4. Widgets

Previous Section (3. Programming with Music) | Back to Table of Contents | Next Section (5. Beyond Music Blocks)

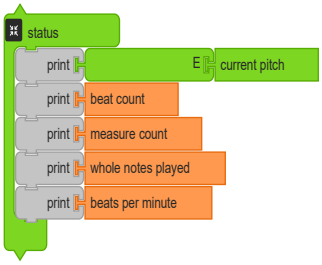
This section of the guide will talk about the various Widgets that can be used within Music Blocks to enhance your experience.

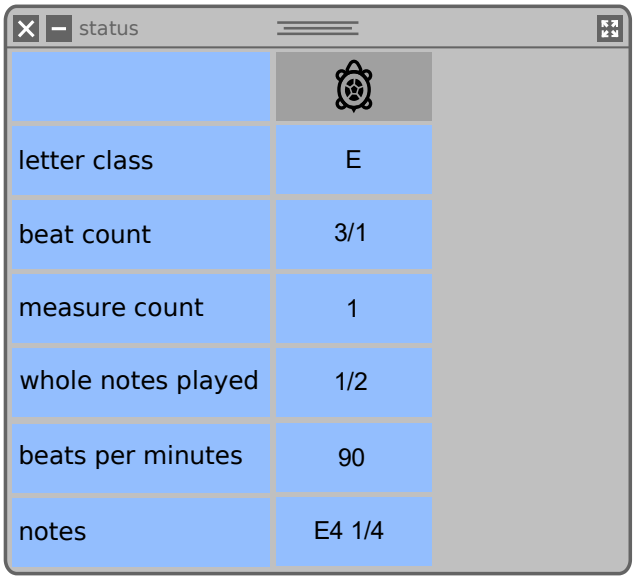
Every widget has a menu with at least two buttons.

You can hide the widget by clicking on the *Close* button.

You can move the widget by dragging its containing the window.

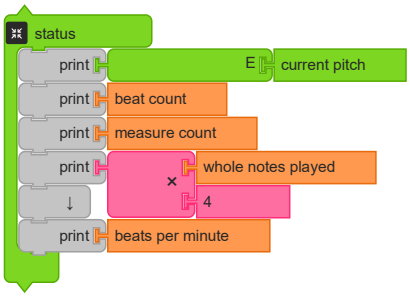
4.1 Status





The *Status widget* is a tool for inspecting the status of Music Blocks as it is running. By default, the key, BPM, and volume are displayed. Also, each note is displayed as it is played. There is one row per voice in the status table.

Additional *Print* blocks can be added to the *Status* widget to display additional music factors, e.g., duplicate, transposition, skip, staccato and slur, and graphics factors, e.g., x, y, heading, color, shade, grey, and pensize.

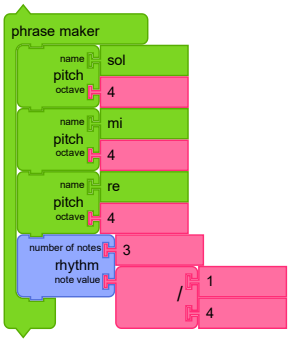


You can do additional programming within the status block. In the example above, `whole notes played` is multiplied by `4` (to calculate quarter notes played) before being displayed.

4.2 Generating Chunks of Notes

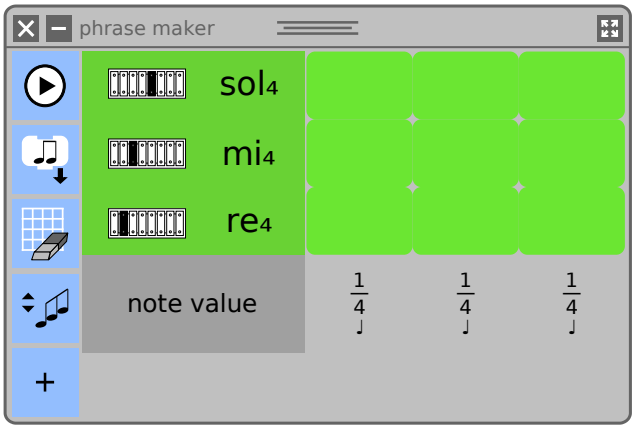
Using the Phrase Maker, it is possible to generate chunks of notes at a much faster speed.

4.2.1 The Phrase Maker



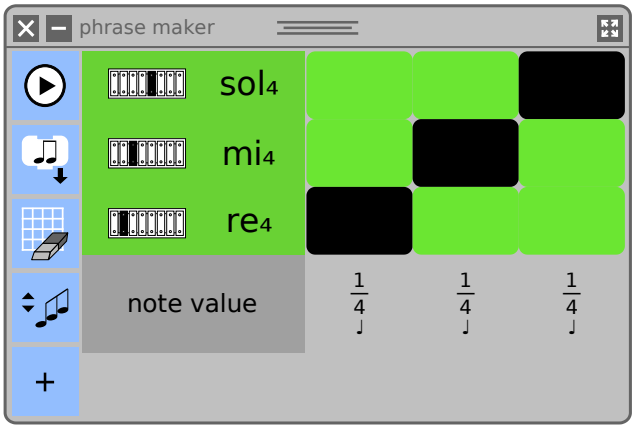
Music Blocks provides a widget, the *Phrase maker*, as a scaffold for getting started.

Once you've launched Music Blocks in your browser, start by clicking on the *Phrase maker* stack that appears in the middle of the screen. (For the moment, ignore the *Start* block.) You'll see a grid organized vertically by pitch and horizontally by rhythm.



The matrix in the figure above has three *Pitch* blocks and one *Rhythm* block, which is used to create a 3 x 3 grid of pitch and time.

Note that the default matrix has five *Pitch* blocks, one *Drum* block, and two *Mouse* (movement) blocks. Hence, you will see eight rows, one for each pitch, drum, and mouse (movement). (A ninth row at the bottom is used for specifying the rhythms associated with each note.) Also by default, there are two *Rhythm* blocks, which specifies six quarter `(1/4)` notes followed by one half `(1/2)` note.



By clicking on individual cells in the grid, you should hear individual notes (or chords if you click on more than one cell in a column). In the figure, three quarter notes are selected (black cells). First `Re 4`, followed by `Mi 4`, followed by `Sol 4`.

If you click on the *Play* button (found in the top row of the grid), you will hear a sequence of notes played (from left to right): `Re 4`, `Mi 4`, `Sol 4`.

Once you have a group of notes (a "chunk") that you like, click on the *Save* button (just to the right of the *Play* button). This will create a stack of blocks that can used to play these same notes programmatically. (More on that below.)

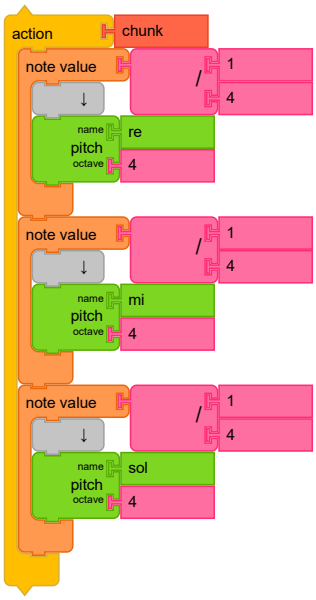
You can rearrange the selected notes in the grid and save other chunks as well.

The *Sort* button will reorder the pitches in the matrix from highest to lowest and eliminate any duplicate *Pitch* blocks.

There is also an Erase button that will clear the grid.

Don’t worry. You can reopen the matrix at anytime (it will remember its previous state) and since you can define as many chunks as you want, feel free to experiment.

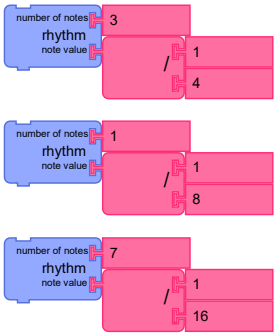
Tip: You can put a chunk inside a *Phrase maker* block to generate the matrix to corresponds to that chunk.



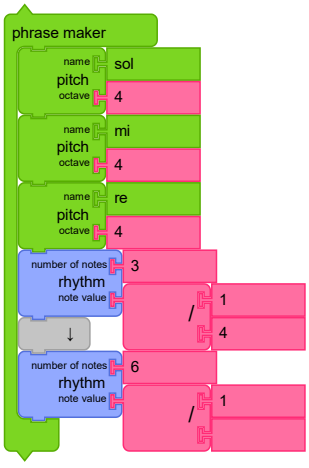
The chunk created when you click on the matrix is a stack of blocks. The blocks are nested: an *Action* block contains three *Note value* blocks, each of which contains a *Pitch* block. The *Action* block has a name automatically generated by the matrix, in this case, chunk. (You can rename the action by clicking on the name.). Each note has a duration (in this case 4, which represents a quarter note). Try putting different numbers in and see (hear) what happens. Each note block also has a pitch block (if it were a chord, there would be multiple *Pitch* blocks nested inside the Note block’s clamp). Each pitch block has a pitch name (`Re`, `Mi`, and `Sol`), and a pitch octave; in this example, the octave is 4 for each pitch. (Try changing the pitch names and the pitch octaves.)

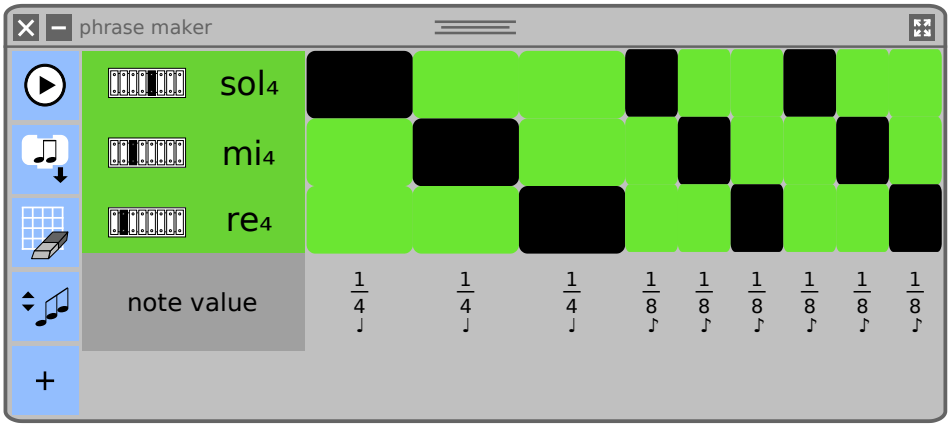
To play the chuck, simply click on the action block (on the word action). You should hear the notes play, ordered from top to bottom.

4.2.2 The Rhythm Block



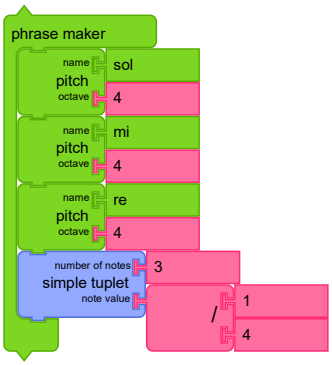
Rhythm blocks are used to generate rhythm patterns in the *Phrase maker* block. The top argument to the *Rhythm* block is the number of notes. The bottom argument is the duration of the note. In the top example above, three columns for quarter notes would be generated in the matrix. In the middle example, one column for an eighth note would be generated. In the bottom example, seven columns for 16th notes would be generated.

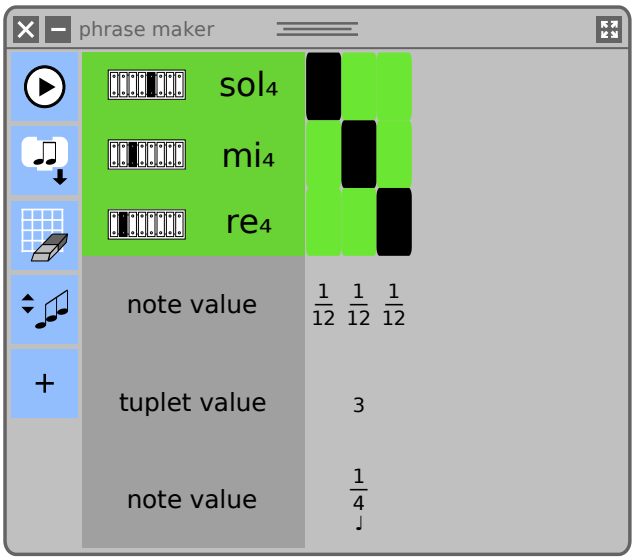




You can use as many *Rhythm* blocks as you'd like inside the *Phrase maker* block. In the above example, two *Rhythm* blocks are used, resulting in three quarter notes and six eighth notes.

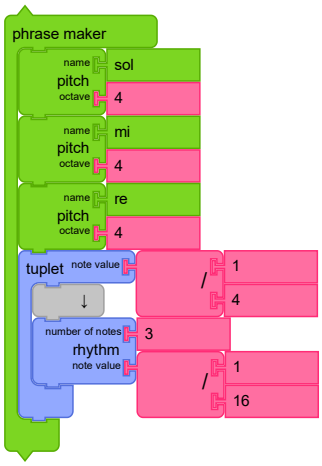
4.2.3 Creating Tuplets



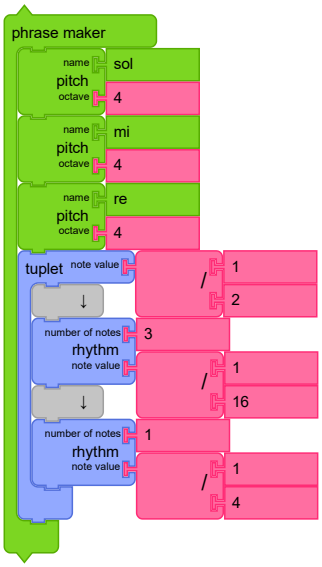


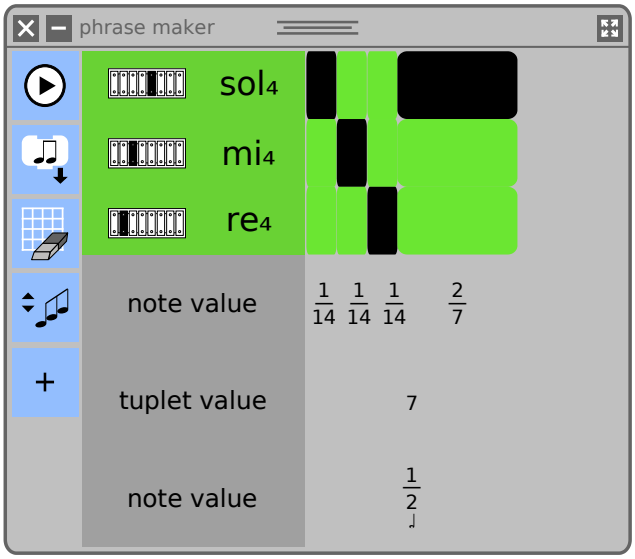
Tuplets are a collection of notes that get scaled to a specific duration. Using tuplets makes it easy to create groups of notes that are not based on a power of 2.

In the example above, three quarter notes—defined in the *Simple Tuplet* block—are played in the time of a single quarter note. The result is three twelfth notes. (This form, which is quite common in music, is called a *triplet*. Other common tuplets include a *quintuplet* and a *septuplet*.)



In the example above, the three quarter notes are defined in the *Rhythm* block embedded in the *Tuplet* block. As with the *Simple Tuplet* example, they are played in the time of a single quarter note. The result is three twelfth notes. This more complex form allows for intermixing multiple rhythms within single tuplet.





In the example above, the two *Rhythm* blocks are embedded in the *Tuplet* block, resulting in a more complex rhythm.

Note: You can mix and match *Rhythm* blocks and *Tuplet* blocks when defining your matrix.

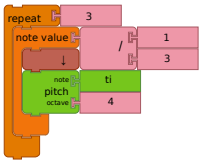
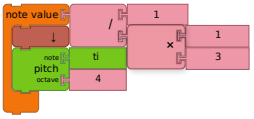
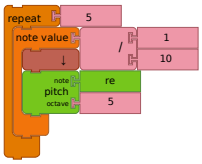
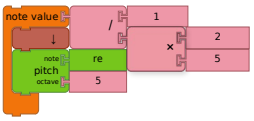
Using Tuplets

A tuplet is a specific group of notes played in a condensed amount of time.

x= power of the note* y= tuplet value

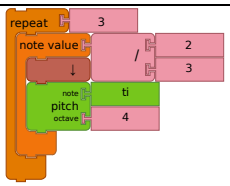
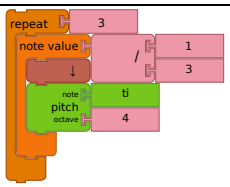
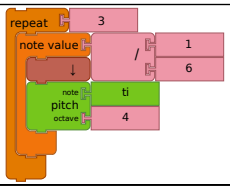
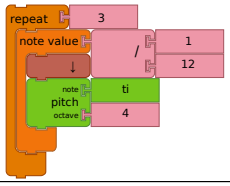
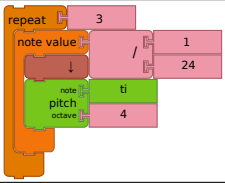
Formula: $\frac{1}{2^{x} * y} =$ resulting note value**

Examples:

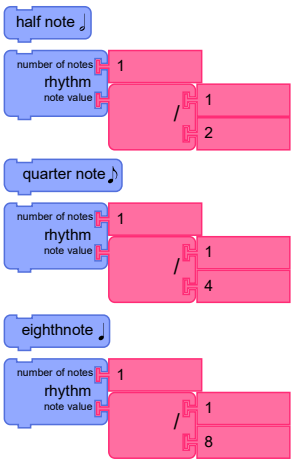
Western Notation	Music Blocks Tuplet	Music Block Math for Tuplet
 x= 0 and y=3 $\frac{1}{2^{0} \times 3} = \frac{1}{1 \times 3} = \frac{1}{3}$		
 x= 1 and y=5 $\frac{1}{2^{1} \times 5} = \frac{1}{2 \times 5} = \frac{1}{10}$		

*The power of the note occurs as follows:
longa= -3, breve= -2, whole= -1, half=0, quarter=1, eighth=2, sixteenth=3, thirty-second=4, and continues in this pattern.

**Different tuplet values produce different rhythmic qualities when mixed with note values of different tuplet values.

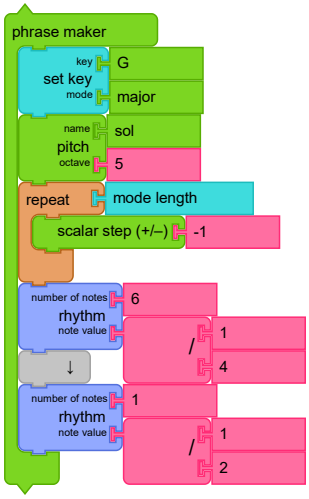
Power of Two	Music Blocks Tuplet	Tuplet in Western Notation
$\frac{1}{2^{-1} \times 3} = \frac{2}{3}$		
$\frac{1}{2^{0} \times 3} = \frac{1}{3}$		
$\frac{1}{2^{1} \times 3} = \frac{1}{6}$		
$\frac{1}{2^{2} \times 3} = \frac{1}{12}$		
$\frac{1}{2^{3} \times 3} = \frac{1}{24}$		

4.2.5 Using Individual Notes



You can also use individual notes when defining the grid. These blocks will expand into *Rhythm* blocks with the corresponding values.

4.2.6 Using a Scale of Pitches



You can use the *Scalar step* block to generate a scale of pitches in the matrix. In the example above, the pitches comprising the G major scale in the 4th octave are added to the grid. Note that in order to put the highest note on top, the first pitch is the `Sol` in `Octave 5`. From there, we use `-1` as the argument to the *Scalar step* block inside the *Repeat*, working our way down to `Sol` in `Octave 4`. Another detail to note is the use of the *Mode length* block.