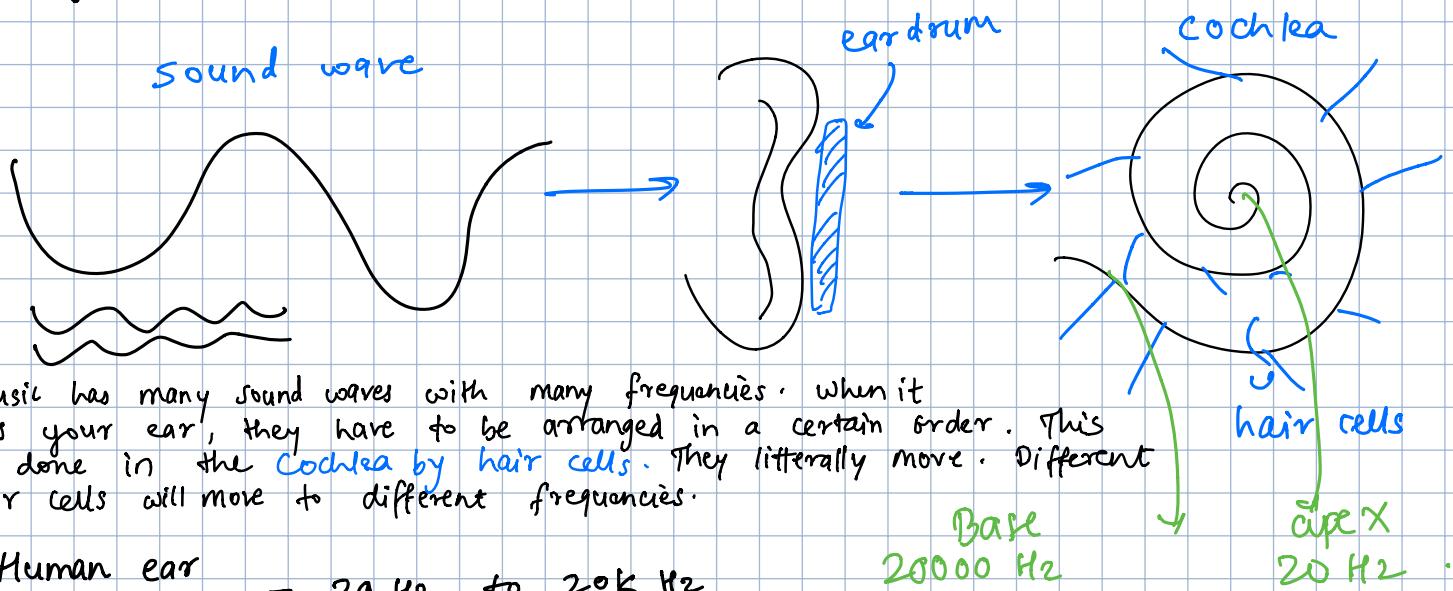




MUSIC

what is music? It is a **SOUND WAVE**.
 ↳ Frequency (in Hz)
 ↳ Amplitude (Volume)

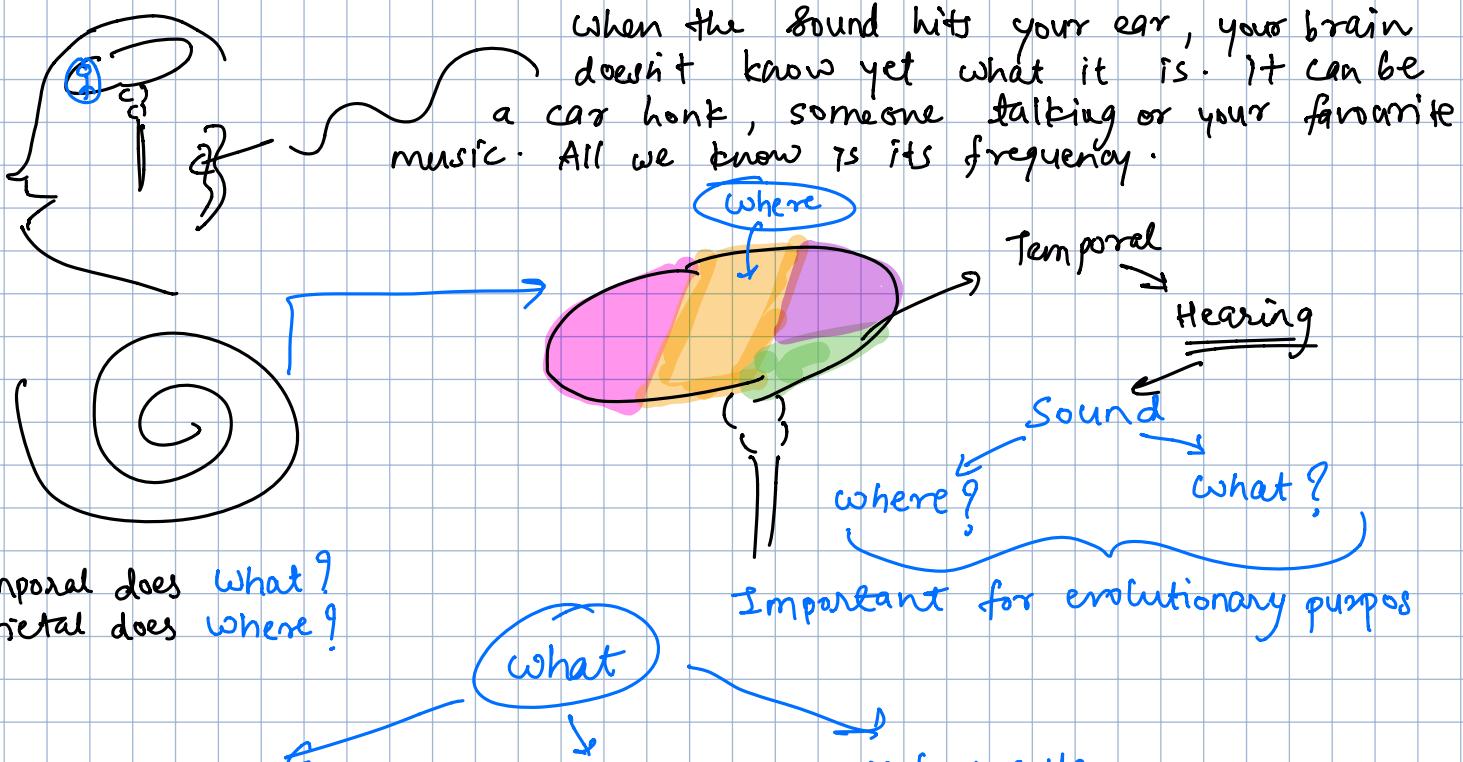
Everything you hear is a sound wave. What is so special about music?



Music has many sound waves with many frequencies. When it hits your ear, they have to be arranged in a certain order. This is done in the **cochlea** by **hair cells**. They literally move. Different hair cells will move to different frequencies.

Human ear pitch capacity - 20 Hz to 20k Hz

Dolphins can hear - 2Hz to 200khz Hz. They can hear more sounds than we don't even know exist.



Sound

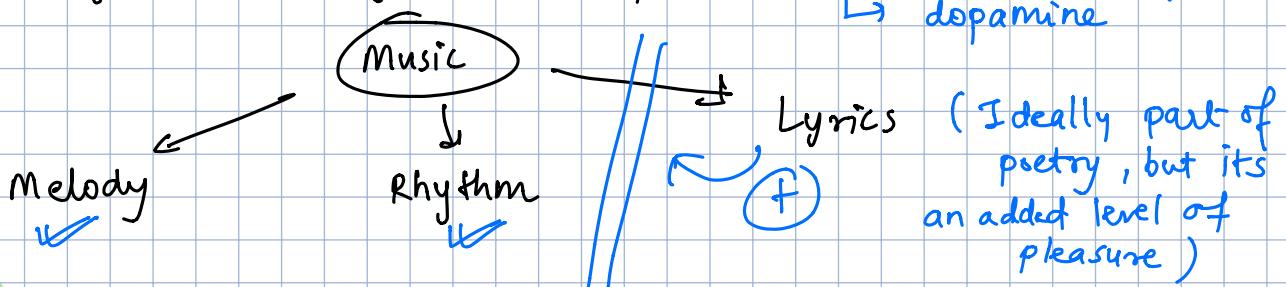
- roar of tiger
- sound of water
- familiar stuff

Speech

Higher pattern
(something which I have not heard / picking up)

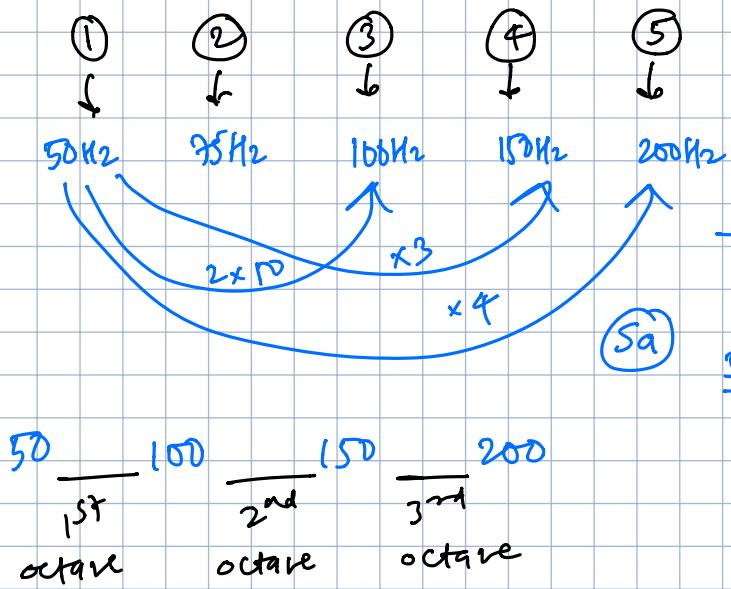
music → sound in pattern

Everytime your brain figures out a pattern → it rewards itself
↳ dopamine



① Melody

Notes



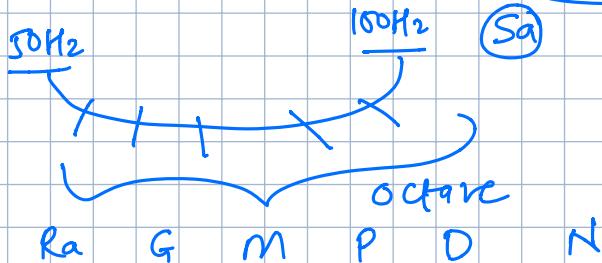
Music is multiple notes put together when they hit your ear, it performs mathematical calculations on it.

↳ π , \leq

↳ multiples

→ calculates the relationship

Harmonic



Brain realizes this pattern of octaves and becomes happy.

② Rhythm → Distribution of notes in time

↳ beats per second.

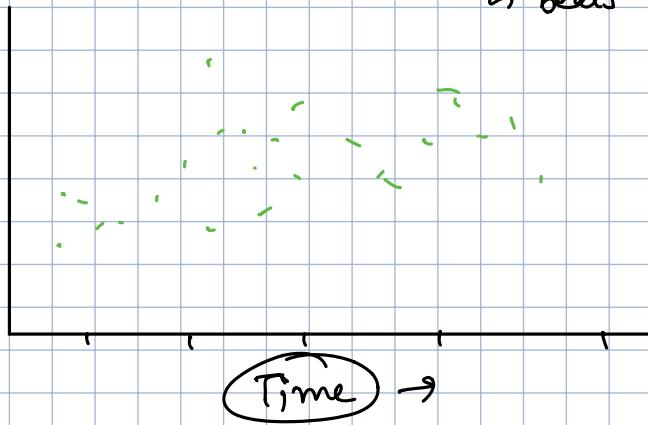


Brain calculates this.
Just to make sense of music, the brain does insane amounts of calculations.

Imagine doing this voluntarily?

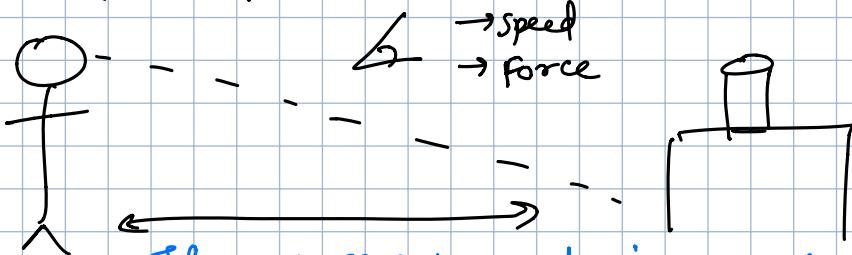


Too stressful?



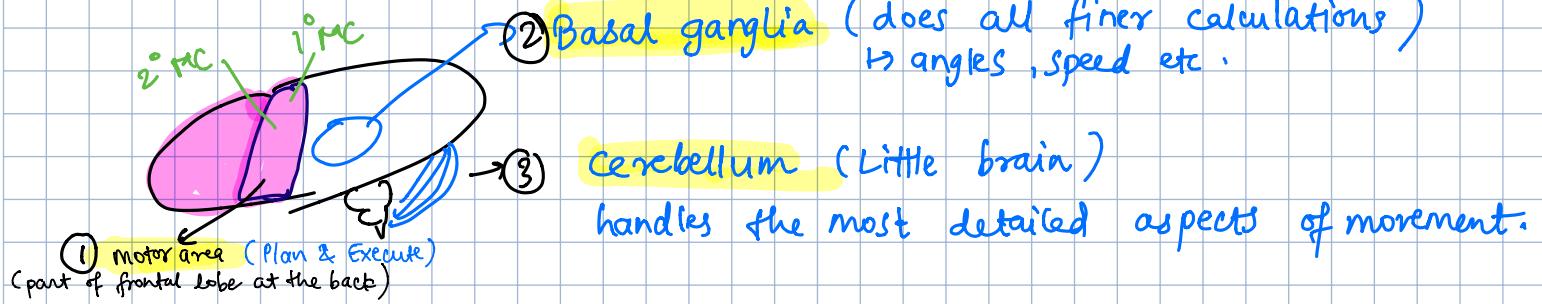
But the brain is super efficient at all these calculations.

what is one type of calculation that even calculators or AI systems cannot do efficiently? movement and coordination.



Just to pick up a glass of water, the brain does insane calculations.

This primitive function is so evolved and important and complicated, that one area cannot do it.



② Basal ganglia (does all finer calculations)
→ angles, speed etc.

③ Cerebellum (Little brain)

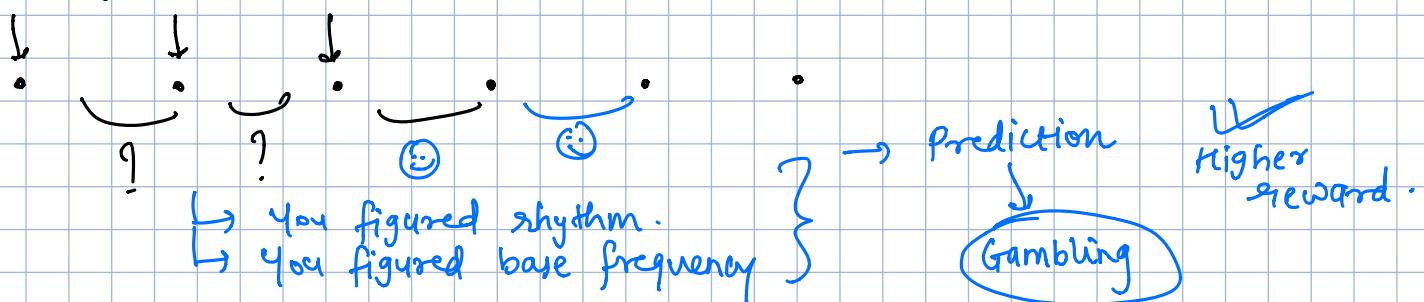
handles the most detailed aspects of movement.

Music → hijacks the above → utilizes these to perform calculations required for music.

Music activates the motor cortex. Analyzes music → movement??
Hence you like dancing as well.

You get the urge to move as well involuntarily. Dancing as well.
Tapping your foot, bobbing your head etc.

Hearing songs for the first time...



→ Prediction
Higher reward.
Gambling

Music touches almost all parts of the brain.
All organisms have a motor system and react to music.

↳ Live concert

Visual pattern

10000

oxytocin

Momentary bit of social bonding

→ brain is flooded with hormones and you get happy!

Goose bumps - when you find a pattern that excites you very much, as much as you get a reward, there is a small part of threat also detected.

(This is so new and awesome, I'm writing this)

reward → fear → am I missing something, am I
sure this is not threatening)
Autonomic nervous system gets activated and - so extraordinary that you tend
you get goosebumps . to be careful .

Trying to calculate
music is like
Centipede's dilemma?

"The Centipede's Dilemma" is a short poem that has lent its name to a psychological effect called the **centipede effect** or **centipede syndrome**. The centipede effect occurs when a normally automatic or unconscious activity is disrupted by consciousness of it or reflection on it. For example, a golfer thinking too closely about her swing or someone thinking too much about how he knots his tie may find his performance of the task impaired. The effect is also known as **hyper-reflection** or **Humphrey's law^[1]** after the English psychologist George Humphrey (1889–1966), who propounded it in 1923. As he wrote of the poem, "This is a most psychological rhyme. It contains a profound truth which is illustrated daily in the lives of all of us". The effect is the reverse of a solvitur ambulando.

Getting trained in music at young age is good for brain development.

lots of questions ...