

Animation has been a part of history for over 100 years. In 1832, the Phenikistiscope was invented. This device had each frame drawn to give the appearance of an animation. Later, in 1833, the zoetrope was invented. Similarly, in 1877, the proximiscope was invented. All of these devices had the principle of straight ahead action, which was the process of drawing or photographing each frame at a time to create an animation. 1928 was a groundbreaking year because during that time, the first full length animation with audio was released, entitled "Steamboat willy." This animation was created by Walt Disney using cel animation. From then till now, there were many types of animation, like rotoscoping, which is drawing and painting over footage and photos. Many things made animation more efficient, like blurs and looping frames, which was very apparent in Scooby Doo. Studio Ghibli, a famously beautiful studio, created my Neighbor Totoro using cel animation. More recently, animation switched to digital, which was still cel animation, but more efficient and easier to keep track of. Shows like Bob's Burgers and Family Guy were created using digital cel animation. Much more recently, 3d computer animation has become a thing. While all of these devices are very different, and while the style of animation can range from 2d and black and white, to 3d and complex, all animations have something in common.

The one thing that they all have in common is the 12 principles of animation. The 12 principles of animation is what makes animation so interesting and engaging. The first principle is called "Squash and stretch," which gives the viewer a sense of weight and mass when moving. For example, a rubber ball would squash down when touching the ground, while a bowling ball would not change its form at all. The second principle is called "anticipation," which focuses on what is going to happen next. For example, someone wouldn't just jump, they would bend down to get momentum to jump. The third principle is "Staging" which is used for drawing the audience's attention to what they want to happen. For example, the thing that the animator would want to be focused on would have its attention drawn to it. The fourth principle is called "Straight ahead action and pose to pose," which basically tells what the animation style should be. Pose to pose works better for non chaotic movements, like running or jumping, whereas straight ahead action would be used for more unpredictable moments, like rain, fire, or tornadoes. The fifth principle is called "follow through and anticipate action," which refers to parts of something moving after the main thing has stopped. For example, if a person jumped, their hair would still be bouncing for a split second after they landed. The sixth principal is entitled "Slow in and slow out" which helps give the viewer a grasp on speed. A car doesn't just immediately drive fast, it will take a bit of time to accelerate and pick up speed, as well as the car can't just immediately brake, it has to slow down to stop. The 7th principle are arcs, which naturally show movement in a non robotic way. The 8th principle, secondary action, are actions that help the main action. Take running for example. The main movement is the legs, but the secondary movement can be the arms pumping. The 9th principle is called "timing," which focuses on realistic timing and reactions to what's happening. For example, somebody wouldn't flinch before someone makes a movement to throw a punch, rather, after they make the movement as a realistic and perfectly timed reaction. The 10th principle, entitled "exaggeration" is what makes cartoons and animations so appealing. Exaggerate the movements, add more character, exaggerate the facial expressions. The character shouldn't just be surprised, the character should have their jaw literally on the floor. The 11th principle is called "Solid drawing," which basically focuses on keeping the drawing consistent and not changing the size of the animation. Last but not least, the 12 principle is "appeal. Appeal focuses on making the characters likable, engaging, and interesting to look at. Nobody wants a boring cartoon with

bland character design. The reason why animation is so engaging, interesting, and enjoyable is because of the principles of animation. Without it, there would be no animation, or rather, there would just be incredibly bad and boring animation. Throughout the years, animation has evolved, and it will continue to evolve as long as people are creative and expressive with their artwork.