NB the examples used here to explain harmonica physics are for a C diatonic harmonica. Refer to Note Layout Chart and Keyboard Illustration of Chromatic Scale.

**Standard Bending**
For holes 1 to 6 the draw note is the higher pitched note in the hole.
For example, the 4 hole draw note D is higher in pitch than the 4 hole blow note C.
For holes 7 to 10 the blow note is the higher pitched note in the hole.
For example, the 9 hole blow note G is higher in pitch than the 9 hole draw note F.
( refer to Note Layout Chart ).
When we bend a note, we flatten the pitch of the higher note in the hole.
Therefore we draw bend on holes 1 to 6 and blow bend on holes 7 to 10.
For example, 4 draw note D flattens to Db, 9 blow note G flattens to Gb.

To bend a note we change the position of the tongue in the mouth which changes the shape of the resonance chamber of the mouth and throat.
Both reeds in the hole respond to changes in the resonance chamber to produce the bend.

The musical interval ( number of notes ) between the higher pitched note in the hole and the lower pitched note in the hole determines how many notes can be achieved using bending.
For example, the number of notes found between the 4 hole draw note D and the 4 hole blow note C is one which is Db ( refer to Keyboard Illustration ). This is the note we achieve when bending.
For example, the number of notes found between the 3 hole draw note B and the 3 hole blow note G is three which are Bb, A and Ab ( refer to Keyboard Illustration ). These are the notes we achieve when bending.

Quick rule for draw bends
The 1 hole draw bends 1 semitone.
The 2 hole draw bends 2 semitones.
The 3 hole draw bends 3 semitones.
The 4 hole draw bends 1 semitone being the same as the 1 hole just an octave higher.
The 5 hole draw bends but not a full semitone only a quarter tone.
The 6 hole draw bends 1 semitone.

Bending technique varies depending on the pitch of the note you are bending.
The lower pitched notes require more tongue movement, the higher pitched notes require less tongue movement. Therefore the bending technique varies across the holes of a harmonica and also across varying keys of harmonica.

Bending of notes can be achieved using the tongue block, U block and pucker / lipping embouchures.

An amazing fact, when bending a note, both the draw and blow reeds in the hole vibrate.
The reed you commence playing flattens in pitch during the initial phase of the bend.
The paired reed in the hole also vibrates rising in pitch to create the bent note during the latter part of the bend.
For example, the 2 hole draw note G when played and bent flattens in pitch, whilst the 2 hole blow note E also vibrates and rises in pitch to create the bent note F.
Thus both the draw reed and the associated blow reed participate in producing the bent note.
Likewise with blow bends. For example, the 8 hole blow note E when played and bent flattens in pitch, whilst the 8 hole draw note D also vibrates and rises in pitch to create the bent note Eb.
Thus both the blow reed and the associated draw reed participate in producing the bent note.
To personally test this take the cover plates off your harmonica. The blow reeds are on the top reedplate and the draw reeds are on the bottom reedplate. Placing your finger over the vibrating reeds whilst blowing or drawing stops them from sounding. For example, play 4 hole draw and bend the note down in pitch. Once the bend is achieved place your finger over the 4 draw reed to stop it vibrating. The bent note continues to sound as the associated blow reed is also vibrating to create the bent note.

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**Overbending**
The principle of both reeds in the hole vibrating to produce the bent note comes into play when considering how overbends are created.

Overblowing and overdrawing are specialised bending techniques utilising the reed which rises in pitch to achieve the desired note.

In overblowing the blow reed is played and bent but is choked and does not vibrate or sound. The draw reed, which also vibrates with the blow bend, rises in pitch to produce the overblow note.

For example, the 6 hole blow note G, when played and bent with overblow technique chokes, whilst the 6 hole draw note A also vibrates, sounding up in pitch to produce the overblow note of Bb.

The same principle applies to overdraws. In overdrawing the draw reed is played and bent but is choked and does not vibrate or sound. The blow reed, which also vibrates with the draw bend, rises in pitch to produce the overdraw note.

For example, the 7 hole draw note B, when played and bent with overdraw technique chokes, whilst the 6 hole blow note C also vibrates, sounding up in pitch to produce the overdraw note of Db.

Standard bending increases the range of notes available on the diatonic harmonica and contributes to its unique sound especially valued in the blues tradition.

Overbending, utilising the specialised bending techniques of overblowing and overdrawing, creates additional notes allowing the harmonica to be played chromatically with all 12 notes of the chromatic scale available. See Note Layout Chart for C Harmonica and Keyboard Illustration.

Howard Levy is a harmonica player who pioneered the use overbending to play diatonic harmonicas chromatically.

A basic harmonica modification which assists in playing overbends is reducing the gap between the reed and the reedplate. To gap the reeds, remove the cover plates and gently push each blow and draw reed down into the reed plate.