■ Audio / Media API Cheatsheet

1. Audio Constructor

```
const audio = new Audio("song.mp3"); // create audio element
audio.src = "song.mp3";              // set/change source
document.body.appendChild(audio);    // attach to DOM (optional)
```

2. Playback Controls

```
await audio.play();   // start (returns Promise)
audio.pause();        // pause, retain position
audio.load();         // reload element after src change
audio.currentTime=30; // jump to 30s
if(audio.fastSeek) audio.fastSeek(120); // approx. seek
```

3. Key Properties

```
audio.currentTime   // playback time (s)
audio.duration      // total length (s)
audio.loop = true   // auto-restart when ended
audio.muted = true  // silence output
audio.volume = 0.5  // 50% volume
audio.playbackRate=2; // 2× speed
```

4. Tracks / Subtitles

```
// Add <track> in HTML
// <track kind="subtitles" srclang="en" src="subs.vtt">
const track = audio.addTextTrack("captions","English","en");
track.mode = "showing";
track.addCue(new VTTCue(0,5,"Hello!"));
```

5. Useful Events

```
audio.addEventListener("canplay", ()=>console.log("ready"));
audio.addEventListener("canplaythrough", ()=>console.log("buffered enough"));
audio.addEventListener("timeupdate", ()=>console.log(audio.currentTime));
audio.addEventListener("ended", ()=>console.log("done"));
audio.addEventListener("error", ()=>console.log("error loading"));
```

6. Format / Codec Support

```
<audio controls>
  <source src="song.mp3" type="audio/mpeg">
  <source src="song.ogg" type='audio/ogg; codecs="vorbis"'>
</audio>
audio.canPlayType("audio/mpeg"); // "probably" | "maybe" |
```

7. Media Capture APIs

```javascript
// Mic/Camera
const stream = await navigator.mediaDevices.getUserMedia({ audio:true, video:true });
video.srcObject = stream;

// Screen
const screenStream = await navigator.mediaDevices.getDisplayMedia({ video:true });
```

8. MediaRecorder (Recording)

```javascript
const rec = new MediaRecorder(stream);
const chunks=[];
rec.ondataavailable = e => chunks.push(e.data);
rec.onstop = ()=> {
  const blob = new Blob(chunks,{type:"video/webm"});
  download.href = URL.createObjectURL(blob);
};
rec.start(); setTimeout(()=>rec.stop(),5000);
```

9. Web Audio API

```javascript
const ctx = new AudioContext();
const osc = ctx.createOscillator();
osc.type="sine"; osc.frequency.value=440;
osc.connect(ctx.destination);
osc.start(); setTimeout(()=>osc.stop(),1000);
```

10. Quick Browser Notes

```
- play() returns a Promise (handle rejections for autoplay)
- getUserMedia / getDisplayMedia require HTTPS + permission
- Always offer multiple formats (mp3, ogg, etc.) for compatibility
```