

1. Follow Through/Overlapping Action

Stuff drags when a character moves

Follow through = parts of body keep moving after the character stops

Overlapping action = offset of main body and other parts

Main body moves, tip of appendage should be last to catch up and farthest forward when main body stops

Amount of drag says something about mass

Makes animation more interesting

1. Slow In & Slow Out

Movement starts slowly, middle is fast, end is slow

Robots are only thing that moves at a constant speed

In between the drawings closest to the extremes

1. Arcs

Circular paths

Movement of x axis stays the same, but y axis has an arc

Fast movements have arcs in smears (filled in between same color, slightly transparent, fragmented towards end of action)

1. Secondary Action

Gestures that support the main action

Staging is important in secondary action

1. Timing

More frames = slower object

Fewer frames = faster object

Standard is 24 fps (for movies)

If drawn on every frame, it’s drawing on ones, every other frame, drawing on twos, etc.

Very common to draw in twos, cuts work in half, makes slow actions look smoother, more lively fast animations

Very fast action should be ones

1. Exaggeration

Take everything to the next level

If a character is sad, make him sadder, bright, make him brighter, worried, make him more worried, wild, and make him wilder

Exaggeration = more convincing, not more distorted

1. Solid Drawing

Volume, weight, and balance (basically 3d drawing)

Line on sphere must follow contour of sphere’s surface

Basic drawing = use simple shapes (spheres, cubes, cylinders, not circles, squares, and rectangles)

Include overlap whenever possible

Try to avoid symmetry in lines

1. Appeal

Characters need to be pleasing to look at

Applies to every character (hero, villain, everyone)

Appeal != good looking (at least, not all the time), but interesting

Dynamic design = + Appeal

1. Use variety of shapes (Basic shape design of a character)
2. Proportions (magnify what’s interesting, shrink what’s ugly or boring) (ex. Enlarge head & eyes, make body smaller, and hands larger)
3. Keep it simple (too much is overcomplicated and can detract from original purpose)