### Chromatic scale:

Chromatic scale: "12 equal frequency ratios" of $2^{6}(1/12)$ ["equal temperament"] = "12 semitones" (12s) or "half-steps" = "6 tones" (6t) or "whole steps".

#### C-major scale:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>maj7</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td>G</td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
</tbody>
</table>

#### Major scale:

Major scale: (Ionian mode of diatonic scale)

<table>
<thead>
<tr>
<th>1s</th>
<th>2s</th>
<th>1s</th>
<th>2s</th>
<th>1s</th>
<th>2s</th>
<th>1s</th>
<th>2s</th>
<th>1s</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td>G</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>C</td>
</tr>
</tbody>
</table>

### Interval

**Interval** = "pitch ratio" or "number" of "semitones."

- second"(2)" = "2 semitones = "1 whole step" [examples: C–D, E–F#]
- minor"third"(♭3, ♭3)" = "3 semitones [examples: C–E♭, E–G]"
- (major)"third"(3)" = "4 semitones = "2 whole steps" [examples: C–E, A–C#]"
- fourth (4)" = "5 semitones [example: C–F, E–A, F–B♭]"
- fifth (5)" = "7 semitones [examples: C–G, D–A, B–F♯]"
- sixth (6)" = "9 semitones [example: C–A♭]"
- (minor) seventh (♭7)" = "10 semitones [examples: C–B♭, D–C♯]"
- major"seventh (maj7, ∆7)" = "11 semitones [examples: C–B, D–C♯]"
- diminished"Intervāl"N (−N, °N, Ndim): "abstract one semitone"
- augmented"Intervāl"N (+N): "add one semitone"

### Chord

**Chord** = "2 + Intervals" starting at "root" of chord.

- major = "3 and"♭3" [e.g. 1–3–5–5, Cmaj = "C–E–G–B♭, "Am" = "C–E–A")"
- minor = "♭3" and "3" [e.g. 1–♭3–5–♭5, Cm = "C–E♭–G–B♭, "Am" = "C–E–A")"
- (dominant) seventh = "♭3" and "♭3" and "♭3" [e.g. 1–3–5–7, C7 = "C–E–G–B♭, "G7" = "G–B–D–F"]"
- minor"seventh" = "♭3" and "♭3" and "♭3" [e.g. 1–♭3–5–7, Cm7 = "C–E♭–G–B♭, Dm7 = "D–F–A–C"]"
- major"seventh" = "3" and "♭3" and "♭3" [e.g. 1–3–5–maj7, Cmaj7 = "C–E–G–B♭, Dmaj7 = "G–B–D–F♯"]"
- ninth = "3" and "♭3" and "♭3" and "♭3" [e.g. 1–3–5–7–1 (=9), "G9" = "G–B–D–F–A"]"
- augmented = "3" and "♭3" [e.g. 1–3–♭5, C+ = "C–E–G♭, "E+" = "E–G♭–C, "G♭+" = G♭–C–E"]"
- diminished = "♭3" and "♭3" [e.g. 1–♭3–♭5, C− = "Cdim = "C–E♭–G♭"]"
- diminished"seventh" = "♭3" and "♭3" and "♭3" [e.g. 1–♭3–♭5–♭7 (=6), Cdim7 = "C–E♭–G♭–A, Adim7 = "A–C–E♭–G♭"]"

Changing the root of a chord, "X/R" means play "X" with "R" on the bottom. e.g. C/E = "E–G–C... (=1 inversion of C)"

### Transposition

Transposition = "shift all" pitches" by" same Intervāl" [e.g. transposing "down" by" 4th gives F → C, B♭ → F, ...]"
Standard guitar tuning: E, A, D, G, B, E

This image has been removed due to copyright restrictions. Please see the image on page http://www.guitarnoise.com/images/features/guitar-tuning-pegs.jpg

Em chord diagram:

Compared to 3 to 3!

Fingering ("voicing") is not unique! Another Em chord:

Starts on 7th fret!

A few more simple chords:

Finger numbering:

\( \text{o} \) = strum the "open" string
\( \times \) = do not strum! (or mute by touching)

Image by MIT OpenCourseWare.