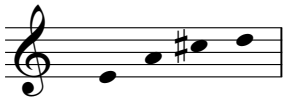
Set Theory: An Overview

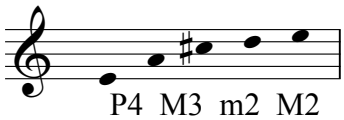
A ***pitch class*** refers to a note without specifying a particular octave or enharmonic spelling.
Normal order means listing the pitch classes of a sonority in order from bottom to top with the smallest possible interval between the bottom and top pitch classes and the smallest possible intervals on the bottom.
Adjacent intervals are intervals between notes that are next to each other in normal order. The top and bottom pitch classes are also considered to be adjacent.
An ***interval class*** refers to the number of half steps in an interval. If the interval is larger than 6 half steps (tritone), invert it at the octave. See the separate handout on interval vectors for more information.
An ***interval vector*** is a catalog of the interval classes present in a given sonority.
Best normal order maintains the same ordering of adjacent intervals, but places the smallest intervals on the bottom. This may require changing some of the inner (i.e. NOT top or bottom) notes.
Prime form takes the best normal order, labels the lowest note as "0," and lists the number of half steps each note is above the lowest note.
Inversionally symmetrical refers to a sonority in which the list of adjacent intervals is palindromic.

What is the point of all this? **The ability to compare sonorities that share common interval content and describe how they function in atonal music.**

1. Order pitch classes from lowest to highest in a single octave.

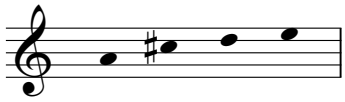


2. Write the lowest note on top so you can see all the adjacent intervals.



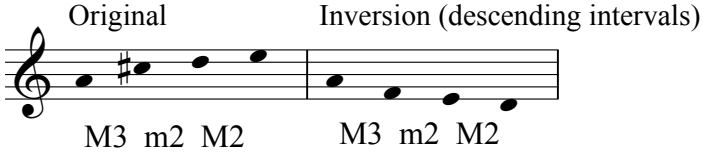
Adj intervals (bottom to top):
P4, M3, m2, M2
Since the P4 is the largest, it will *become* the smallest when inverted. So A should be on the *bottom*, and E should be on *top*.

3. Reorder the notes with the smallest possible outer interval. Remove the duplicate pitch class (in this case, E). If two adjacent intervals are equally large, use the option that places the smallest intervals on the bottom.

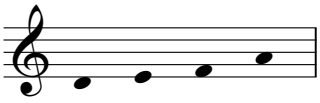


THIS IS NORMAL ORDER #1.

4. Find the inversion of the normal order from step #3 by using the same intervals in the same order, but as *descending* intervals.



5. Find the normal order of the inverted version from step #4 using steps #1-3.



NORMAL ORDER #2

6. Select the version with the smallest intervals closer to the *bottom*. This is **BEST NORMAL ORDER**. In this case, since normal order #2 has a M2 on the bottom, instead of a M3, #2 is the **BEST NORMAL ORDER**.

7. Using the lowest note of the best normal order as "zero," write the **PRIME FORM** of the set by listing the number of half steps each note is above the **lowest** note. In this case, E is **2** half steps above D, F is **3** half steps above D, and A is **7** half steps above D. Therefore, the prime form is **[0237]**. Now, you can take the interval vector of the prime form and examine the interval content of the sonority (see the separate interval vector handout).