**Definition of animation** – the technique of photographing successive drawings or positions of puppets or models to create an illusion of movement when the film is shown in sequence

**Types of animation:**

* Hand drawn animation – draw images on a transparent paper one frame at a time, start with rough drawings and run frames in sequence to make sure the animation makes sense. Once each drawing is complete, the animator will photograph each frame individually
* Vector-based 2D animation – computer generated using the same technique as hand drawn animation, but software is used with interpolation to provide action to the animation in between frames drawn on a tablet or using computer software
* 3D animation – character is created, and a skeleton helps animate the character. Individual poses are created, and the computer software moves from one pose to the next by interpolation to create movement
* Stop motion – uses objects, created by clay or puppets, that are photographed in a sequence to create the illusion of movement

**Production pipeline:**

In the production pipeline, animation is one of the final steps in the pipeline, it comes before vfx but it should be accomplished once the model is made, the texturing and rigging of the model is finished as well.

Artists can start animating characters based on the storyboard. With computer 3D animation, the artist only needs to create the main frames and the computer will move between them

**Rigging**

Used in skeletal animation for representing a 3D character model using a series of interconnected ‘bones’

Process of creating the bone structure

Rigging allows for position, rotation and scale to be changed

Rigging has a hierarchal system where each bone is in a parent/child relationship with the bones connected to it

*Weight scale:*

* Weight controls how much influence a bone has over a section of the mesh
* Weight painting is essential – computer can automatically do it but finer details can be done manually

*Inverse kinematics:*

* Reverse the default forward kinematics
* Mostly used for arms and legs or things like tails

Constraints are key to rigging as well, some bones have restrictions applied to their movement

By recording the bones along the timeline, animations can be recorded.