Appendix C: Answers to Chapter Exercises

Chapter 1

1. Fill in the missing words. Musical tone has three basic properties. These are **pitch**, **intensity**, and **tone color/timbre/tone quality**.
2. Fill in the missing words. The frequency of sound is measured in terms of **Hertz**. When abbreviated, this term appears as **Hz**.
3. If the frequency of the first harmonic is given as 220 Hz, what are the frequencies of the following harmonics?
   - Second harmonic: **440 Hz**
   - Fifth harmonic: **1,100 Hz**
4. Fill in the missing words. Oscillators generate two main properties. These are **harmonic** content and **frequency**.
5. Name three examples of different timbres.

   Answers will vary and may include any types of instrumental sound, such as flute, strings, piano, and so on.
6. Fill in the missing words in this paragraph. The characteristic **timbre** of a sound is determined by its harmonic content. The harmonic content of a sound largely determines the **waveform**. The simplest of all waveforms is the sine wave. There are three other important simple waveforms—the sawtooth, the **triangle**, and the **square** waveforms.
7. Match these six to form three related pairs.

   Boxes 1 and 2, 6 and 5, and 3 and 4
8. Choose the correct answer. The master tune standard for Western electronic instruments is:

   D. 440 Hz
9. Fill in the missing word. How is the volume of sound measured? The volume of sound is measured in **decibels**.

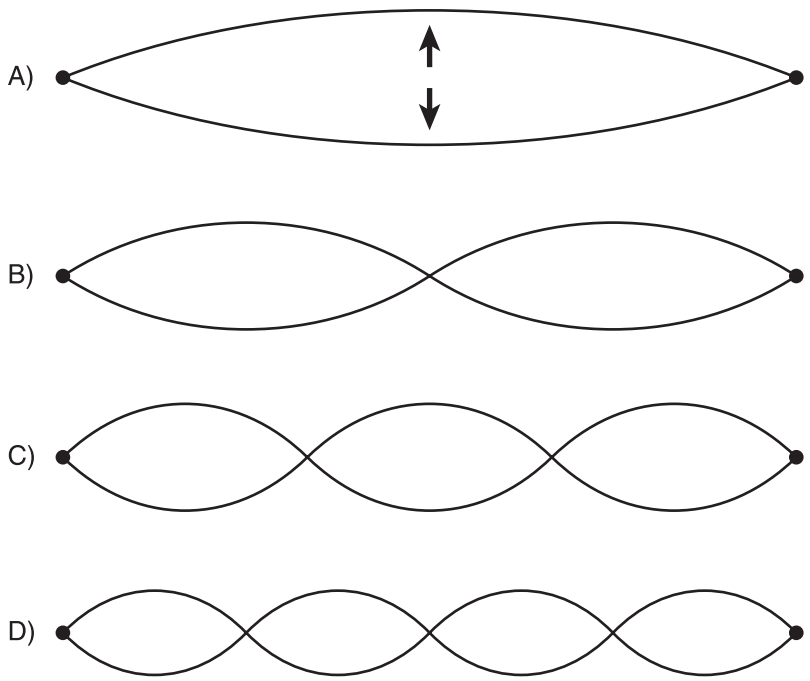
10. Fill in the missing words. The intensity of each note within a particular sequencer track or channel is also known as the **velocity**. This is measured on a scale from **0** to **127**.

11. If the frequency of the first mode of vibration shown below (A) is given as 64 Hz, what would be the frequencies produced by:

    B. **128 Hz**

    C. **192 Hz**

    D. **256 Hz**



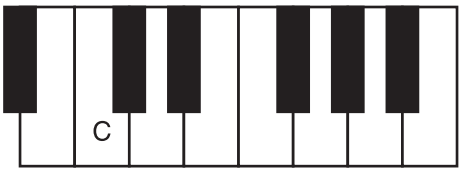
12. Fill in the missing words. The first partial is also known as the **fundamental** frequency. If subsequent partials are related by whole numbers to the **fundamental** frequency, the series is called **harmonic**.

13. Fill in the missing words. A sound vibration of increasing amplitude manifests to the **ear** as an **increase** of **volume**.

14. Fill in the missing words. The sound envelope is the characteristic way in which a sound develops through time. It has four components, which are the **attack**, **decay**, **sustain**, and **release**.

Chapter 2

1. Draw in where the black keys should be on this keyboard. The position of note C has been given for you.



2. Choose the correct answer for the following statement. Note C is always:

   C. The white key to the left of the two black keys.

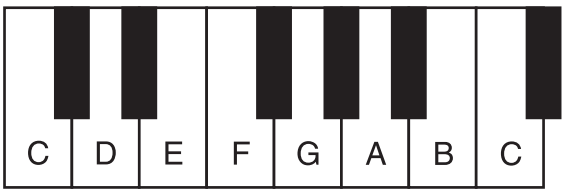
3. Fill in the missing words. From note C, it is necessary to count up or down **eight** notes to reach note C again. The distance between any two adjacent C's on the keyboard is called a(n) **octave**.

4. Fill in the missing words. The ratio between two notes an octave apart is **2:1**. If the frequency of the first note is given as 336 Hz, the frequency of the note an octave above will be **672 Hz**.

5. Place the seven letters of the musical alphabet in the boxes provided, in order from the lowest to the highest.

A	B	C	D	E	F	G

6. Fill in the names of all of the white keys on this keyboard.



7. Fill in the missing words. The first black key to the right of note D is called **D sharp**, while the first black key to the left of note E is called **E flat**. Because these are the same key but spelled differently, they are classed as being **enharmonic** equivalents.

8. Answer the following questions.

   A. What does the symbol # mean?

   Sharp

   B. What does the symbol b mean?

   Flat

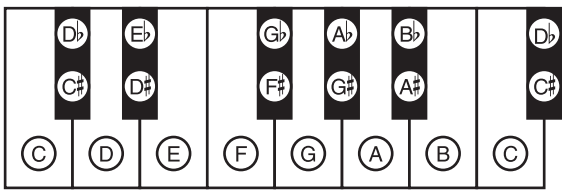
   C. Name five black keys that use the symbol #.

   C#, D#, F#, G#, A#

   D. Name five black keys that use the symbol b.

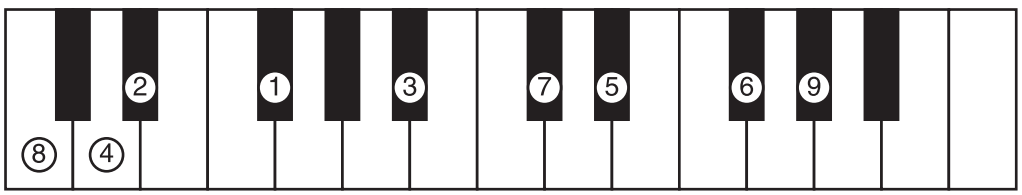
   Db, Eb, Gb, Ab, Bb

9. Label all of the notes correctly in the circles provided on this keyboard. Remember to give each black key two names.



10. Identify the key on the keyboard to which the following samples have been assigned. The first key has already been labeled for you:

- 1: Note F#3, closed hi-hat
- 2: Note D#3, clap
- 3: Note A#3, open hi-hat
- 4: Note D3, snare
- 5: Note D#4, ride cymbal
- 6: Note F#4, tambourine
- 7: Note C#4, crash cymbal
- 8: Note G#4, vocal hit
- 9: Note C3, kick drum



Chapter 3

1. Fill in the missing words: The C **major** scale has **seven** notes per octave. Their names are **C D E F G A B**.

2. List three kinds of scales used in music:

   Any three of the various scales listed at the beginning of Chapter 3 will do: Major, minor, chromatic, pentatonic, hexatonic, octatonic, modal, microtonal.

   A. _____

   B. _____

   C. _____

3. Fill in the missing words. A scale that takes note **C** as the tonic note is said to be in the **key** of C.

4. Which degree of the scale are these notes in C major?
   - D: **II**
   - B: **VII**
   - G: **V**
   - F: **IV**

5. The interval between any two adjacent notes on the keyboard or **frets** on the guitar is called a **semitone**. The octave is composed of **12** such semitones. These are called the 12-tone **chromatic** scale.

6. The pattern of tones and semitones that makes up the major scale is:

   TTSTTTS

7. Define the gaps between the following pairs of notes in terms of the number of semitones:

   A. C–D: **2**

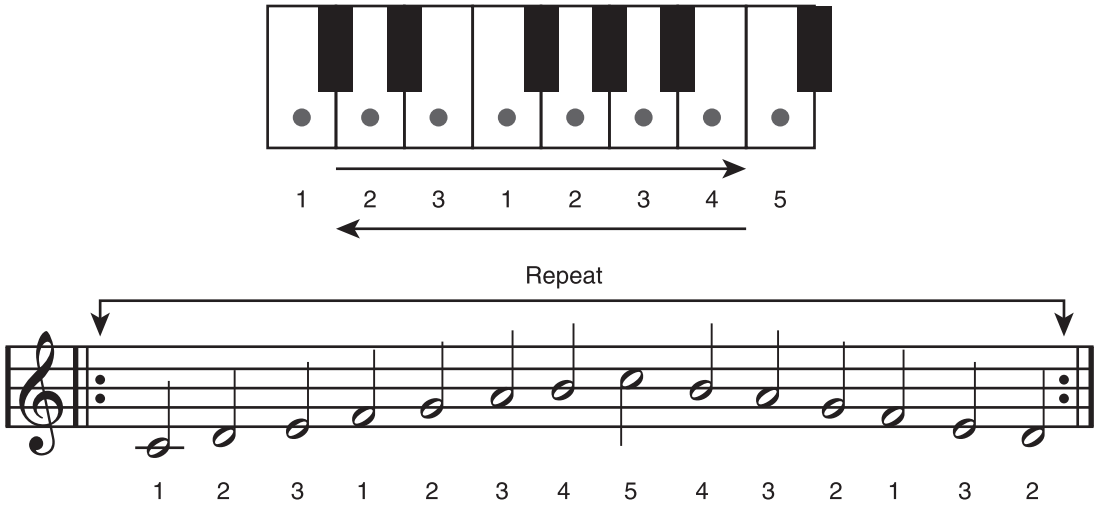
   B. B–C: **1**

   C. A–B: **2**

   D. E–F: **1**

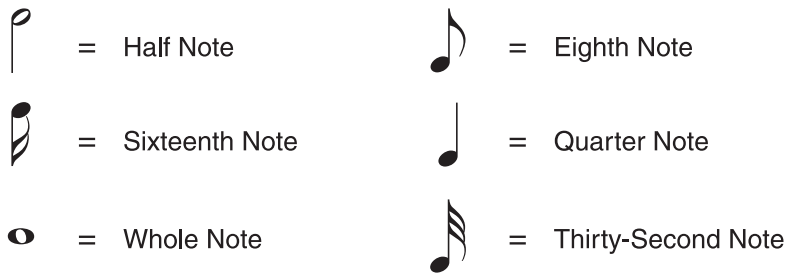
8. Fill in the missing words. The most important note in the C major scale is the **first** scale degree, which is also called the **tonic**. This note serves as the **tonal** center of music written in that key.

9. Play the C major scale. Practice this exercise on the MIDI keyboard until it is fluent.



Chapter 4

1. Fill in the missing word. Every sound used in a musical composition has a certain length or **duration**.
2. Complete the following sentence. The speed of music is called the **tempo**, which is measured and described in terms of **BPM**.
3. Name the following symbols (according to the American fractional method):



4. Name the note value that represents the sum of the following. One example has already been done for you.

A) + = Whole Note

B) + + + = Whole Note

C) + + + = Dotted Half Note

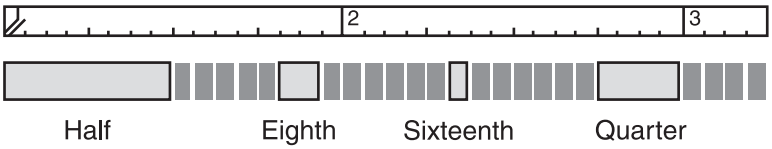
D) + + = Quarter Note

E) + + + = Quarter Note

F) + + + + = Whole Note

G) + + + = Eighth Note

5. Identify the durations in fractions of a whole note sequenced on this drum channel.



6. Choose the note symbol indicating the resolution required for quantization to the nearest:

A. Sixteenth note:

B. Half note:

C. Eighth note: 

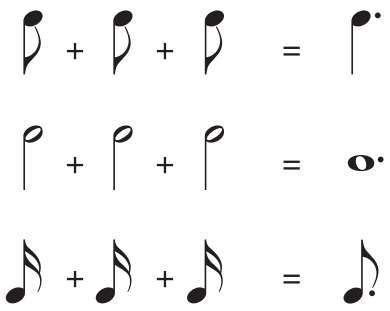
D. Quarter note: 

7. Complete the following sentences:
   A. There are **eight** sixteenth notes in a half note.
   B. Three quarter notes are equivalent to **six** eighth notes.
   C. There are **four** thirty-second notes in an eighth note.

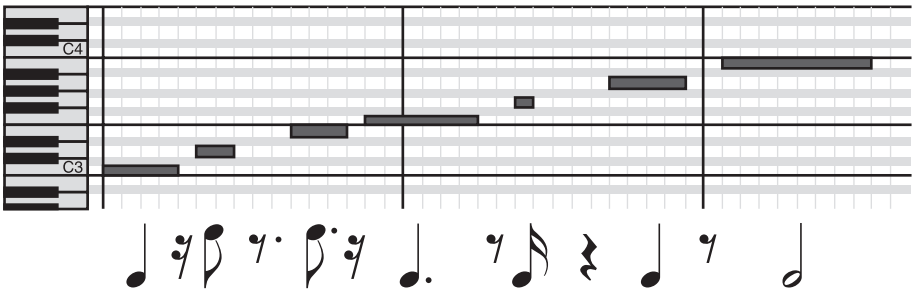
8. Place next to the following rests the equivalent note length:

9. Complete the following statements:
   A. A dotted quarter note is equivalent to **six** eighth notes.
   B. A dotted whole note is equivalent to **six** quarter notes.
   C. A dotted sixteenth note is equivalent to **three** thirty-second notes.

10. Place the note symbol required in the requisite space:



11. Underneath the following notes and gaps, place the equivalent note value or rest required. The note resolution of the matrix grid is set to sixteenth notes.



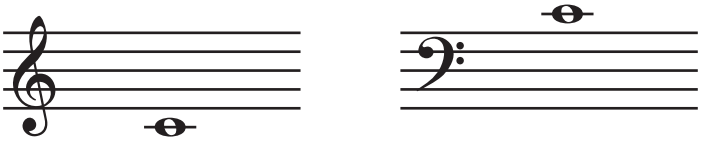
Chapter 5

1. Fill in the missing words. The **staff** is a series of five lines upon which musical notes may be placed. Notes may be placed both **on** and **between** the lines of the staff.
2. Write down both of the names by which the following clefs are known:

Treble Clef or G Clef

Bass Clef or F Clef

3. Place note Middle C as a whole note in its correct position on the following staffs:



4. What are the following symbols called?

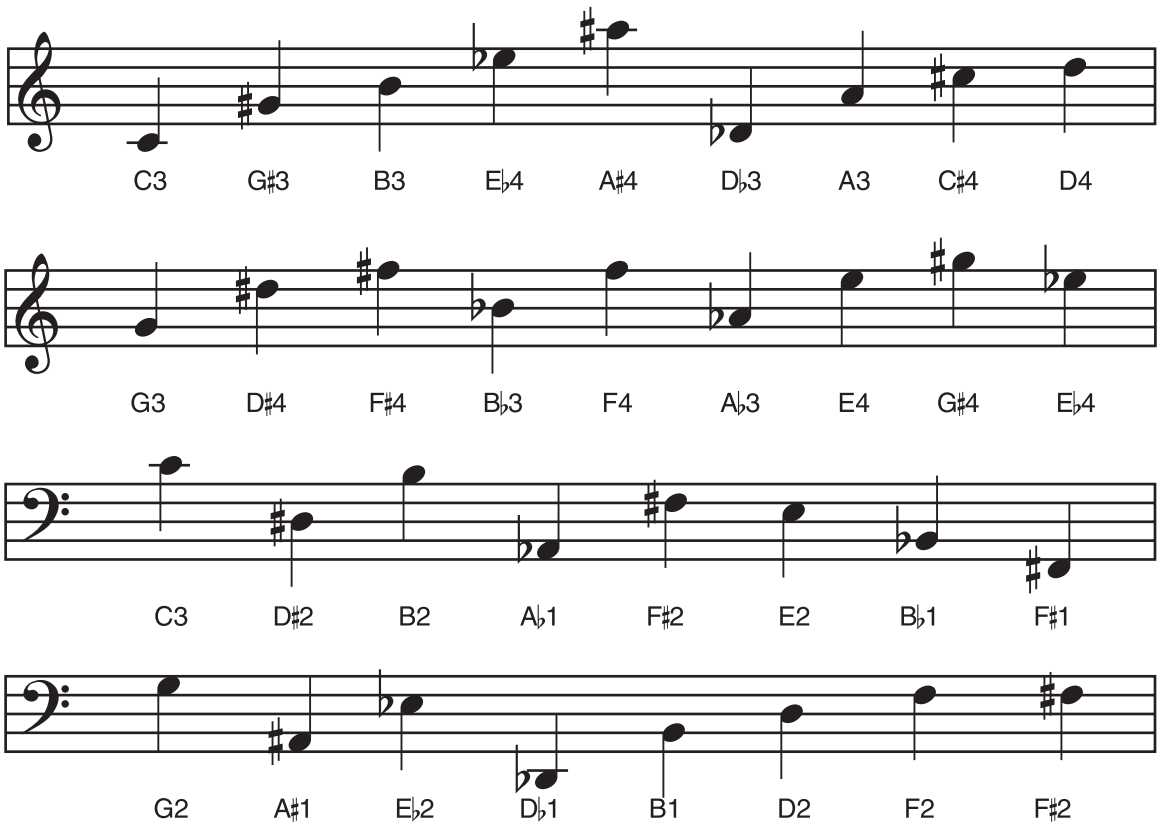
   A. # is called a **sharp**.

   B. b is called a **flat**.

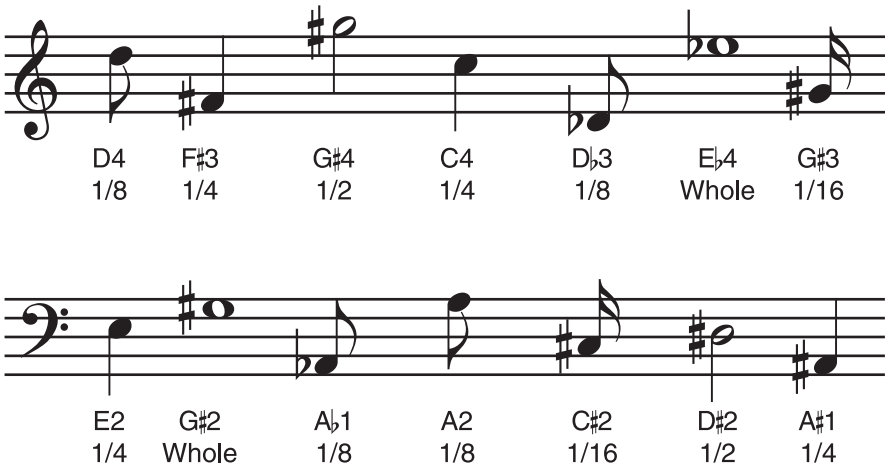
   C. A # before a note indicates that **the note is to be raised by a semitone**.

   D. A b before a note indicates that **the note is to be lowered by a semitone**.

5. Write on each staff the pitch indicated using quarter notes:



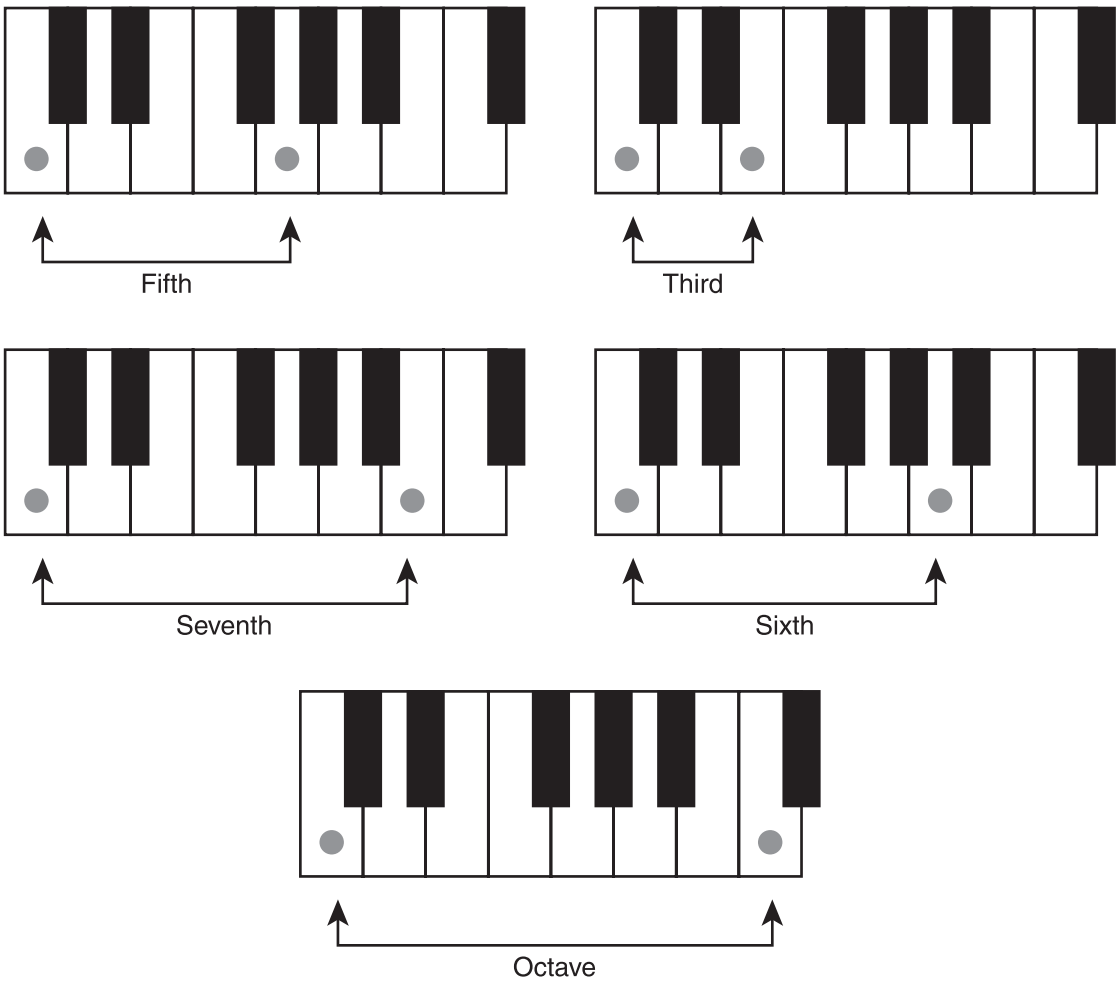
6. Name each of the following notes and their respective time values:



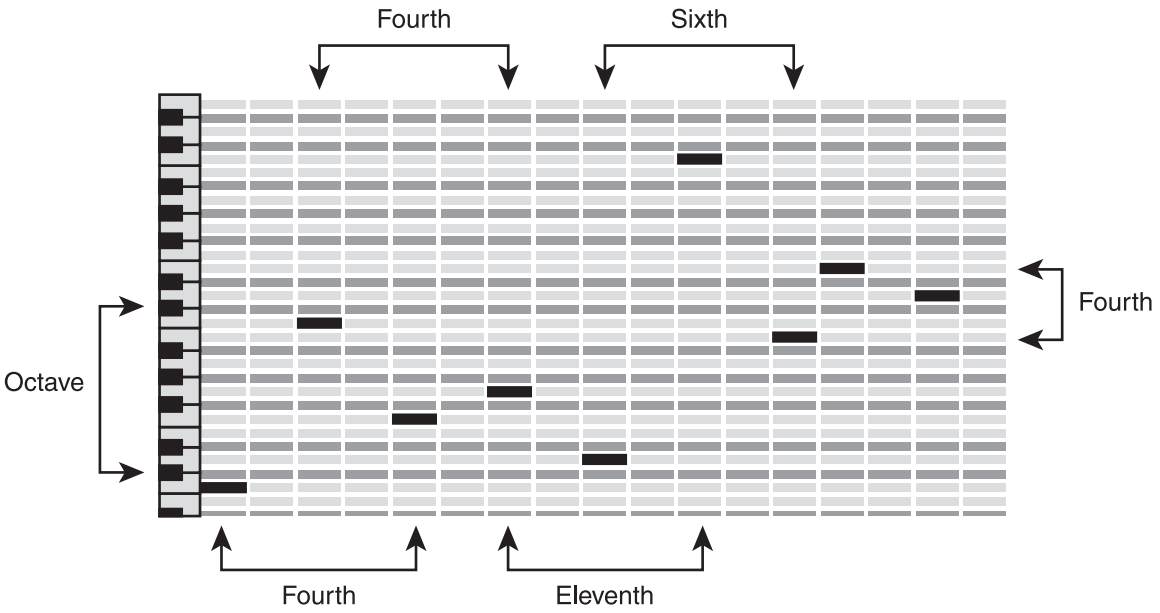
Chapter 6

1. Complete the following statement. There are two types of intervals: **simple** intervals, which are those that lie within the range of an octave, and **compound** intervals, which are larger than an octave.

2. Identify the following intervals:



3. Name the following melodic intervals:



4. Fill in the missing notes:

   Note C. Go a seventh up: Note B. Go a fifth down: Note E. Go a fourth up: Note **A**. Go a third down: Note **F**. Go a ninth up: Note **G**. Go a sixth down: Note **B**.

5. Complete the following list of fifths in the C major scale:

   A. C–G

   B. D–**A**

   C. E–**B**

   D. F–**C**

   E. G–**D**

   F. A–**E**

   G. B–**F**

6. Complete the following sentences:

   A. A fifth above note D is note **A**.

   B. A ninth above note F is note **G**.

   C. A compound third above note G is note **B**.

   D. A seventh below note A is note **B**.

E. A fourth below note B is note **F.**

F. A sixth above note E is note **C.**

G. An octave above note D is note **D.**

H. An eleventh above note C is note **F.**

7. Sequence a random series of a dozen varied simple intervals using only the white notes of the keyboard. Make each interval last a single bar. Use an acoustic piano patch. Leave a gap of two bars between them. After you have done this, turn around with a sheet of paper and try to identify each of the intervals. Do this as often as necessary until you can recognize the intervals by their qualities.

Chapter 7

1. Complete the following sentence. Each complete metric cycle is called a **bar**. There are three basic types of metric cycles recognized in traditional musical theory. These are **duple** time, **triple** time, and **quadruple (or common)** time.

2. Set up a metronome beat or click track on your sequencer and set the tempo to 60bpm. Each click represents a complete bar or metric cycle. Then count out loud the following:

   A. Duple time: Two beats to each beat of the click track.

Click:		<		<		<		<	
Count:	1	2	1	2	1	2	1	2	etc.

   B. Triple time: Three beats to each beat of the click track.

Click:		<			<		
Count:	1	2	3	1	2	3	etc.

   C. Quadruple time: Four beats to each beat of the click track.

Click:		<				<			
Count:	1	2	3	4	1	2	3	4	etc.

   This is a practical exercise and therefore there are no right or wrong answers.

3. Complete the following. A time signature consists of **two** numbers—an upper number that is the **numerator** and a lower number that is the **denominator**. The upper number tells you **how many** beats there are in a bar, while the lower number tells you their **value**.

4. What is the meaning of the following time signatures?

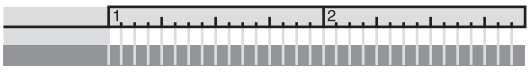
$\frac{2}{4}$ Signifies two quarter notes per bar

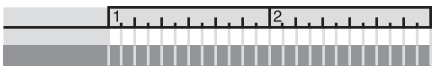
$\frac{3}{8}$ Signifies three sixteenth notes per bar

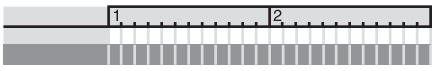
$\frac{9}{16}$ Signifies nine sixteenth notes per bar

$\frac{3}{4}$ Signifies three quarter notes per bar

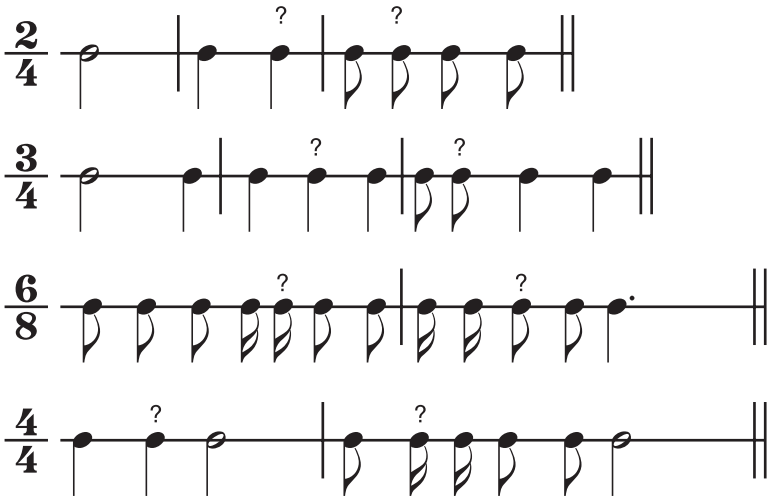
5. What is the correct time signature for the following drum lanes? The grid resolution is set to 1/16.

A) $\frac{4}{4}$ 

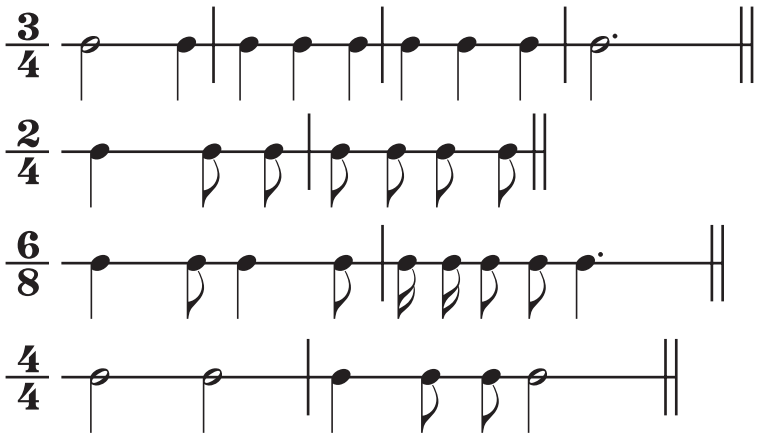
B) $\frac{6}{8}$ 

C) $\frac{12}{16}$ 

6. Fill in the missing note values to complete the bars. Question marks have been placed where the notes are required.

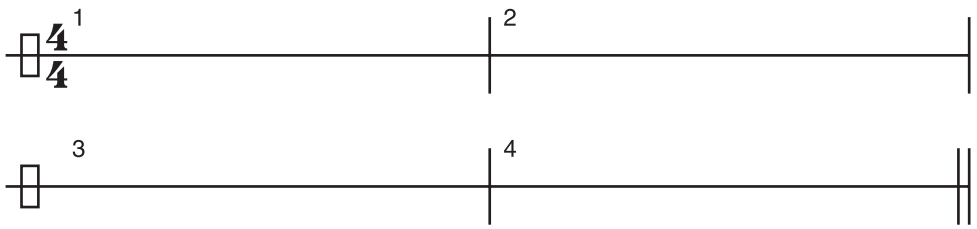


7. Place the correct time signature at the front of each of these patterns.



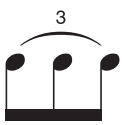
8a. List the rhythmic motives that can be devised from two sixteenth notes and one eighth note, with each value appearing only once.

8b. Compose a four-bar rhythm in quadruple metre that uses at least two of these motives.

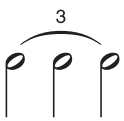


Answers will vary.

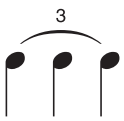
9. What note values are the following triplets equivalent to?



is worth one quarter note.

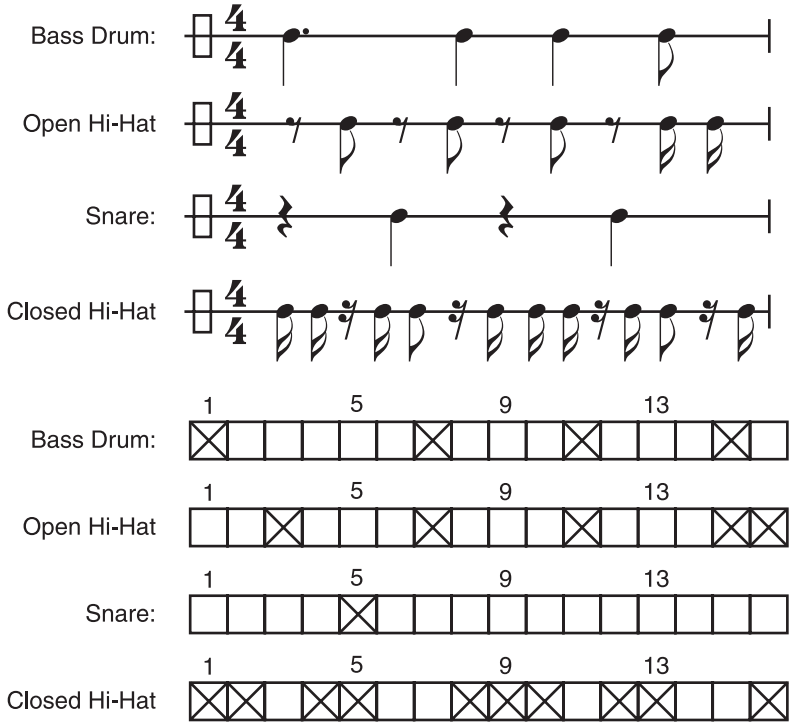


is worth one whole note.



is worth one half note.

10. Below you will see the 16 buttons of a drum machine, such as Redrum. The resolution is set to 1/16. Place a tick in those boxes required to give the following rhythms for these separate drum parts.



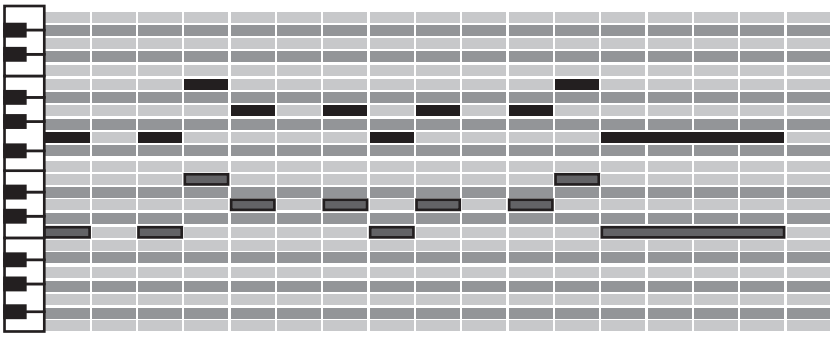
Chapter 8

1. Complete the following statement. All musical intervals have a characteristic aural quality. In terms of aural quality, there are two main types of intervals: **concords**, which includes all of those intervals that have a generally agreeable sound to the ear; and **discords**, which have an element of tension about them.

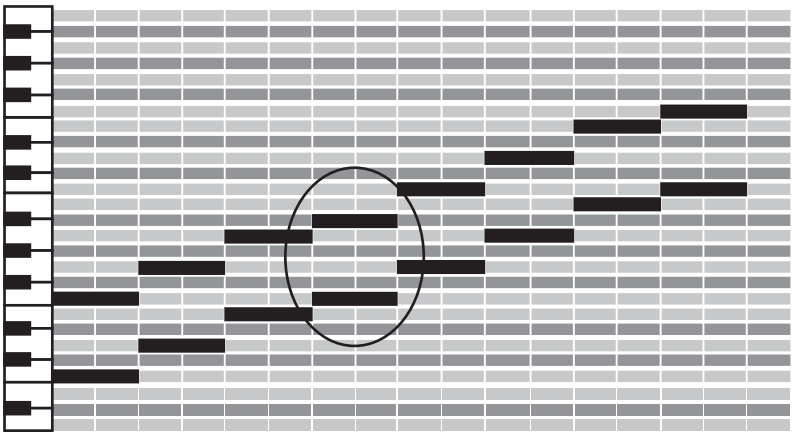
2. Complete the following statement. There are three perfect concords—the octave (ratio 2:1), the perfect **fifth** (ratio **3:2**), and the perfect **fourth** (ratio **4:3**).

3. There are four imperfect concords—the **major third** (ratio 5:4), the minor third (ratio **6:5**), the **major sixth** (ratio 5:3), and the minor sixth (ratio **8:5**).

4. Pencil in the notes required to harmonize this melody in C major in fifths.

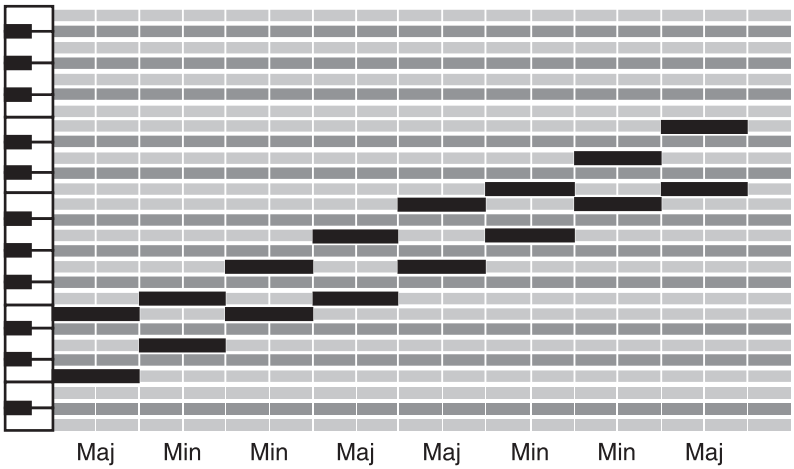


5. Pencil in a note a fourth above each of these notes of the scale of C major. When you have done so, circle the so-called ***devil's fourth***.



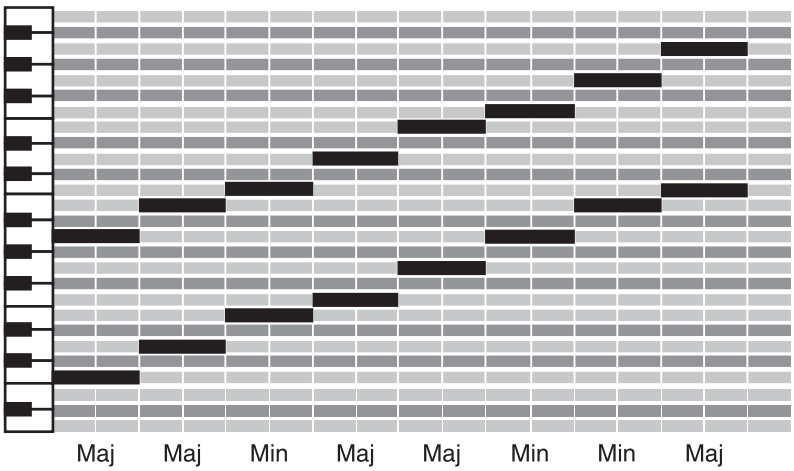
6. Complete the following statement. There are two kinds of third in the major scale: There is the major third, which has a width of **four** semitones, and the minor third, which has a width of **three** semitones.

7. Pencil in the notes required for a third above each of the following notes of the scale of C major. When you have done this, underline the third as being major or minor.



8. Complete the following statement. There are two kinds of sixth in the major scale: There is the major sixth, which has a width of **nine** semitones, and the minor sixth, which has a width of **eight** semitones.

9. Pencil in the notes required for a sixth above each of the following notes of the scale of C major. When you have done this, underline the third as being major or minor.



10. Identify the following intervals, both in terms of their size and whether they are major, minor, or perfect. The second note is always above the first.

Notes	Interval	Notes	Interval
C–D	Major second	F–C	Perfect fifth
G–B	Major third	C–B	Major seventh
D–F	Minor third	G–F	Minor seventh
E–F	Minor second	D–B	Major sixth
A–G	Minor seventh	A–F	Minor sixth
B–C	Minor second	E–A	Perfect fourth

11. List the intervals that belong in these categories:

Perfect Concord	Imperfect Concord	Discord
a) Octave/unison	a) Minor third	a) Minor second
b) Perfect fifth	b) Major third	b) Major second
c) Perfect fourth	c) Minor sixth	c) Minor seventh
	d) Major sixth	d) Major seventh
		e) Augmented fourth/diminished fifth

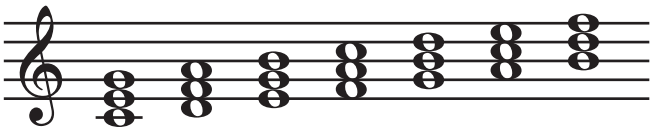
12. Fill in the missing words. The simplest sonority of all is the **interval**, which results from the simultaneous combination of two notes. Combinations of three notes are called **triads**, two examples of which are the **major** triad and the **minor** triad.

13. Fill in the missing words. The major triad has three notes, which are called the **root**, the **third**, and the **fifth**. In the case of the major triad, the third is **major**, while in the case of the minor triad, the third is **minor**.

14. Fill in the missing notes to complete the series of triads in C major. Then identify those triads. The first chord has already been named for you:

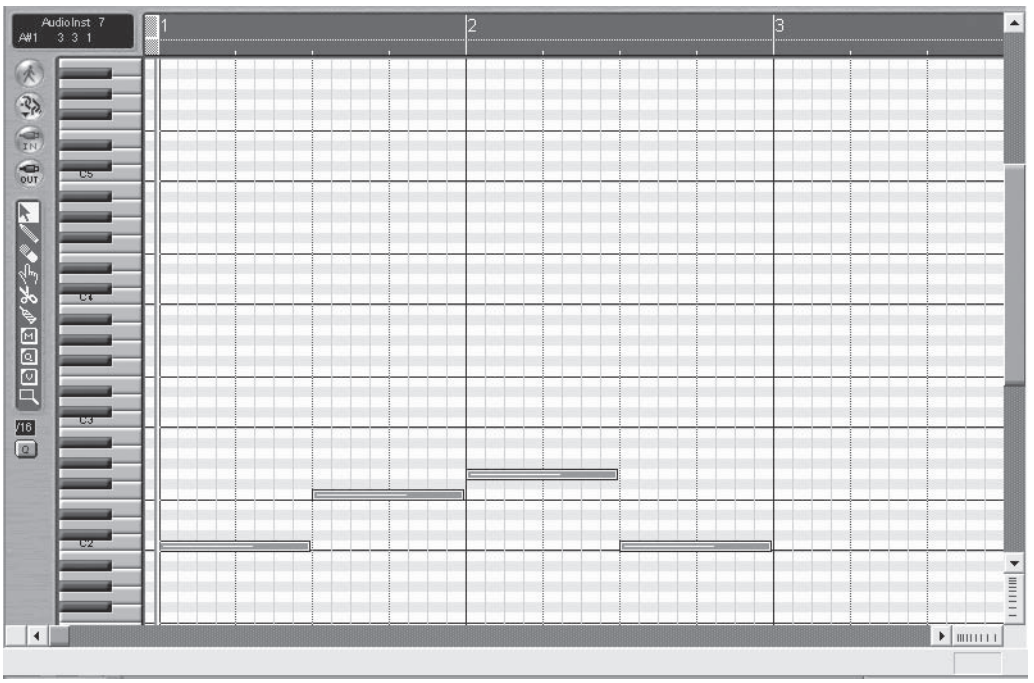
Chord I	C	E	G	C major
Chord II	D	F	A	D minor
Chord III	E	G	B	E minor
Chord IV	F	A	C	F major
Chord V	G	B	D	G major
Chord VI	A	C	E	A minor
Chord VII	B	D	F	B diminished

15. Fill in the missing whole notes required to complete the following triads.



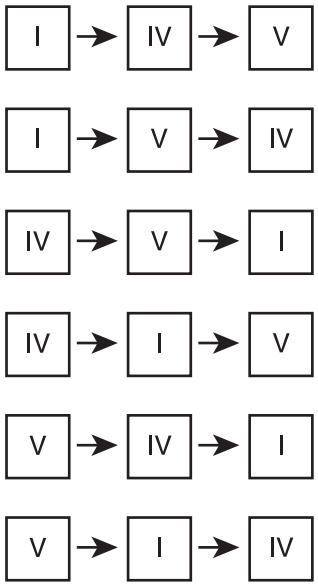
16. Fill in the missing words. The progression from **dominant** triad to tonic triad is called a **perfect** cadence. The **tonic** triad is built on the first degree of the scale, while the **dominant** triad is built on the **fifth**. In the key of C major, the three notes belonging to the tonic triad are therefore **C**, **E**, and **G**, while the three notes belonging to the **dominant** triad are **G**, **B**, and **D**.

17. Program the notes given below into your sequencer. Then pencil in the notes required to complete the following primary triads.

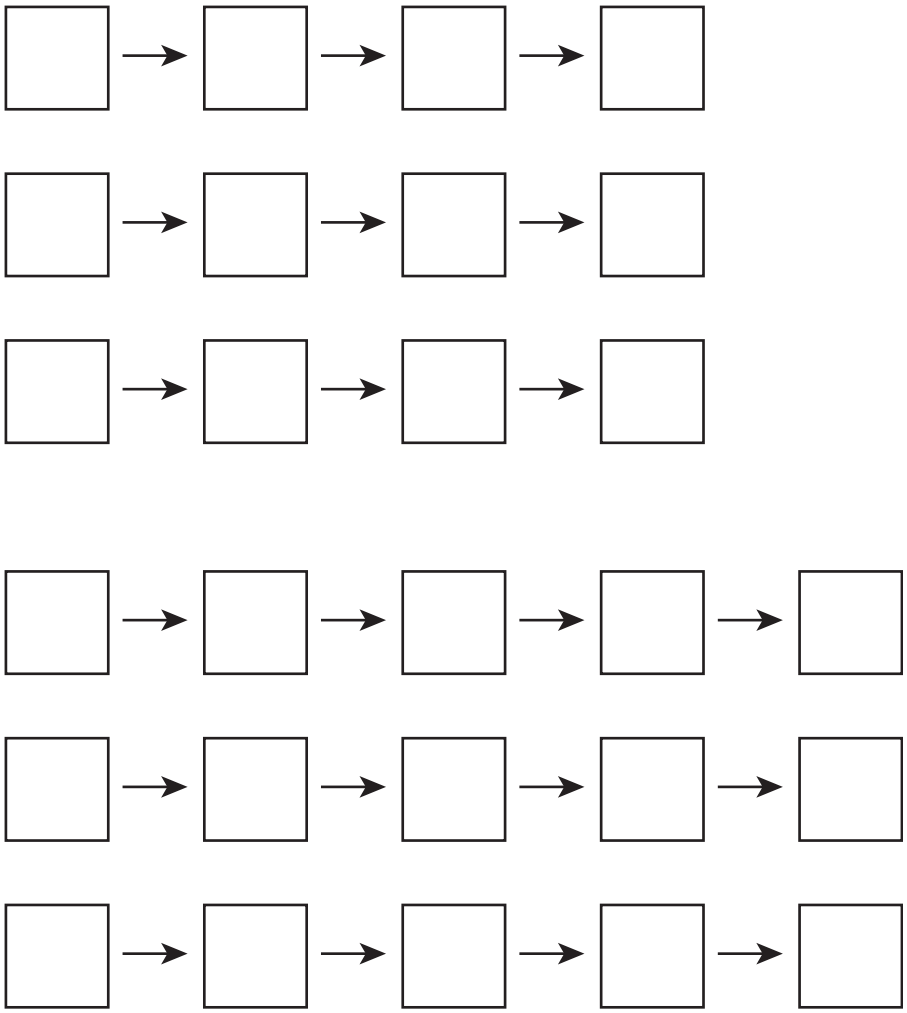


There are numerous ways of doing this. The tonic triad needs at least three notes, including C, E, and G; the subdominant triad needs the notes F, A, and C; and the dominant triad needs the notes G, B, and D.

18. In the boxes provided, note all the possible three-chord progressions involving chords I, IV, and V, with each chord appearing only once. Having done so, you will find it very beneficial to play each of these through on your MIDI keyboard or to sequence them and listen to them.



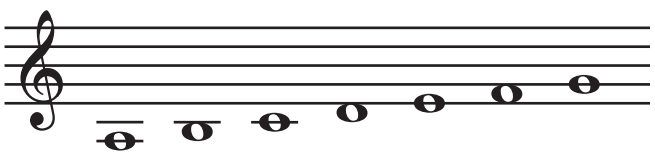
19. Compose your own chord progressions in the key of C major involving at least one secondary chord, using the boxes provided to indicate the chord. When you have done so, spend some time either playing through or sequencing each chord progression. Listen carefully for the qualities of each progression and the particular merits of each. The number of chords required is indicated by the number of boxes.



There are no right answers here. Provided the chord progression remains within the key and uses at least one primary chord, it deserves full marks.

Chapter 9

1. Fill in the missing words. The relative minor key of C major is **A minor**. To find the relative minor key from a major key, you must count **three** notes down.
2. Fill in the six missing notes required to complete a rising A natural minor scale.



3. Fill in the missing words. **Key** concerns the note upon which a scale is built. **Mode** concerns the type of scale—major or minor.

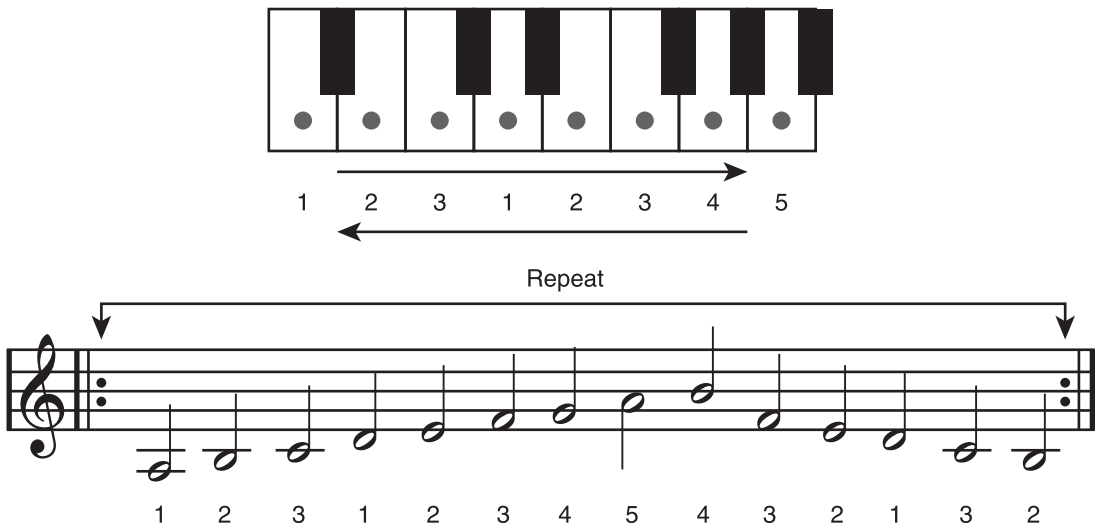
4. In the space provided, indicate the pattern of tones and semitones that belongs with each scale.

Major Mode:	T	T	S	T	T	T	S
Natural Minor Mode:	T	S	T	T	T	S	T

5. Which degree of the scale are these notes in A natural minor?
   - D: **IV**
   - B: **II**
   - G: **VII**
   - F: **VI**

6. Fill in the notes required to give the three primary triads of the key of A natural minor.
   - Chord i: **A C E** _____
   - Chord iv: **D F A** _____
   - Chord v: **E G B** _____

7. Play the A natural scale. Practice this exercise on your MIDI keyboard until you are fluent.

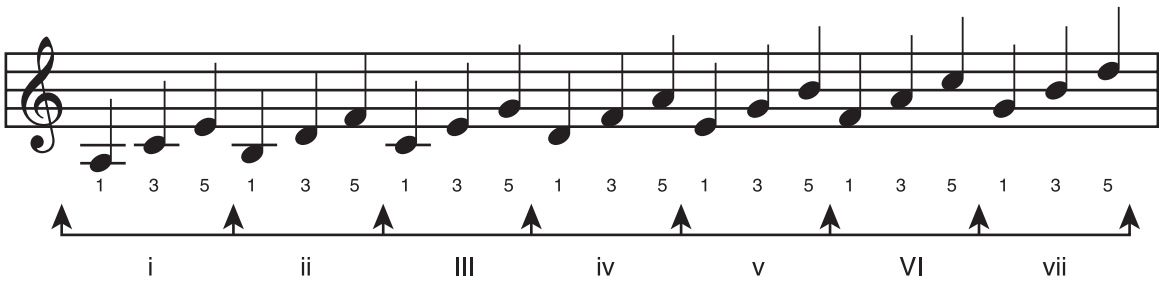


8. Compose your own chord progressions in the key of A natural minor, involving at least one secondary chord, using the boxes provided to indicate the chord. When you have done so, spend some time either playing through or sequencing each chord progression.

Listen carefully for the qualities of each progression and the particular merits of each. The number of chords required is indicated by the number of boxes.

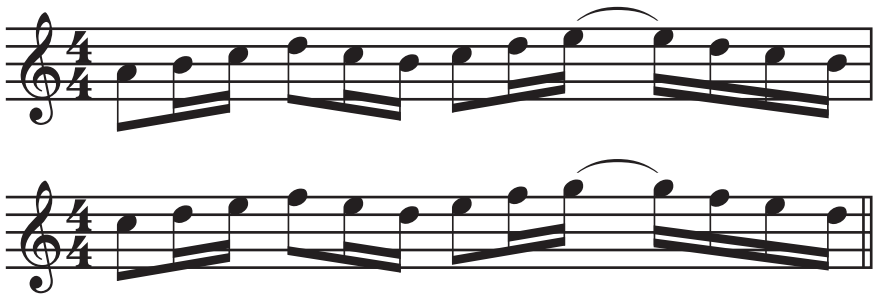
Answers will vary.

9. Arpeggios of the chords of A natural minor. Play the following through on your MIDI keyboard. The fingers to use are given below each note.



Chapter 10

1. Fill in the missing words. A melodic line can be thought of as having two axes: There is the axis of **pitch** (the vertical axis) and the axis of **time** (the horizontal axis).
2. Fill in the missing words. **Motives** generally employ two or three notes played with a strong, readily identifiable **rhythm**.
3. Answer the following questions about the given two-bar melody.

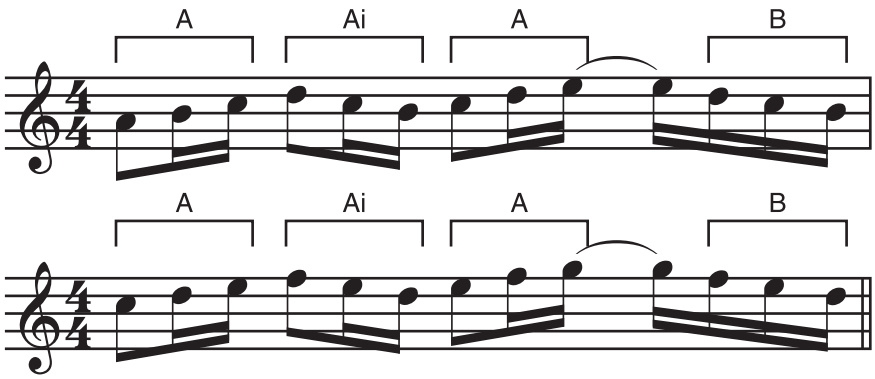


A. What scale does this melodic extract use?

A natural minor

B. Using a pencil, identify and mark out the motives used, assigning to each identified motive a letter (A, B, and so on).

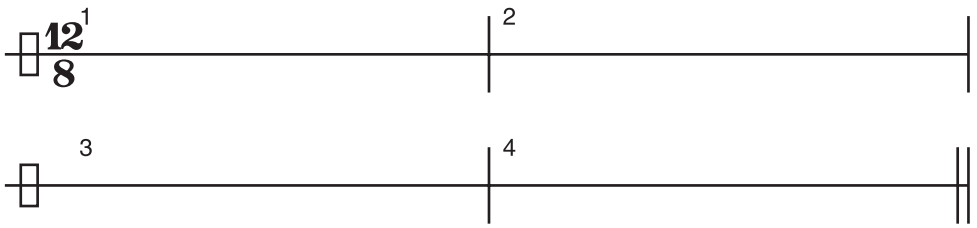
Ai = Inversion of the motive



C. Mark out and indicate the phrase structure of the melody, giving each phrase a letter (A, B, and so on).

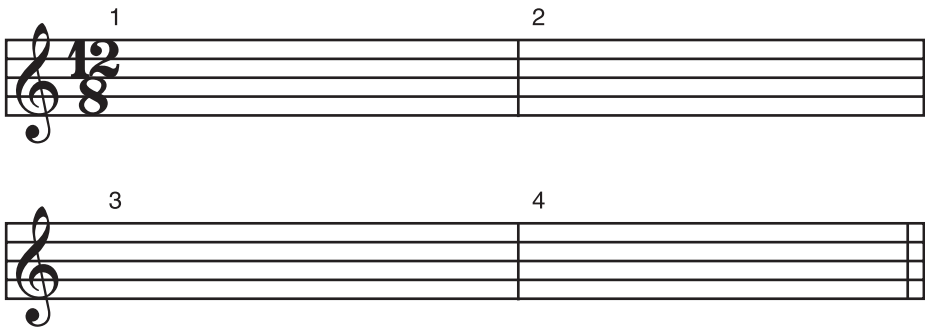
Phrase A: Bars 1 to 2; Phrase B: Bars 3 to 4.

4. Build up a four-bar rhythm in compound quadruple time using the following motives.



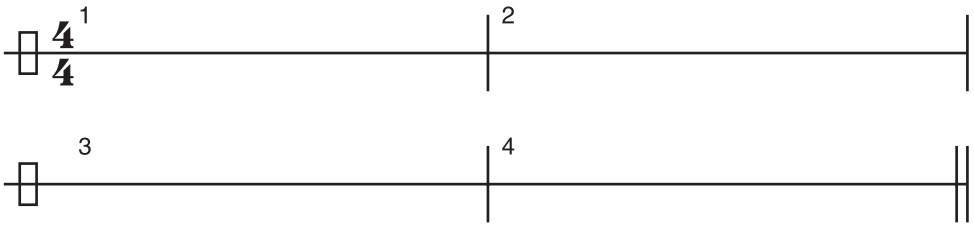
There are no right or wrong answers here. Mark using your own discretion.

5. Using the rhythm you created in Exercise 4, compose a four-bar lead melody based around the motive of a rising fifth, in the key of C major.



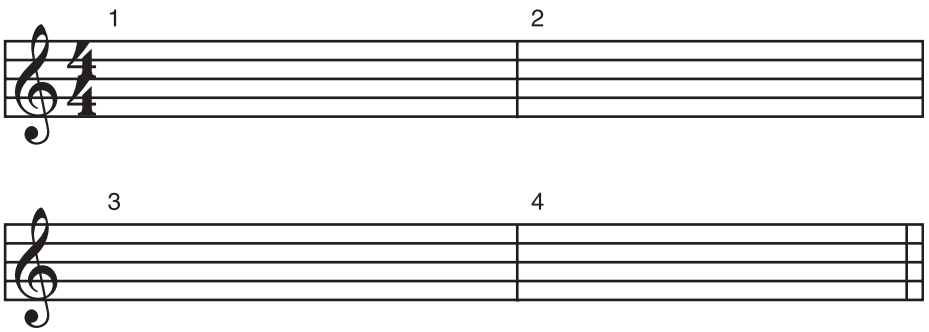
Again, there are no right or wrong answers here. Mark using your own discretion.

6. Build up a four-bar rhythm in quadruple time using the following motives.



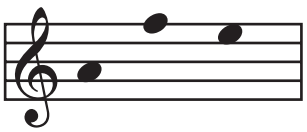
Again, there are no right or wrong answers here. Mark using your own discretion.

7. Using the rhythm you created in Exercise 6, compose a four-bar melody based around the motive of a falling third, in the key of A natural minor.



Again, there are no right or wrong answers here. Mark using your own discretion.

8. Compose and sequence a lead for a solo flute patch based around the following melodic intervals. The meter and time signature are optional.

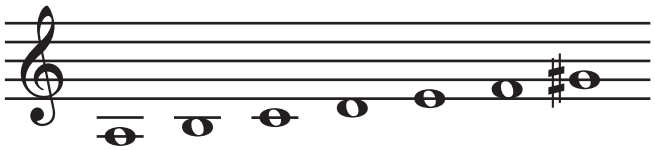


Again, there are no right or wrong answers here. Mark using your own discretion.

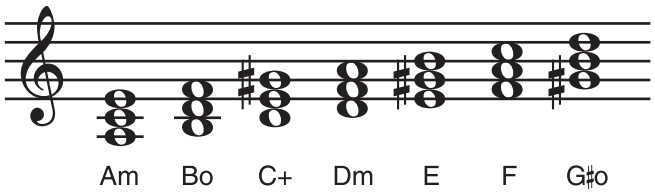
Chapter 11

1. Fill in the missing words. Although there is only one kind of major mode, there are **three** types of minor mode: the natural minor, **harmonic** minor, and melodic minor. The difference between the natural and harmonic minor is that the harmonic minor mode has a sharp **seventh** in order to give a leading note up to the **eighth** degree. The ascending form of the melodic minor mode also has a sharp **sixth**, while on descent it is identical to the **natural** minor mode.

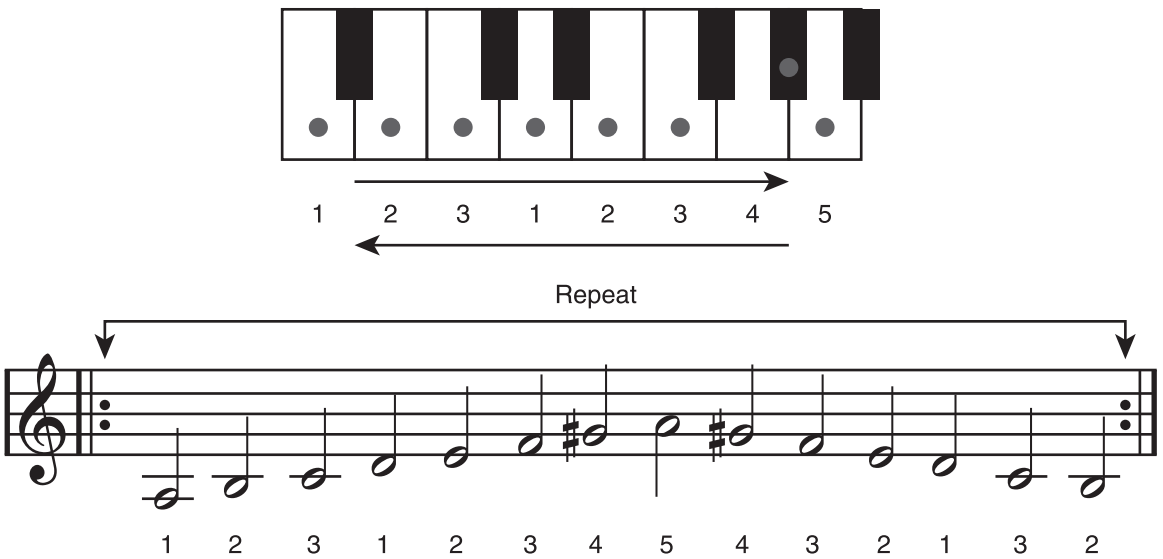
2. Fill in the six missing notes required to complete a rising A harmonic minor scale.



3. Identify the following triads from the A harmonic minor mode. The first triad has already been identified for you.

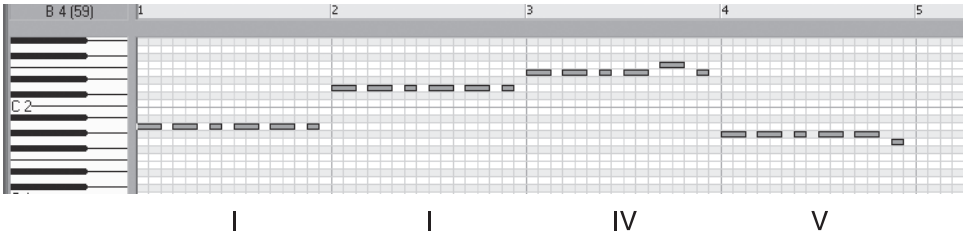


4. Play the A harmonic minor scale. Practice the following exercise on your MIDI keyboard until you are fluent.



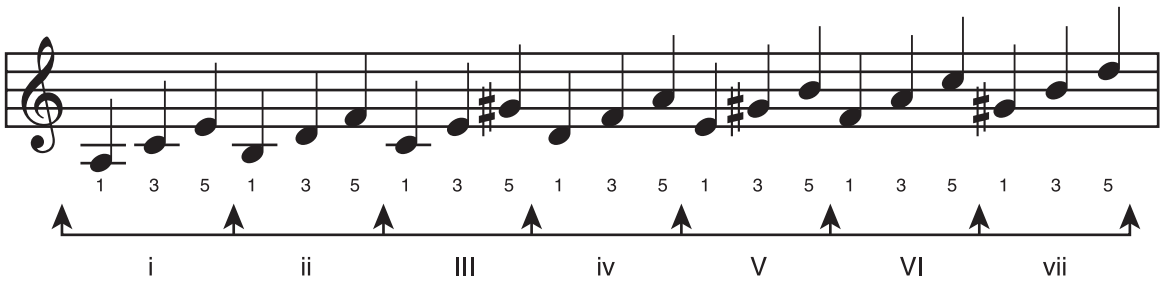
This simply requires practice.

5. Sequence the following bass in A harmonic minor. Then, on another track, add a pad or string part over it using the chords indicated—the three primary chords of A harmonic minor.



Mark using your own discretion.

6. Play the arpeggios of the chords of A harmonic minor. Practice this exercise until you are fluent.

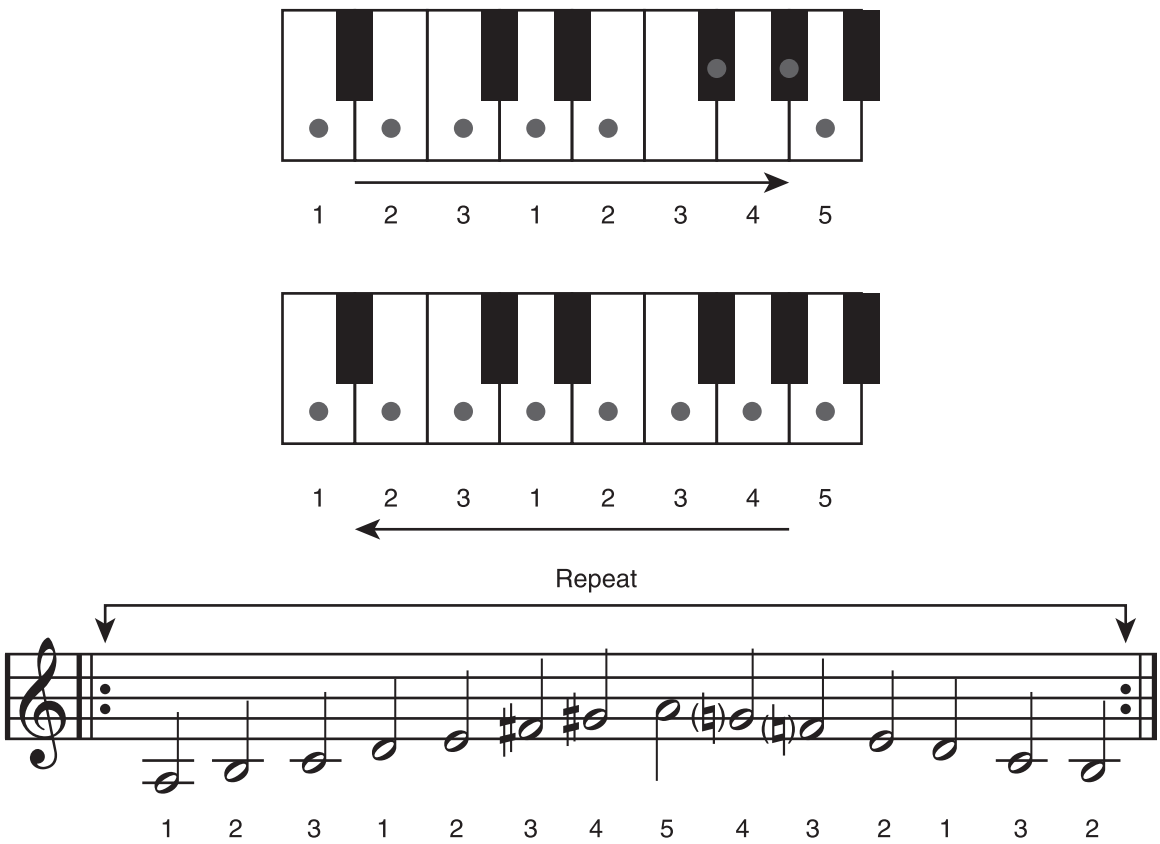


This simply requires practice.

7. Compose your own chord progressions in the key of A harmonic minor, involving at least one secondary chord, using the boxes provided to indicate the chord. When you have done so, spend some time either playing through or sequencing each chord progression. Listen carefully for the qualities of each progression and the particular merits of each. The number of chords required is indicated by the number of boxes.

Answers will vary.

8. Play the A melodic minor scale. Practice the following exercise on your MIDI keyboard until you are fluent.



This simply requires practice.

9. Compose your own chord progressions in the key of A melodic minor, involving at least one secondary chord, using the boxes provided to indicate the chord. When you have done so, spend some time either playing through or sequencing each chord progression. Listen carefully for the qualities of each progression and the particular merits of each. The number of chords required is indicated by the number of boxes.

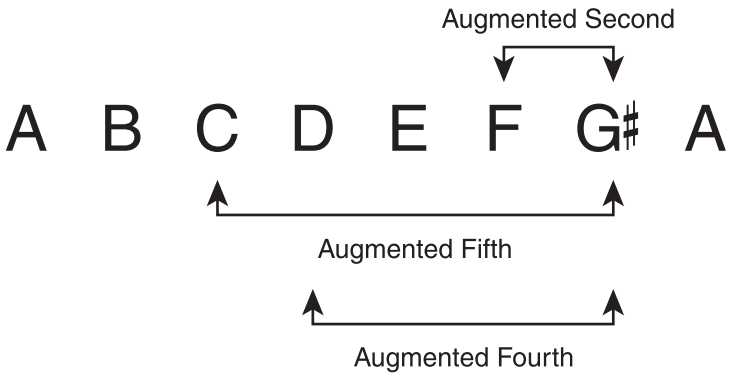
   Answers will vary.

Chapter 12

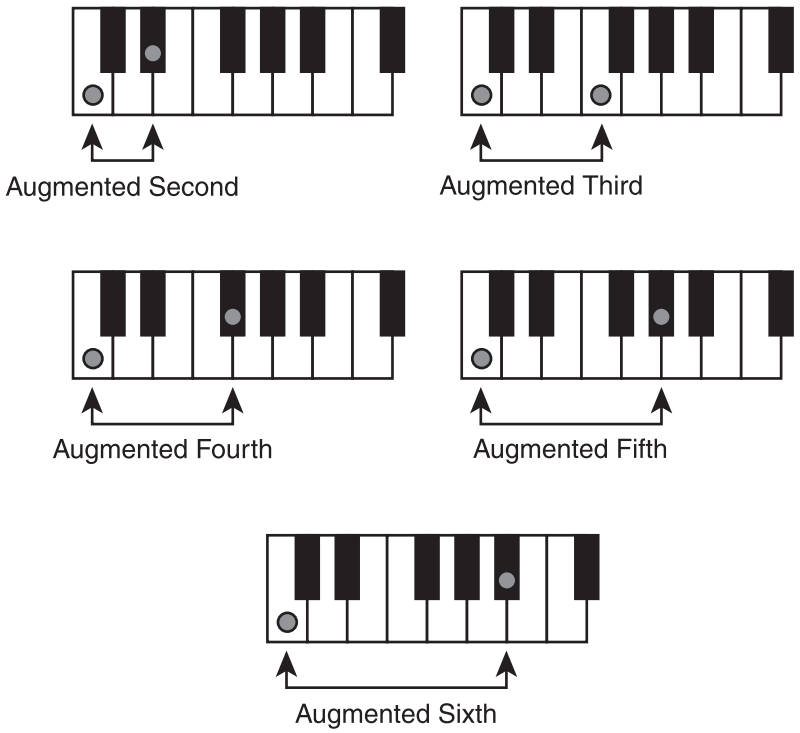
1. Fill in the missing words. When an interval is **augmented**, it is increased in size by a semitone. Therefore, the perfect fifth—G to D—can become an augmented fifth by **sharpening** the top note D or **flattening** the bottom note G.

2. Fill in the missing words. When an interval is diminished, it is **decreased** in size by a semitone. Therefore, the perfect fifth—G to D—can become a diminished fifth by **flattening** the top note D or **sharpening** the bottom note G.

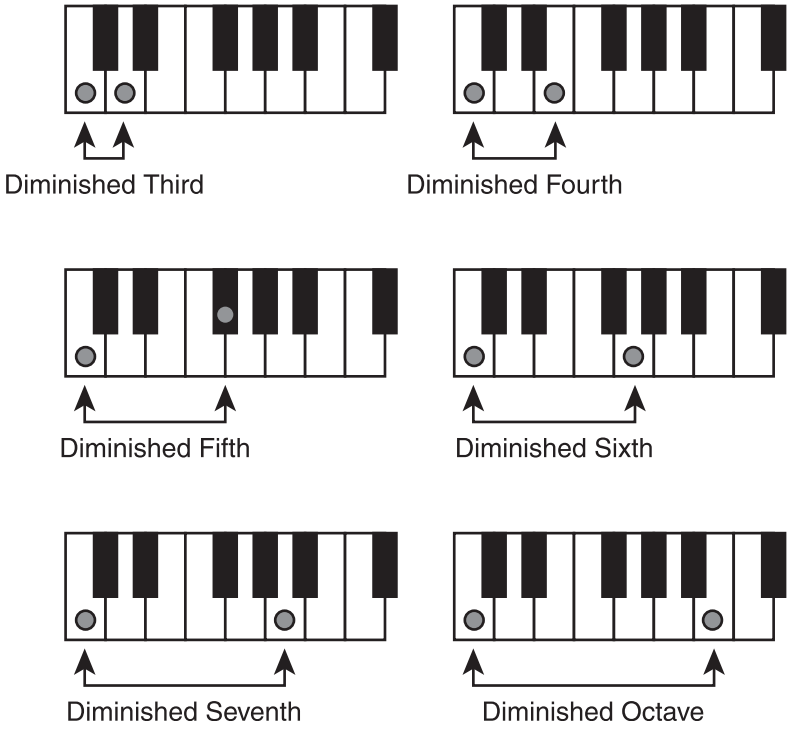
3. Identify the following augmented intervals in the spaces provided.



4. In the spaces provided, identify the following augmented intervals.



5. In the spaces provided, identify the following diminished intervals.



6. What are the three families of intervals?

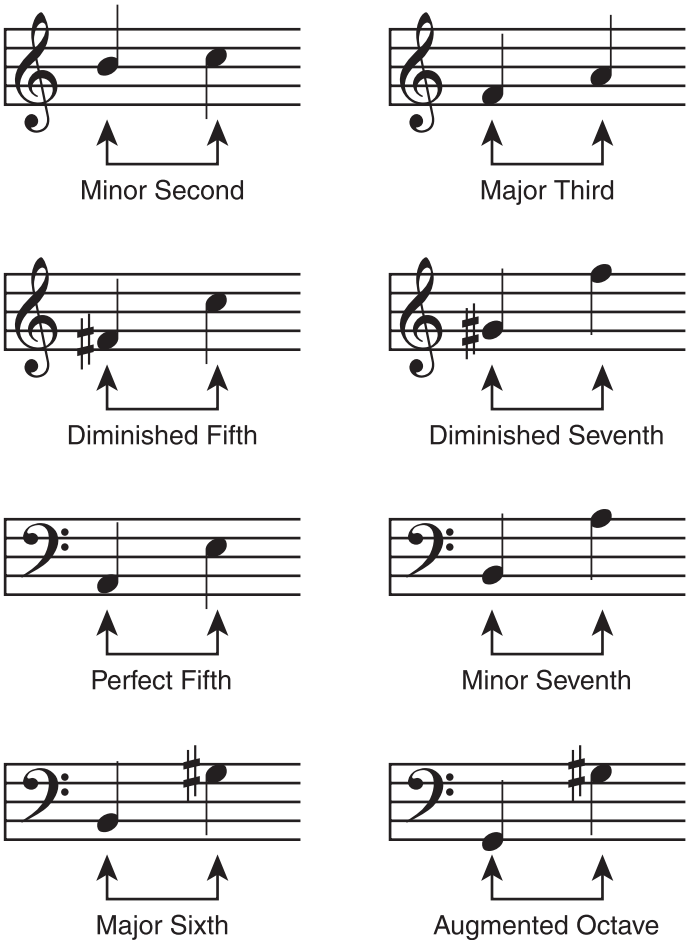
   A. **Perfect**

   B. **Major and minor**

   C. **Augmented and diminished**

7. Fill in the missing words. When inverted, a major interval gives a **minor** interval (and vice versa), and an **augmented** interval, when inverted, gives a diminished interval (and vice versa).

8. Identify the following intervals.



9. Name the inversions of each of these intervals.

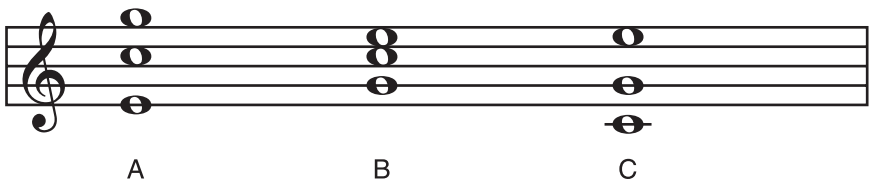
Interval	Inversion
First (unison, prime)	Octave
Augmented prime	Diminished octave
Minor second	Major seventh
Major second	Minor seventh
Augmented second	Diminished seventh
Diminished third	Augmented sixth

Interval	Inversion
Minor third	Major sixth
Major third	Minor sixth
Augmented third	Diminished sixth
Diminished fourth	Augmented fifth
Perfect fourth	Perfect fifth
Augmented fourth	Diminished fifth

Chapter 13

1. Complete the following sentence. A triad has three notes, which are called the root, the **third**, and the **fifth**.

2. Name the positions (inversions) as determined by the bass notes of the following C major triads.

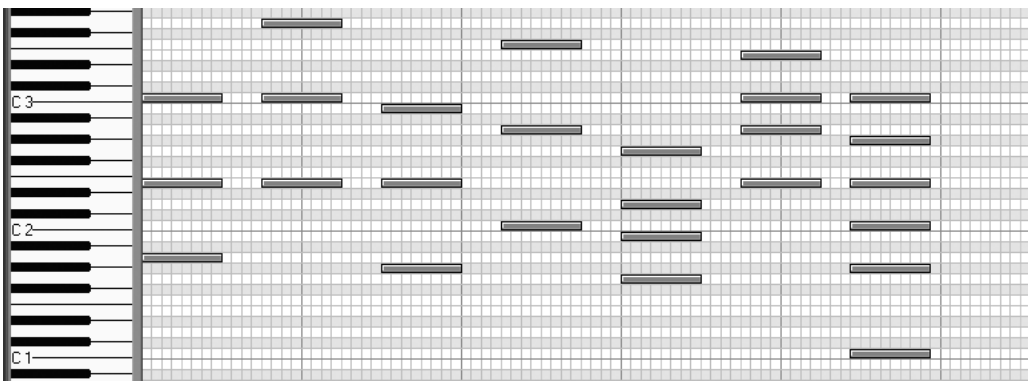


A is a C major chord in **first inversion.**

B is a C major chord in **second inversion.**

C is a C major chord in **root position.**

3. Identify the following chords, including their respective inversions.



In order from the beginning, they are:

- **A minor in root position**
- **C major first inversion**
- **E major first inversion**
- **F major second inversion**
- **G major root position**
- **A minor second inversion**
- **C augmented root position**

4. In the spaces provided, write out the inversions of the following chords.

Example	A	C	E	First Inversion:	C	E	A
	C	E	G	Second Inversion:	G	C	E
	F	A	C	First Inversion:	A	C	F
	E	G#	B	Second Inversion:	B	E	G#
	C	E	G#	First Inversion:	E	G#	C
	G	C	E	Root Position:	C	E	G
	A	D	F	First Inversion:	F	A	D

5. Fill in the missing words. There are two kinds of chord spacing: Closed and **open**. Closed spacing is where the notes of a chord are crowded together as closely as possible, while **open** spacing is where the chord is given a wider spread over the register.

6. Sequence the following chords in as many different types of spacing as you can think of. An acoustic piano patch would be suitable for this, or even a string orchestra patch. Feel free to double notes at the octave to give a full and rich-sounding sonority. When you have done so, listen carefully to each sonority and assess the merits and/or shortfalls of each.

   A. A minor triad—root position

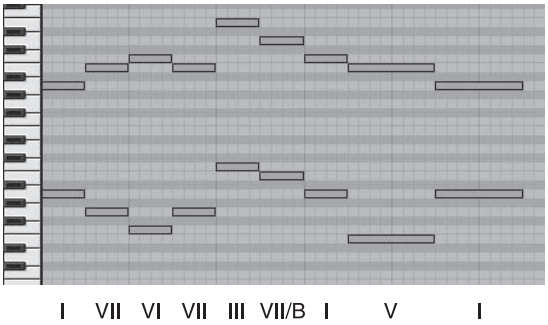
   B. C major triad—first inversion

   C. F major triad—second inversion

   D. D minor triad—root position

   Mark according to your own discretion.

7. Fill in the missing harmony parts using the chords indicated.



Tips:

A. Make sure each chord is a complete triad.

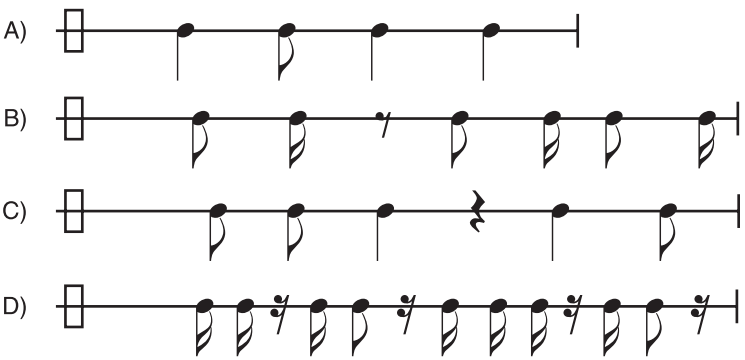
B. To ensure smooth voice leading, look out for shared notes that can be carried over through successive chords.

C. Score for at least four separate parts, meaning that with each chord, one or more of the notes needs doubling.

There are no right or wrong answers; the solutions are numerous.

Chapter 14

1. Fill in the correct time signatures for each of these rhythms.



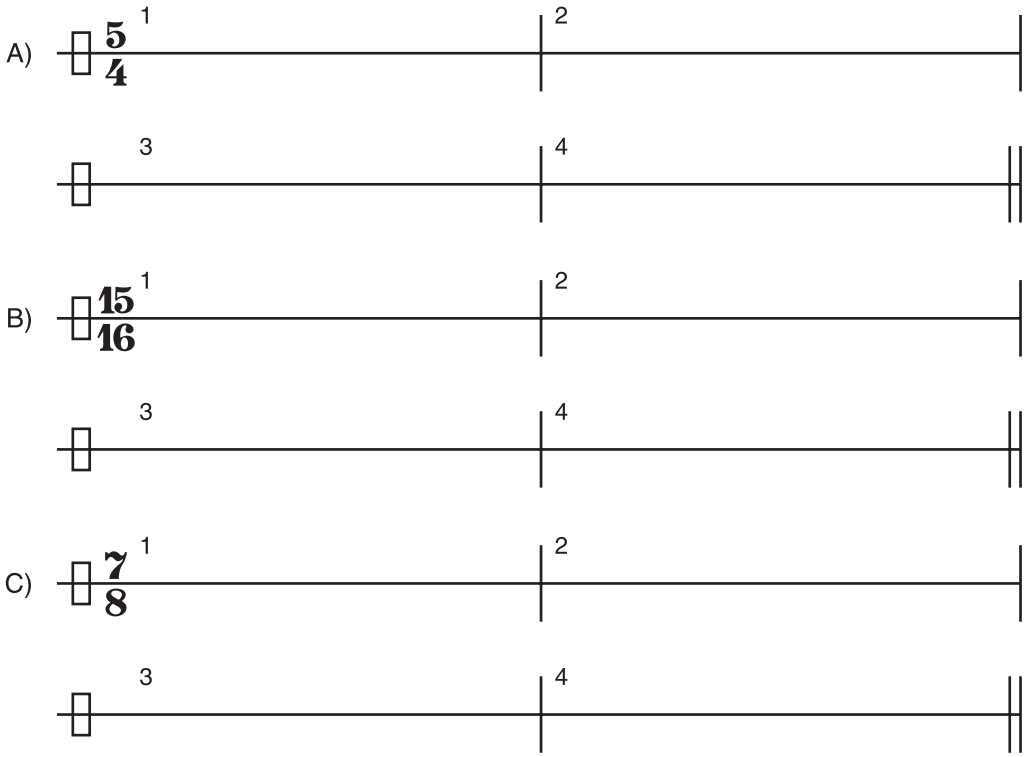
A. **7/8**

B. **11/16**

C. **9/8**

D. **15/16**

2. Compose four-bar rhythms using the following time signatures.



Mark according to your own discretion. Look for correct tally of note values for time signature and logical use of motives in the rhythm.

3. Complete the following. 7/8 can consist of the following groupings of two and three:

   A. 2 plus 3 plus 2

   B. 2 plus 2 plus 3

   C. 3 plus 2 plus 2

   11/8 can consist of the following groupings of two and three. (Give four possible different types of groupings.)

   Any grouping involving 22223 or 33332 in any order.

   8/8 can consist of the following groupings of two and three:

   Any grouping involving 2222 and 223 in any order.

4. Compose and sequence a lead line using the follows time signatures and keys.

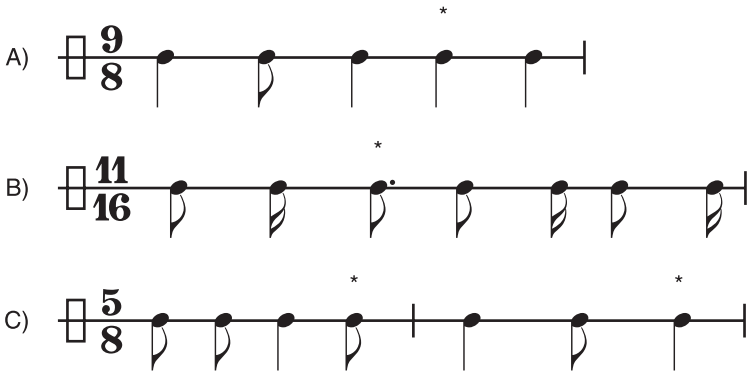
   A. 7/8 in the key of C major.

   B. 5/8 in the key of A natural minor.

   C. 13/8 in the key of A harmonic minor.

   Mark according to your own discretion.

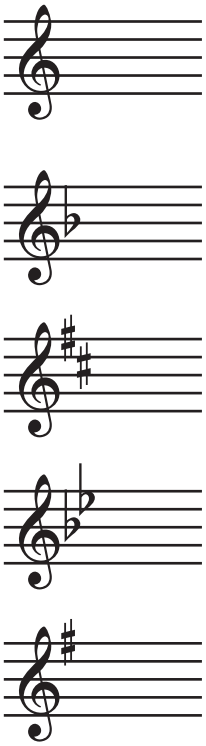
5. Fill in the missing notes required to complete the following rhythms.



Chapter 15

1. Fill in the missing words. The scale from which the notes of a key are selected has 12 notes and is known as the **chromatic scale**. Any of these 12 notes can be taken to be the prospective **keynote** (or tonic) of a major or minor scale.
2. To construct a major scale upon any keynote, it is necessary to apply the formula: **TTSTTTS**.
3. Fill in the notes required to complete the following scales:
   - C major: C **D E F G A B C**
   - D major: D **E F# G A B C# D**
   - F major: F **G A Bb C D E F**
   - Bb major: Bb **C D Eb F G A Bb**
   - G major: G **A B C D E F# G**

4. Identify the following major key signatures:



In order from top to bottom: C, F, D, Bb, G.

5. Fill in the missing words. To work out a relative minor key, count down **three** notes (or up **six** notes) from the tonic of the equivalent major key. The relative minor of the key of G is therefore **E** minor.

6. Write down the relative minor keys of the following major keys.

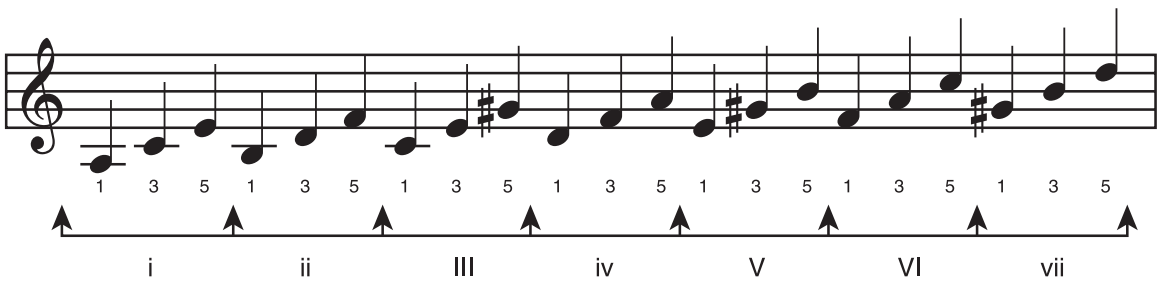
Major Key	Relative Minor
C major	A minor
F major	D minor
G major	E minor
D major	B minor
Bb major	G minor

7. Fill in the notes required to complete the following triads.
   - Key of Bb major, Chord ii, first inversion: **Eb G C**
   - Key of D natural minor, Chord III, root position: **F A C**
   - Key of F major, Chord VI, second inversion: **A D F**
   - Key of D major, Chord IV, root position: **G B D**
   - Key of G harmonic minor, Chord IV, root position: **C Eb G**
   - Key of G major, Chord vi, first inversion: **G B E**
   - Key of E natural minor, Chord ii, root position: **F# A C**
8. Correctly play from memory the following scales: G major, D major, F major, Bb major. The correct fingering for each scale can be found in Appendix A.

   Mark according to evenness of tone and correctness of technique.
9. Transpose the following major key three-chord progression (I, IV, V) into the required keys.

C major	C E G	F A C	G B D
Bb major	Bb D F	Eb G Bb	FAC
D major	D F# A	G B D	A C# E
F major	F A C	Bb D F	C E G

10. Correctly play from memory the arpeggios of the following scales: G harmonic minor, D melodic minor, E natural minor, B harmonic minor. The fingering is identical, as for the A minor arpeggios. For example:



   Mark according to evenness of tone and correctness of technique.
11. Transpose the following minor key three-chord progression (I, IV, V) into the required keys:

A natural minor	A C E	D F A	E G B
G harmonic minor	G Bb D	C Eb G	D F A
D melodic minor	D F A	G Bb D	A C# E
E natural minor	E G B	A C E	B D F#
B harmonic minor	B D F#	E G B	F# A# C#

12. Play correctly from memory the following scales: G and D harmonic minor, E and B melodic minor. The correct fingering for each can be found in Appendix A.

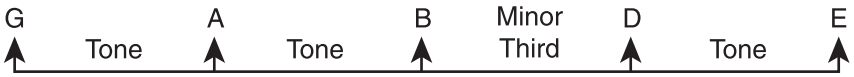
    Mark according to evenness of tone and correctness of technique.

Chapter 16

1. Name four different types of music in which the pentatonic scale has been used.

   Any four from the list in Chapter 16 for full marks. Use discretion for any alternatives not used.

2. Label and identify the intervals between each of the notes of this G pentatonic scale.



3. Build a pentatonic scale on the following keynotes.

D	E	F#	A	B
F	G	A	C	D
Bb	C	D	F	G

4. Build all five pentatonic modes on this tonic note C.

C	D	E	G	A
C	D	F	G	A
C	D	F	G	Bb
C	Eb	F	G	Bb
C	Eb	F	Ab	Bb

5. Identify three added note chords that could be used in the following pentatonic scale.

   F G A C D

   Any of the following will suffice: F A C D; F A C G; F A C D G; D F A C G

6. Compose a lead using the pentatonic scale. When you have done so, add a harmony based on quintal chords—chords composed of superimposed fifths.

   Mark according to your own discretion.

Chapter 17

1a. What kind of triads are the following?

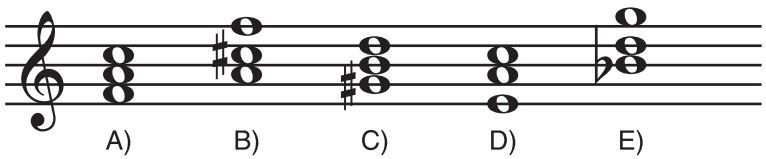
1. Example: C E G is a major triad.
2. C Eb G is a **minor** triad.
3. C Eb Gb is a **diminished** triad.
4. C E G# is an **augmented** triad.

1b. Which of the above do the following symbols denote?

- Cm denotes chord 2.
- C+ denotes chord **4**.
- Co denotes chord **3**.
- C denotes chord **1**.

2. The semitone rule: Fill in the number of semitones required for each triad.
   - Diminished Triad: **3** plus **3** semitones.
   - Minor Triad: **3** plus **4** semitones.
   - Major Triad: **4** plus **3** semitones.
   - Augmented Triad: **4** plus **4** semitones.

3. Identify the following triads. Include the inversion.



A. **F major root position**

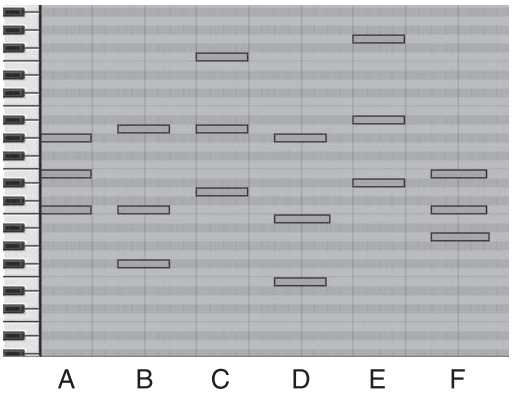
B. **F augmented first inversion**

C. **G3 diminished root position**

D. **A minor second inversion**

E. **G minor first inversion**

4. What kind of the triads are the following?



A. **Augmented**

B. **Diminished**

C. **Minor**

D. **Major**

E. **Diminished**

F. **Minor**

5. Identify:

A. The key of each scale given below.

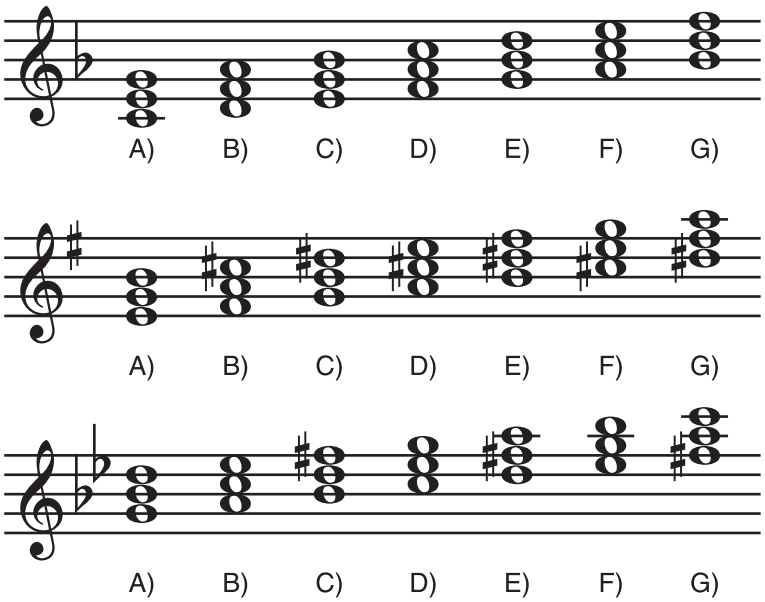
1. **F major**
2. **E minor**
3. **G minor**

B. The scale used.

1. **Major**
2. **Melodic minor ascending**
3. **G harmonic minor**

C. Each of the seven triads.

1. **F major, G minor, A minor, Bb major, C major, D minor, E diminished**
2. **E minor, F# diminished, G augmented, A major, B major, C# diminished, D# diminished**
3. **G minor, A diminished, Bb augmented, C minor, D major, Eb major, F# diminished**



Chapter 18

1. Fill in the missing words. A sequence of chords is called a **chord progression**. The most important feature of chord progressions is the sense of **root movement**, of which there are three types: **root movement** by seconds, thirds and fourths.

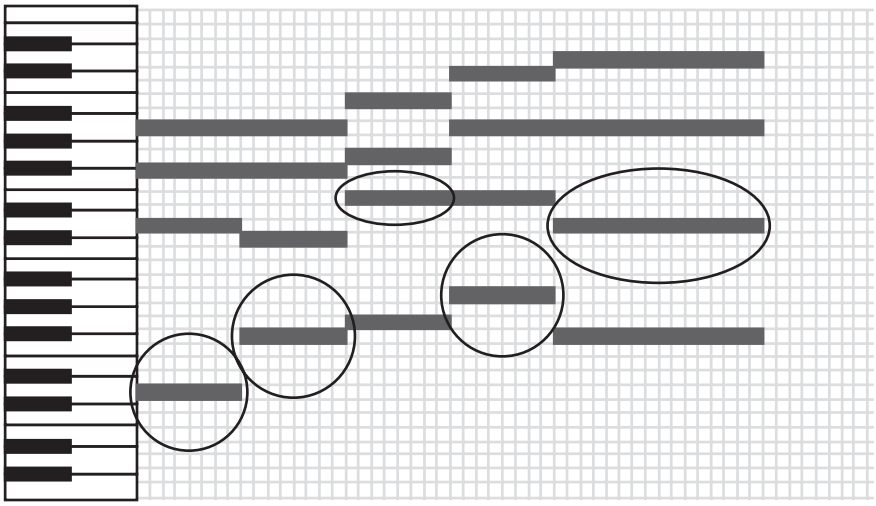
2a. What key is the chord progression given below in?

D major

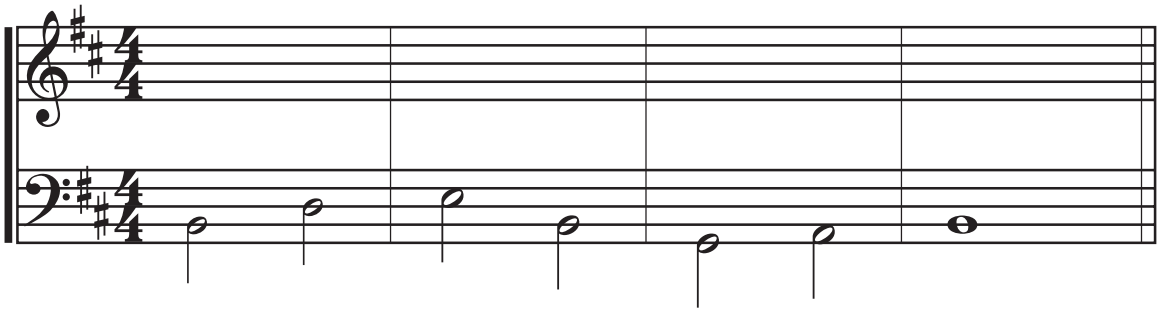
2b. Identify each of the chords below (such as Em/G, and so on).

D, F#m, Em/G, A, D/F#

2c. Circle the roots of each chord.



3. Using your sequencer, complete the harmony by adding three parts above the following chordal roots.



Mark at your own discretion. Look for complete triads and smooth voice leading.

4a. Compose and sequence a four-chord progression in the key of F major based on root movement by fourths.

Mark at your own discretion.

4b. Compose and sequence a four-chord progression in the key of D minor that uses root movement by thirds.

Mark at your own discretion.

4c. Compose and sequence a four-chord progression in the key of G minor that uses root movement by seconds.

Mark at your own discretion.

Chapter 19

1. Fill in the missing words. A major scale whose **tonic** (keynote) is a perfect fifth above the keynote of C requires the addition of a **sharp** in the key signature (the key of G major). This produces the requisite semitone gap between the **seventh** and **eighth** degrees of the scale. Similarly, a major scale whose tonic is a **perfect fifth** above G (D major) requires **two** sharps in the key signature.

2. Fill in the missing words. A major scale whose tonic lies a **perfect fourth** below the keynote of C requires the addition of a **flat** in the key signature (F major). A major scale whose tonic is a further fifth down (Bb) then requires **two** flats in the key signature.

3a. Fill in the notes required to complete each of these major scales.

3b. When you have done so, circle the note that is the tonic of the relative minor key in each case.

	T	T	S	T	T	T	S
C	D	E	F	G	(A)	B
G	A	B	C	D	(E)	F♯
D	E	F♯	G	A	(B)	C♯
A	B	C♯	D	E	(F♯)	G♯
E	F♯	G♯	A	B	(C♯)	D♯
B	C♯	D♯	E	F♯	(G♯)	A♯
F♯	G♯	A♯	B	C♯	(D♯)	E

4. Play the following major scales correctly from memory in the following order: C – G – D – A – E – B – F#. The correct fingering for these scales can be found in Appendix A.

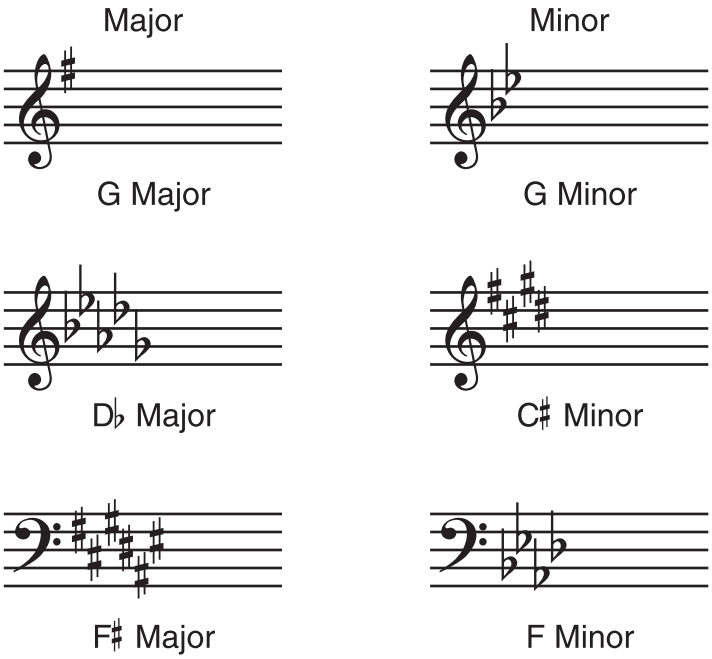
Mark at your own discretion. Look for evenness of tone, smoothness of execution, and the correct technique.

5a. Fill in the notes required to complete the following major scales.

5b. Circle the key that is enharmonically equivalent to the key of F# major.

	T	T	S	T	T	T	S
C	D	E	F	G	A	B
F	G	A	B♭	C	D	E
B♭	C	D	E♭	F	G	A
E♭	F	G	A♭	B♭	C	D
A♭	B♭	C	D♭	E♭	F	G
D♭	E♭	F	G♭	A♭	B♭	C
(G♭)	A♭	B♭	C♭	D♭	E♭	F

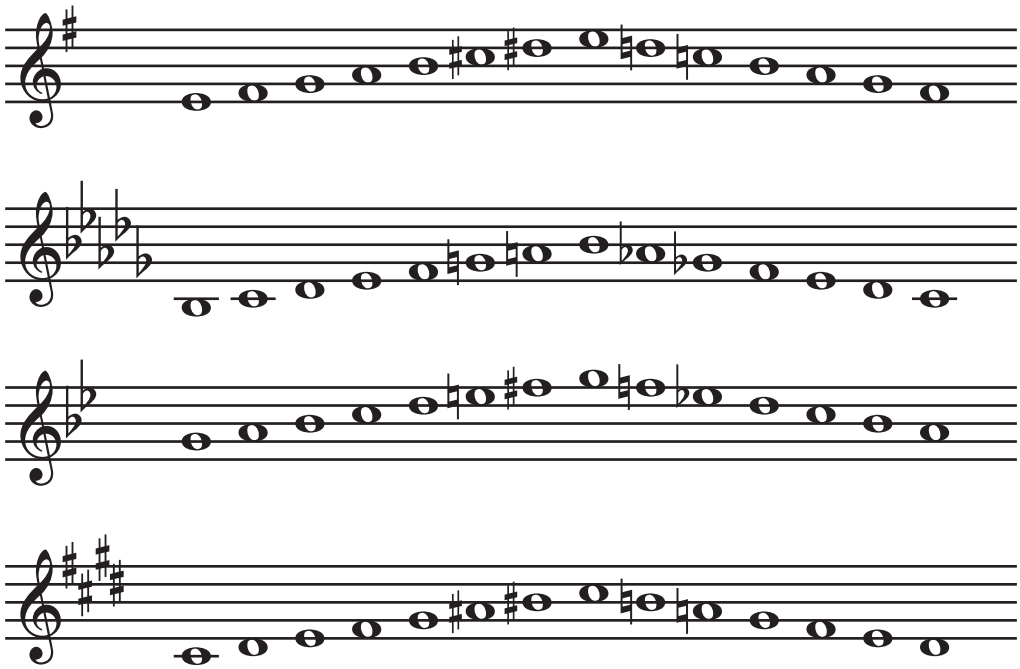
6. Identify the keys that use the following key signatures. Those in the left-hand column are all major keys; those in the right-hand column are all minor keys.



7. Play the following minor scales correctly from memory in the following order: A – E – B – F# – C# – G# – D#.

Mark at your own discretion. Look for evenness of tone, smoothness of execution, and the correct technique.

8. Put in the accidentals—sharps or flats—required to convert each of these natural minor scales into melodic minor scales.



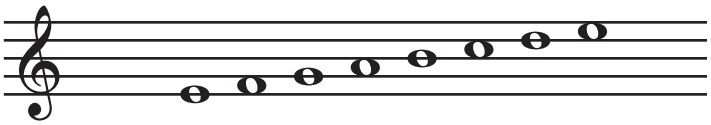
9. Play the following major scales correctly from memory in the following order: C – F – Bb – Eb – Ab – Db – Gb.

   Mark at your own discretion. Look for evenness of tone, smoothness of execution, and the correct technique.

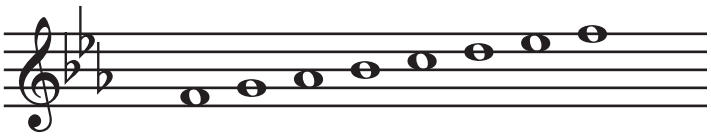
Chapter 20

1. Choose the note that is the tonic or first degree of the following modal scales:
   - Ionian mode: **C** D E F G A B C
   - Mixolydian mode: C D E F **G** A B C
   - Dorian mode: C **D** E F G A B C
   - Aeolian mode: C D E F G **A** B C
   - Phrygian mode: C D **E** F G A B C
   - Locrian mode: C D E F G A **B** C
   - Lydian mode: C D E **F** G A B C

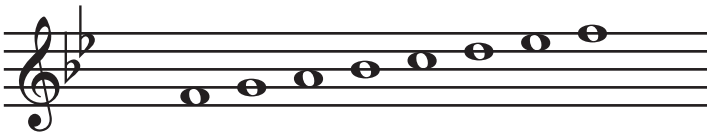
2. Identify the following modes on two levels. First state the keynote, and then state the mode (such as F Phrygian, and so on).



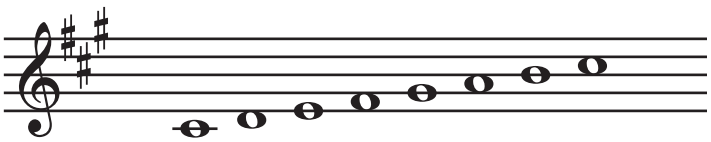
E Phrygian



F Dorian

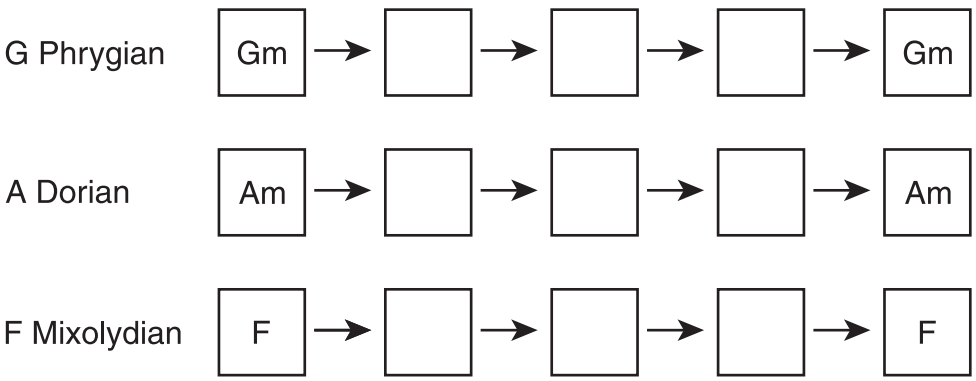


F Mixolydian



C♯ Aeolian

3. Using your sequencer, complete the following chord progressions in the mode and key indicated. One or two bars per chord would make the task easier and simpler to accomplish. Begin and end upon the chord given.



Mark at your own discretion.

4. Fill in the notes required to complete each mode in the key indicated.

	1	2	3	4	5	6	7
C Dorian	C#	D#	E	F#	G#	A#	B
F# Locrian	F#	G	A	B	C	D	E
G Aeolian	G	A	Bb	C	D	Eb	F
Eb Lydian	Eb	F	G	A	Bb	C	D

Chapter 21

1. Name three types of complex chords (chords other than triads).

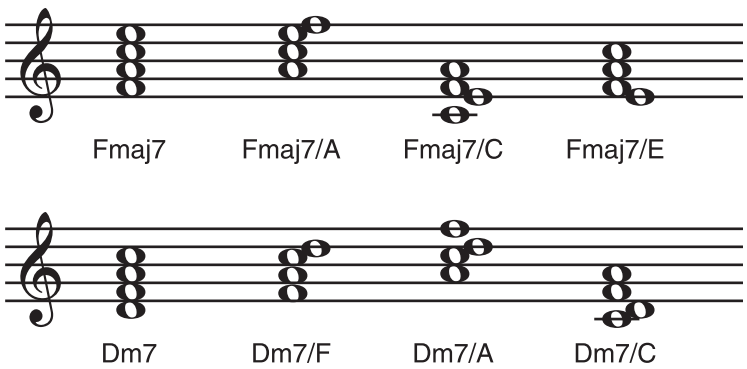
   Answers can be any of the following: seventh chords, ninth chords, eleventh chords, thirteenth chords, added note chords.

2. Fill in the missing words. A chord of the seventh is obtained when a **seventh** above the root of the chord is added to the root, third, and fifth of a **triad**.

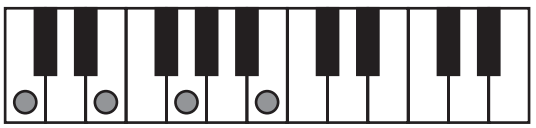
3. Sequence a closed position Cmaj7 chord for strings. Then produce as many different types of spacing of the same chord as you can. Listen carefully to each sonority to assess its strengths and merits.

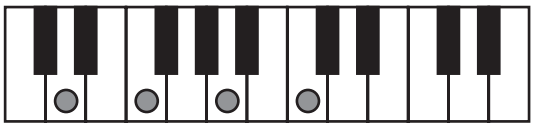
   Mark at your own discretion.

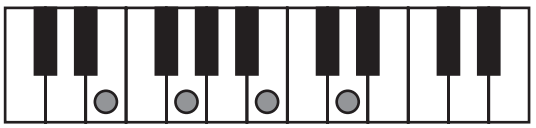
4. Fill in the other three notes required to complete each of the indicated seventh chords.

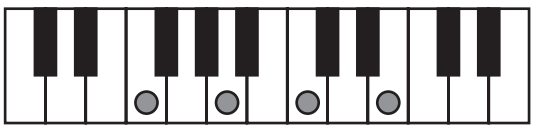


5. Identify and label the following seventh chords in the key of C major in the manner indicated. The first seventh chord has already been identified and labeled for you.

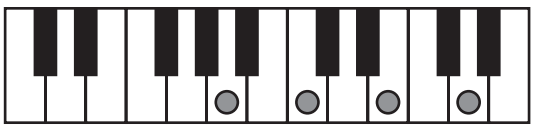

I_7 Cmaj7

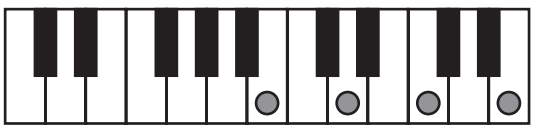

ii_7 Dm7


iii_7 Em7

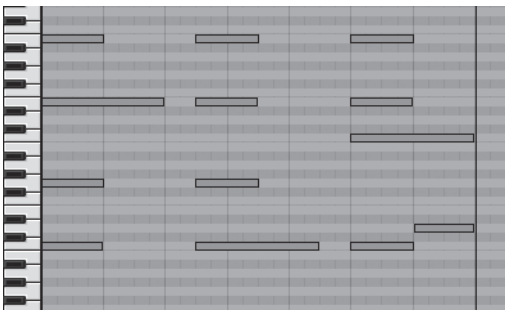

IV_7 Fmaj7


V_7 G7


vi_7 Am7


vii_7 Bo7

6. Below you will see Cmaj7 progressing to three different seventh chords—the first (Fmaj7) involving root movement by fourths, the second (Am7) involving root movement by thirds, and the third (Dm7) involving root movement by seconds. Complete the harmony as indicated below. Resolve the seventh of each chord stepwise.



Cmaj7–Fmaj7 Cmaj7–Am7/C Cmaj7–Dm7

Mark at your own discretion.

7. List and identify the seventh chords belonging to the following keys.

D natural minor:	**D**	**E**	**F**	**G**	**A**	**Bb**	**C**	**D**
Chord I:	D	F	A	C	Dm7			
Chord II:	E	G	Bb	D	Eo7			
Chord III:	F	A	C	E	Fmaj7			
Chord IV:	G	Bb	D	F	Gm7			
Chord V:	A	C	E	G	Am7			
Chord VI:	Bb	D	F	A	Bbmaj7			
Chord VII:	C	E	G	Bb	C7			

B natural minor:	**B**	**C#**	**D**	**E**	**F#**	**G**	**A**	**B**
Chord I:	B	D	F#	A#	Bm/maj7			
Chord II:	C#	E	G	B	C#o7			
Chord III:	D	F#	A#	C#	D+maj7			
Chord IV:	E	G	B	D	Em7			
Chord V:	F#	A#	C#	E	F#7			
Chord VI:	G	B	D	F#	G7			
Chord VII:	A#	C#	E	G	A#0/–7			

F# major:	**F#**	**G#**	**A#**	**B**	**C#**	**D#**	**E#**	**F#**
Chord I:	F#	A#	C#	E#	F#maj7			
Chord II:	G#	B	D#	F#	G#m7			
Chord III:	A#	C#	E#	G#	A#m7			
Chord IV:	B	D#	F#	A#	Bmaj7			
Chord V:	C#	E#	G#	B	C#7			
Chord VI:	D#	F#	A#	C#	D#m7			
Chord VII:	E#	G#	B	D#	E#o7			

Chapter 22

1. Exotic scales work well in many types of electronic music. They are especially good for creating unusual, exotic atmospheres. To use an exotic scale effectively, you must collect important information beforehand. This exercise will show you how to do that. Simply answer the following questions.
   - Name: Syrian
   - Keynote: B
   - Type: Exotic Hexatonic
   - Pitches: B C D# E G A# B

   A. What are the intervals formed by each note of the scale with the keynote (tonic)?

      A. Unison
      B. **Minor second**
      C. **Major third**
      D. **Minor sixth**
      E. **Major seventh**
      F. Octave

   B. What are the salient harmonies of the scale? (Look for conspicuous triads that can be used to help add and create harmonies and list them here.)

      Mark at your own discretion.

   C. What are the salient melodic features that define the scale? These are groups of two or three notes that give the scale its particular character. You can discover these by playing the scale on your keyboard and listening carefully for its strongest and most characteristic features. For example, the strongest feature of the Neapolitan group of modes is the flat second between the first and second degrees. In the

Neapolitan major modes, this creates a note group of C Db E, which is a very strong and recognizable feature of those modes. What do you feel is the strongest feature of the Syrian mode? There might be more than one. List these here.

Mark at your own discretion.

2. Complete the whole tone scale using the keynote given below. Underneath, list the augmented triads that come from it.

Mark at your own discretion.

Note: Ab	Bb	C	D	E	F#
Triad 1:	Ab	C	E		
Triad 2:	Bb	D	F#		

3. List two modes that you feel would be useful to create a traditional Japanese atmosphere. List the reasons for your choice.

Mark at your own discretion.

4. Devise artificial scales using the following criteria.

A. A pentatonic scale that uses two minor chords.

B. A hexatonic scale that has no whole tones.

C. An octatonic scale that uses four major triads.

Mark at your own discretion.

Chapter 23

1. Ninth chords work well in many styles of modern electronic music. To use ninth chords, you must be able to build them on any degree of the scale that you are using. The purpose of this exercise is to help you do that.

List all of the ninth chords that can be built using these scales.

C natural minor: C D Eb F G Ab Bb C

I: **C Eb G Bb D**

II: **D F Ab C Eb**

III: **Eb G Bb D F**

IV: **F Ab C Eb G**

V: **G Bb D F Ab**

VI: **Ab C Eb G Bb**

VII: **Bb D F Ab C**

2. Ninth chords are commonly used in different positions. To use these, you must be able to work out what they are so that you can play them. List the five possible positions of the following ninth chords.

   Cmaj9: C E G B D

   A. Root position: **C E G B D**

   B. First inversion: **E G B D C**

   C. Second inversion: **G B D C E**

   D. Third inversion: **B D C E G**

   E. Fourth inversion: **D C E G B**

   Fm9: F Ab C Eb G

   A. Root position: **F Ab C Eb G**

   B. First inversion: **Ab C Eb G F**

   C. Second inversion: **C Eb G F Ab**

   D. Third inversion: **Eb G F Ab C**

   E. Fourth inversion: **G F Ab C Eb**

3. List the dominant ninth chords of the following keys.

   A. G minor: **D F# A C Eb**

   B. D major: **A C# E G**

   C. Bb minor: **F A C Eb Gb**

   D. E major: **B D# F# A# C#**

4. List all of the eleventh chords that can be built in the key of F major.

   A. **F A C E G Bb**

   B. **G Bb D F A C**

   C. **A C E G Bb D**

   D. **Bb D F A C E**

   E. **C E G Bb D F**

   F. **D F A C E G**

   G. **E G Bb D F A**

5. List four chromatically altered variations of the following dominant eleventh chord: G B D F A C.

   Mark at your own discretion. The root should not be altered, the third should not be flattened, and the seventh should not be sharpened. Anything else goes.

6. List all of the thirteenth chords that can be built in the key of Bb natural minor.

   A. **Bb Db F Ab C Eb Gb**

   B. **C Eb Gb Bb Db F Ab**

   C. **Db F Ab C Eb Gb Bb**

   D. **Eb Gb Bb Db F Ab C**

   E. **F Ab C Eb Gb Bb Db**

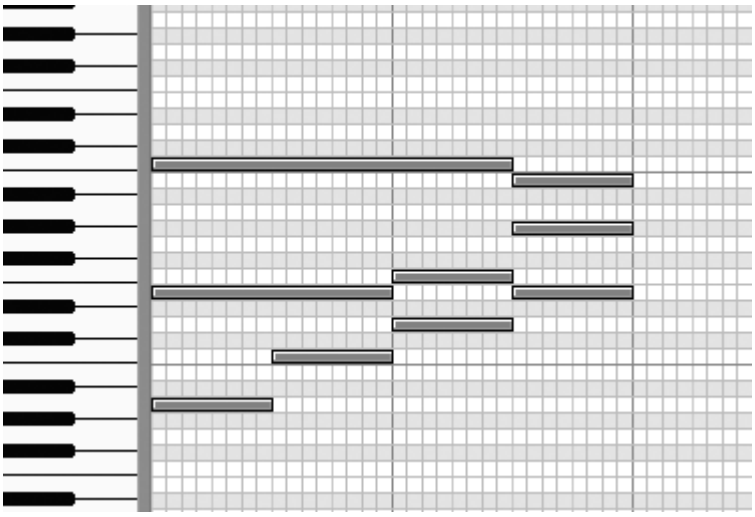
   F. **Gb Bb Db F Ab C Eb**

   G. **Ab C Eb Gb Bb Db F**

Chapter 24

To complete these exercises, you will need to use an arpeggiator or a pencil tool with which to compose and draw the notes of an arpeggio pattern (onto, say, piano roll view of your sequencer).

1. Develop and sequence an eight-step arpeggio pattern using a resolution of sixteenth notes that traces the following two-bar chord progression.



   Mark at your own discretion.

2. Compose and sequence a sixteen-step arpeggio pattern that traces the chord of A minor. Introduce at least two passing notes into the pattern.

   Mark at your own discretion.

3. List three kinds of non-harmonic tones.

   Any of the following are correct: passing note, melodic auxiliary, appoggiatura, returning tone.

4. Compose and sequence a 32-step arpeggio pattern that moves through three octaves and employs two kinds of non-harmonic tones. Build the arpeggio pattern around a Cmaj7 chord.

   Mark at your own discretion.

5. Compose and sequence a five-step arpeggio pattern that uses an exotic scale of your choice.

   Mark at your own discretion.

6. Compose and sequence a seven-step arpeggio pattern that emulates the acid house bass lines popular in the late '80s and early '90s. Build it around note E, making occasional incursions to other notes of your choice.

   Mark at your own discretion.

Chapter 25

1. Fill in the missing words. Intonation concerns the fine points of how a scale is **tuned**. The 12-tone chromatic scale used in Western music is tuned according to the system of **equal temperament**. In this system, the octave is divided up into 12 mathematically equal **semitones**.

2. Name three kinds of intonation:

   A. **Equal temperament**

   B. **Just intonation**

   C. **Pythagorean intonation**

3. Fill in the missing words. For the purposes of fine-tuning, the octave is divided up into **12** hundred cents, in which each equal semitone is worth **100** cents. By providing a fine-tune option on a synthesizer or sampler, it is possible to adjust each semitone up or down in increments of a single **cent**.

4. Name three kinds of music in which alternative tunings might be useful.

   Mark at your own discretion.

5. Fill in the missing words. **Just** intonation uses pure intervals as defined by their mathematical ratios in the **harmonic** series—such as perfect fifths of ratio 3:2, major thirds of ratio **5:4**, major sixths of ratio 5:3, and so on.