ANALOGUE CONSUMER AUDIO FORMATS

AoS 3: ANALOGUE HARDWARE

Vinyl

- A **master** disc would be produced and all consumer discs would be pressed from it
- **Main format** for commercial music **consumption** until the mid **80s**
- Became **less** popular as **cassettes and CDs** grew in use
- Growing in popularity now due to consumers preferring the sound

- Grooves are cut into a disk with small bumps
    - A master disc would be made and all other consumer discs would be pressed from it
    - A needle is placed into the groove which vibrates, recreating the original audio by converting the vibrations into an electrical signal
    - This is amplified by speakers so the consumer can hear it
    - These grooves and bumps are a physical representation of a track's waveform
- Lower frequencies would cause the needle to move too much so they are reduced on the record and added back through EQ when the record is played back
- The consumer discs would have the same grooves and bumps as the original
- Singles/EPs would be released on 7" discs and Albums on 12" discs
- Up until the 60s, many artists would release both mono and stereo versions of their music
    - The mono mix was more important as most consumers would be listening

on mono equipment
    - As more consumers gained access to stereo listening devices, the stereo mix became more important

- Almost obsolete in the 90s

Pros and Cons of Vinyl

Advantages	Disadvantages
Some argue that vinyl sounds more 'authentic/warmer'	Not very portable
DJs still use physical records for beat-matching and scratching	Very fragile
Has become more popular in recent years	Requires a lot of maintenance
	Rumble prone

- Warmth in part due to tape saturation

- Many vinyl records have become collectable items and can sometimes be worth lots of money

- Susceptible to scratches which can cause the needle to jump out of place
- Can warp if exposed to heat

- Things like dust can affect the sound by causing crackle

- Frequencies below 30Hz are not well supported on vinyl

Cassette

- Utilise the same technology as **multitrack tape** but **smaller**
- The signal being recorded would **magnetise** the iron oxide particles on the tape
- This information is read by the **playback head** which converts it to an **electrical signal**

- First became popular in the 70s
- Cassettes would use fewer tracks than studio multitrack tape
- The erase head on a cassette recorder resets the polarisation of the iron oxide particles

Pros and Cons of Cassette

Advantages	Disadvantages
Cheaper than vinyl (when first introduced)	Tape can get tangled/snap
Tape is protected in the casing	High maintenance
Longer recording times than vinyl LPs	Tape deteriorates over time
More portable than vinyl	Hiss prone

- The protection makes the tape harder to scratch
- Could store more tracks on them
- Cassette recorders had to be cleaned regularly to keep them working
- Noise reduction technologies such as Dolby and dbx were developed in response to this

Wow and Flutter

- The **speed** at which tape turns at when recording is linked to the **pitch** of the track
- **Variations in speed** during recording and playback are audible as small changes in **pitch**

- Wow refers to low-frequency speed variation and is common on vinyl records that are badly warped or have a centre-hole punched slightly off-centre
- Flutter refers to high-frequency speed variation and is common on cassettes with a capstan that turns at an uneven speed