

Name: \_\_\_\_\_

Unit: \_\_\_\_\_

# **Cadet Music Theory Workbook**

## **Level Four**

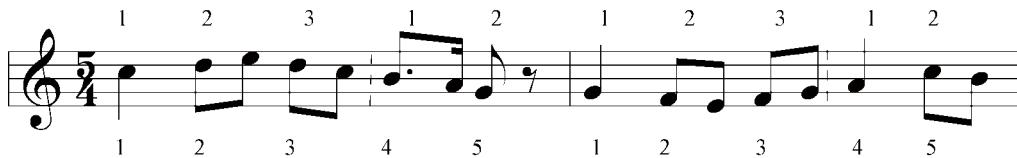
*Updated 5 Dec 2019*

# Level 4

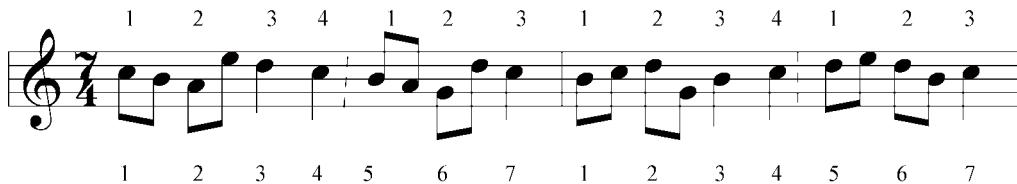
## ***Irregular Time Signatures***

1. Irregular time signatures are time signatures with five or seven beats within a bar. These time signatures are mostly used in twentieth century music.
2. Often these two kinds of measures are alternates to the regular time signatures.

A measure of 5 beats can be considered an alternate to a measure of 3 beats and a measure of 2 beats or vice versa.



A measure of 7 beats can be considered an alternate to a measure of 4 beats, and a measure of 3 beats.



3. We will often see a perpendicular line of dots separating both sub-measures to clearly indicate the strong beats.



4. In the preceding measures, it is possible to indicate the irregular measures as simple measures: the upper figure indicates the number of beats or pulses in each measure. The lower figure indicates the kind of note that represents one beat. The lower figure can be a 1, 2, 4, 8, 16. The most common used are the 8 to represent the eighth-note and the 4, the quarter note.

**A)** Place the bar lines at the right place:



## ***Finding the Key of a Melody without a Key Signature***

5. You learned to find the key of a melody by using the key signature as a reference in Level Two. Now you will find the key of a melody that does not have a key signature but accidentals throughout.
6. IF ALL THE ACCIDENTALS ARE SHARPS, note down all the sharps found throughout the melody and then place them in their order. In this way, the key signature can be found.

Since this melody has three sharps (F#, C#, G#) it is written in A major.

7. If after you have placed the sharps in order as in the example below you find B# does not belong. For example:

The sharps are F#, C#, G#, D#. B sharp does not belong in the order of sharps; therefore, B# must be an accidental. If you raise B by a semitone to B#, you will find that you are in the key of C# minor.

***Note:*** The last note of the musical piece can also be used to find the key.

8. In this example, the sharps seem to be in good order. However, the F<sup>#</sup> is raised by a semitone to a F double sharp (x). Therefore, it is the F double sharp that is the leading note that we find in the G<sup>#</sup> minor scale with 5 sharps at the key signature.

9. IF ALL THE ACCIDENTALS ARE FLATS, note down all the flats found throughout the melody and then place them in their order so that you may find the key signature.

With B<sup>flat</sup>, E<sup>flat</sup>, A<sup>flat</sup>, and D<sup>flat</sup>, the melody is written in A<sup>flat</sup> Major.

10. If the flats can be organized to form a key signature, the melody is written in a major key. If one of these flats is natural, then the melody is written in the relative minor key.

With the B natural, E<sup>flat</sup>, and A<sup>flat</sup>, the melody is written in C minor for B is the leading note of this scale.

11. IF THE ALTERATIONS ARE SHARP AND FLATS, try a key signature of flats and raise the leading note by a semitone to a sharp.

Two flats at the key signature indicate that the melody is in B<sup>flat</sup> or G minor.

**A)** Indicate the keys of the following melodies:



\_\_\_\_\_



\_\_\_\_\_



\_\_\_\_\_



\_\_\_\_\_



\_\_\_\_\_

# Inverting Intervals

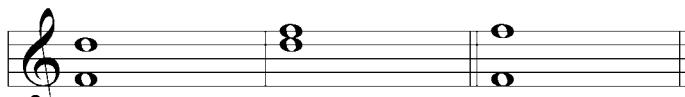
16. Here is a table to illustrate the nature of the intervals.

## Interval Equivalent Table

### Complementary

	INTERVAL	+	INTERVAL
Perfect	Perfect		
Major	Minor		
Minor	Major		
Augmented	Diminished		
Diminished	Augmented		

16. For a better understanding, let's analyze the following example. If you have a third, its complementary interval is a sixth. If the third is minor, then the sixth will be major.



Major 6th + Minor 3rd = Perfect Octave

17. If we have a perfect 4th, then its complementary interval will be a perfect 5th. However, if the 4th is raised by a semitone, the interval becomes an augmented 4th and its complementary interval becomes a diminished 5th.

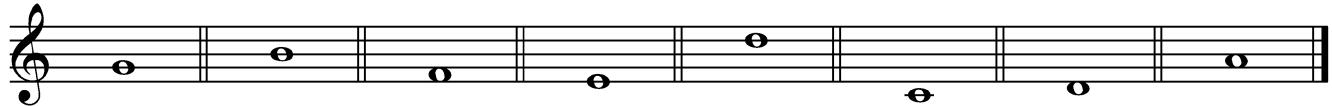


Dim. 5th + Aug. 4th = Perfect Octave

**Note:** This table works for all simple intervals that result to an octave.

## Invert Intervals

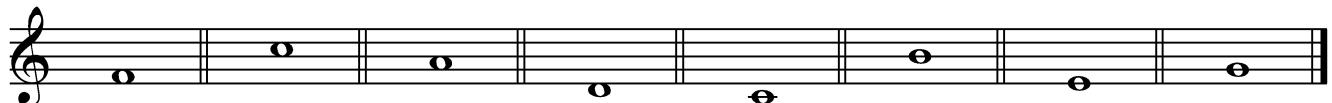
1. Complete the following intervals:



min 6<sup>th</sup> Maj 3<sup>rd</sup> aug 4<sup>th</sup> dim 5 min 3<sup>rd</sup> P1 P8 min 2<sup>nd</sup>

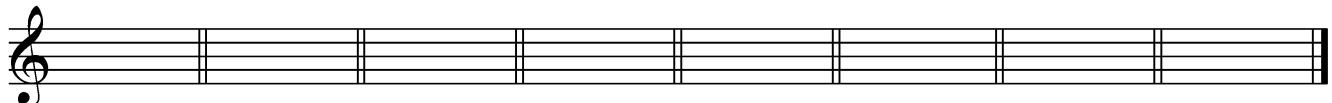


P4<sup>th</sup> Maj 7<sup>th</sup> Maj 3<sup>rd</sup> P5<sup>th</sup> min 2<sup>nd</sup> min 2<sup>nd</sup> Maj 6<sup>th</sup> min 3<sup>rd</sup>

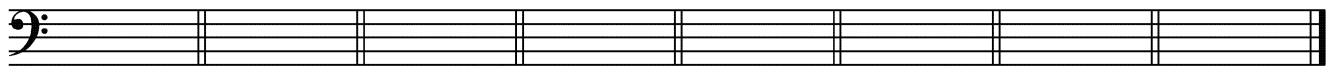


P4<sup>th</sup> Maj 7<sup>th</sup> Maj 3<sup>rd</sup> P5<sup>th</sup> min 2<sup>nd</sup> min 2<sup>nd</sup> Maj 6<sup>th</sup> min 3<sup>rd</sup>

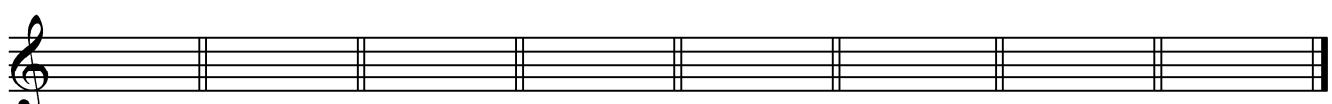
2. Invert the above intervals and name the new interval:



— — — — — — — —

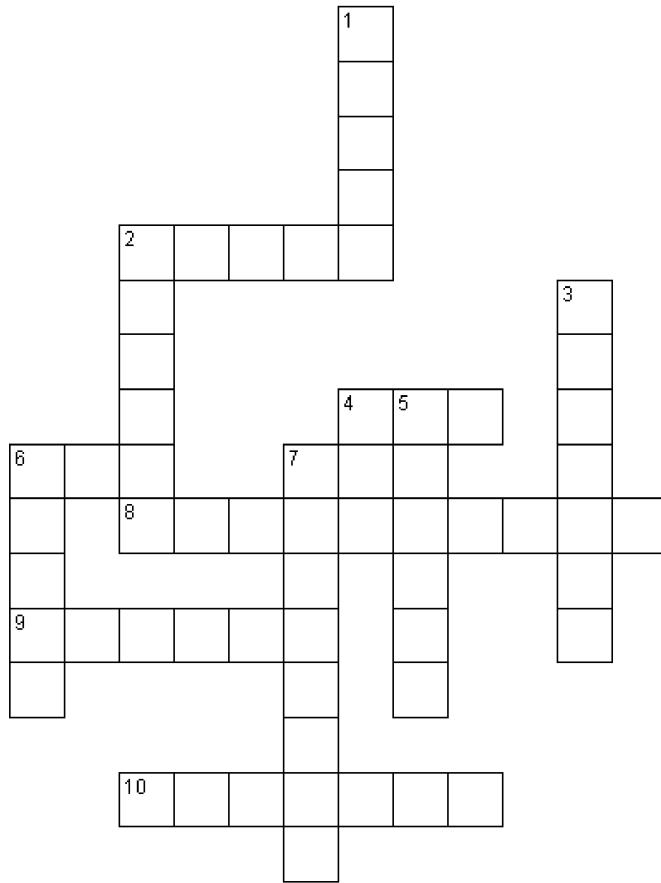


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Complete the Crossword.



**Across**

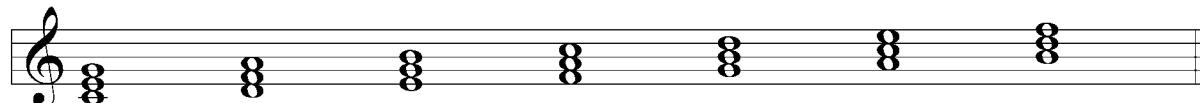
2. When a minor 3<sup>rd</sup> interval is inverted, it becomes a major \_\_\_\_\_.
4. Augmented is abbreviated to \_\_\_\_\_.
6. Minor is abbreviated to \_\_\_\_\_.
8. When an augmented interval is inverted, it becomes \_\_\_\_\_.
9. An interval is inverted by writing the bottom note of the interval up an \_\_\_\_\_.
10. The \_\_\_\_\_ of an interval changes when it is inverted (except perfect intervals).

**Down**

1. When an interval of a 4<sup>th</sup> is inverted, it becomes a \_\_\_\_\_.
2. When a minor 7<sup>th</sup> interval is inverted, it becomes a major \_\_\_\_\_.
3. \_\_\_\_\_ intervals do not change their quality when they are inverted.
5. When an octave is inverted, it becomes a \_\_\_\_\_.
6. When a minor interval is inverted, it becomes \_\_\_\_\_.
7. The \_\_\_\_\_ states that the sum of the intervallic distance of the original interval plus the intervallic distance of the inverted interval is nine.

## Chords

18. As you learned in Level Three, a chord is built on the root, the third, and the fifth. If you take the major scale and build a chord on all the degrees you can determine the nature (major, minor, augmented, diminished) of all the chords of the major scale.

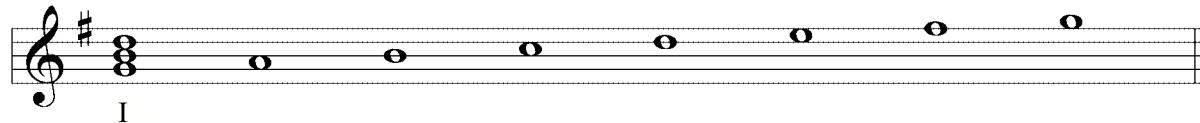


I Maj      II min      III min      IV Maj      V Maj      VI min      VII dim

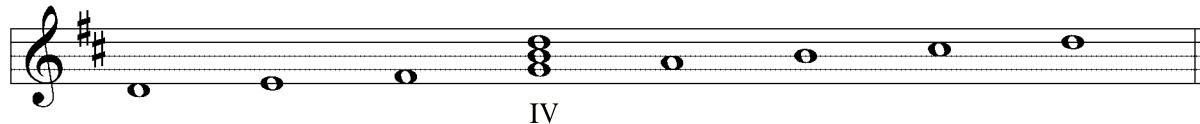
19. By analyzing the major scale (above), we find that the tonic (I), sub-dominant (IV), and the dominant (V), are all the major chords. The supertonic (II), the mediant (III), and the sub-mediant (VI), are all minor. Finally, the leading note (VII) is a diminished chord because the fifth is diminished.

20. All the chords (major and minor) have different roles depending on their position in the scale. For instance, G major can be the tonic (I) in G major, the sub-dominant (IV) in D major, and the dominant (V) in C major.

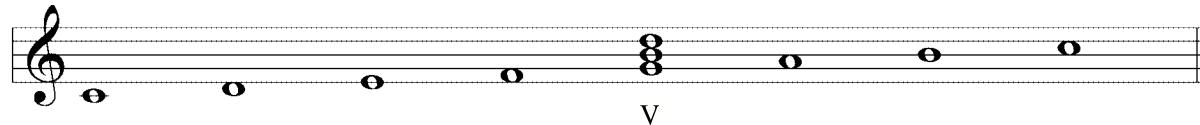
G major



D major



C major



21. A minor chord like D minor can also be found in three different minor keys: it is the supertonic in C major, the mediant in Bb major, and the sub-mediant in F major.

C major

A musical staff in G clef. Notes are placed on the 2nd, 3rd, 4th, 5th, and 6th degrees. The 2nd degree is a minor chord (B-D-F).

B<sup>b</sup> major

A musical staff in G clef with a key signature of one flat. Notes are placed on the 3rd, 4th, 5th, 6th, and 7th degrees. The 3rd degree is a minor chord (D-F-A).

F major

A musical staff in G clef with a key signature of one flat. Notes are placed on the 4th, 5th, 6th, and 7th degrees. The 6th degree is a minor chord (A-C-E).

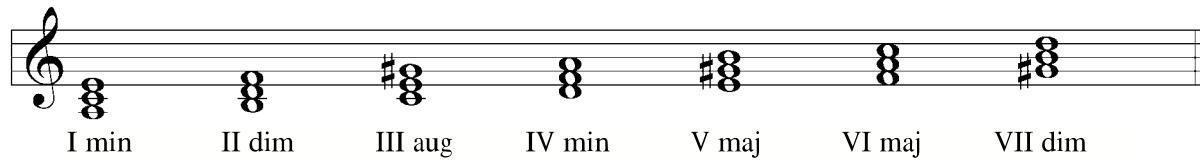
22. As mentioned, the chord found on the seventh degree of a major scale is diminished. A DIMINISHED TRIAD (chord) has a minor third and diminished fifth above the root.

Four diminished triads labeled A, B, C, and D. The labels below the staff indicate the root notes: C dim., F dim., B dim., and F<sup>#</sup> dim.

In this example (above), the four chords are composed with minor thirds and diminished fifths. Example A can be the chord of the leading note of D<sup>b</sup> major. Example B can belong to G<sup>b</sup> major; Example C of C major and Example D of G major.

**Note:** It is important to remember the make-up of the principal chords of the harmonic minor scale: I, IV, and V degrees. The purpose for the role of the other chords can be studies by personal choice.

23. With the harmonic minor scale you also can find the nature of the chords of each degree.



24. In summary, this table explains the break-down of all chords:

	Major Scales	Harmonic Minor Scales
Major Chords	I, IV, V	V, VI
Minor Chords	II, III, VI	I, IV
Diminished Chords	VII	II, VII
Augmented Chords	N/A	III

**Note:** This table included only the principle chords of major and minor scales.

**A)** On which degrees of the major scale can you have major chords?

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**B)** On which degrees of the major scale can you have minor chords?

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**C)** In a harmonic minor scale, what is the nature (maj., min., or dim.) of the following chords:

1) V = \_\_\_\_\_

2) IV = \_\_\_\_\_

3) I = \_\_\_\_\_

**D)** Find 3 scale degrees for each chord given, indicate the scale degree and key for each. Example: F major chord can be subdominant of C major, the dominant of Bb major, and the tonic of F major.

1) E minor = \_\_\_\_\_   \_\_\_\_\_   \_\_\_\_\_

2) G major = \_\_\_\_\_   \_\_\_\_\_   \_\_\_\_\_

3) F<sup>#</sup> minor = \_\_\_\_\_   \_\_\_\_\_   \_\_\_\_\_

4) B<sup>♭</sup> major = \_\_\_\_\_   \_\_\_\_\_   \_\_\_\_\_

5) D dim. = \_\_\_\_\_   \_\_\_\_\_   \_\_\_\_\_

**E)** Why is the chord of the 7th degree different from the other chords? In what way? (nature and how it is built)

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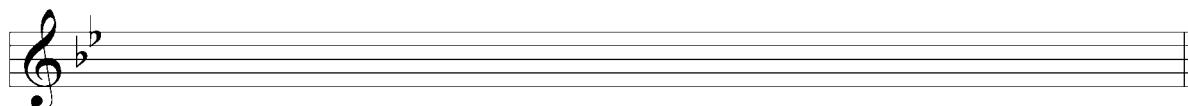
**F)** What does the chord of the 5th degree of the major scale and the chord of the 5th degree of the minor scale have in common?

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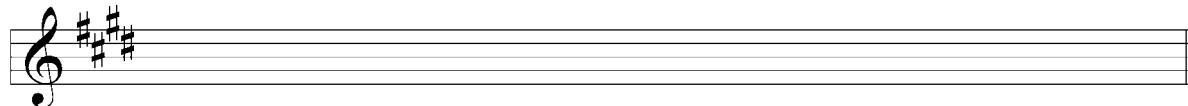
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**G)** Write out all the chords that we find in the following scales. Indicate their nature:  
(Example: A maj, F min, E dim, etc...)

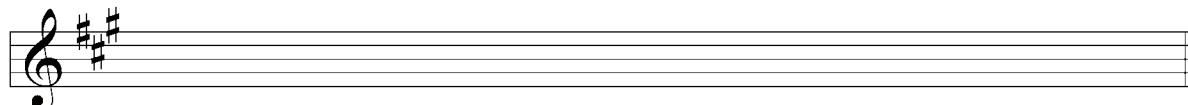
B<sup>b</sup> major

A blank musical staff consisting of five horizontal lines and four spaces, with a treble clef and a B-flat key signature (one flat) at the beginning.

E major

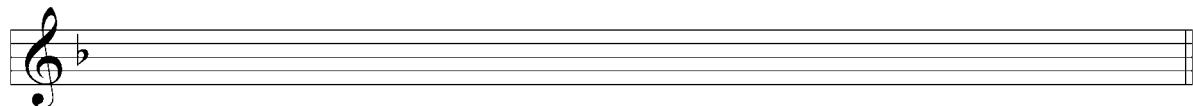
A blank musical staff consisting of five horizontal lines and four spaces, with a treble clef and an E major key signature (no sharps or flats) at the beginning.

A major

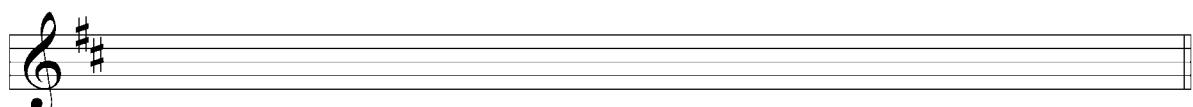
A blank musical staff consisting of five horizontal lines and four spaces, with a treble clef and an A major key signature (two sharps) at the beginning.

H) Write down the chords that are found on the I, IV, and V degrees of the following minor harmonic scales. Indicate their nature.

D harmonic minor



B harmonic minor



# Chords Worksheet

## PART A

Write augmented chords, in root position, on the following notes:

A musical staff in treble clef with five horizontal lines. It contains seven notes: a whole note on the first line, a half note on the second line, a whole note on the third line, a half note on the fourth line, a half note with a flat sign on the fifth line, a half note with a sharp sign on the fourth line, and a whole note on the third line. There are also two rests: a half note rest on the second line and a whole note rest on the first line.

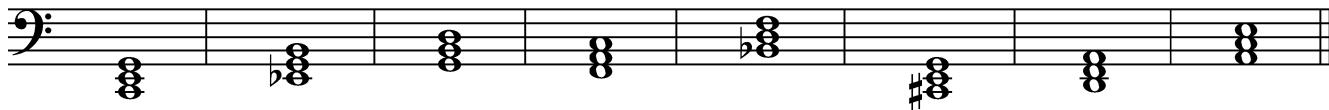
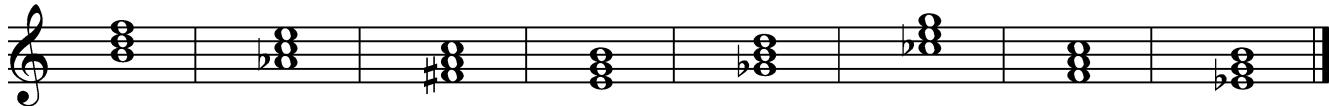
Add accidentals to make the following chords augmented:

## PART B

Write diminished chords, in root position, on the following notes:

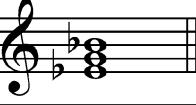
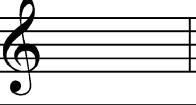
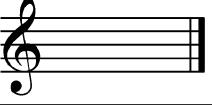
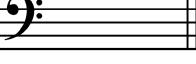
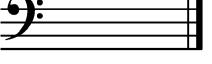
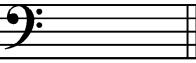
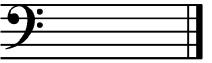
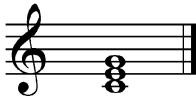
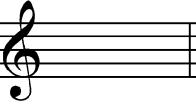
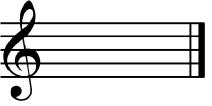
A musical staff in G clef. It contains the following notes from left to right: a whole note on the 4th line, a half note on the 3rd line, a whole note on the 2nd line, a half note on the 1st line, a half note on the 2nd line, a whole note on the 3rd line, a half note on the 4th line, and a whole note on the 5th line.

Add accidentals to make the following chords diminished:



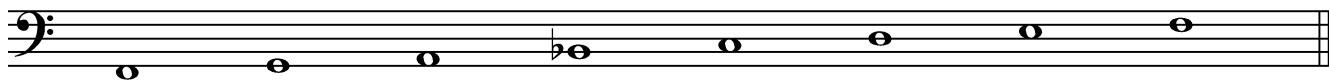
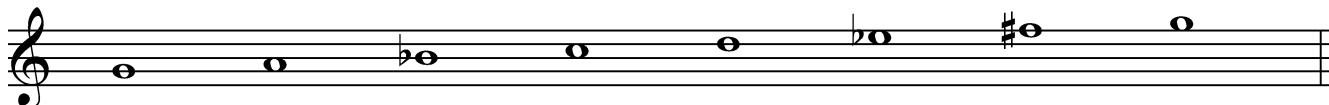
### PART C

Invert the following chords; first into 1<sup>st</sup> inversion and second into 2<sup>nd</sup> inversion:

Root	1 <sup>st</sup> Inversion	2 <sup>nd</sup> Inversion
		
		
		
		

### PART D

Write chords on each scale degree of the following scales. Qualify each chord.



**PART B**

1. Write the following chords: in 1st inversion:



a. F minor



b. D minor



c. B Flat Major



d. E Major



e. E Flat minor



f. G minor



g. F Major



h. C Sharp minor



i. G sharp Major



j. B Flat minor

2. Compose the following chords: in 2nd inversion:



Major



Major



Minor



Major



Major



Minor



Major



Minor



Major



Major

## ***Transposing a Melody***

**25.** As seen in Level Three, it sometimes happens that you have to transpose a melody because it does not match a voice or instrument. You can transpose the melody in many different keys, and also in many different intervals.

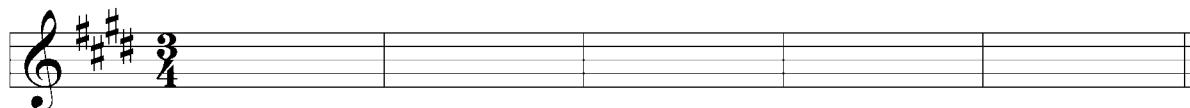
**26.** To transpose a melody in a new key, you use the same steps as these learned in Level Three (Transposition of a major second higher):

- Determine the key of the original melody.
- Find the new key in accordance with the new interval wanted.
- Write down the accidentals at the key signature of the new melody.
- Transpose each note of the melody by the given interval.
- Add any accidentals that appear in the new key that correspond to the transposition of the original note to the new note.

**27.** For example, if you want to transpose the following melody a major third higher, you will use this step by step method:



This example is in C major (step A). If you raise the C a major third higher, the new key will be E major (step B). Next, you write down the new key signature (step C).



By respecting the desired interval, you transpose each note (step D) while keeping everything else the same (rhythm, dynamics, etc.).

Finally, you add any accidentals that are a result of the transposition (step E). The arrows indicate the accidentals.

**28.** To ensure that all your transpositions are correct, you must follow the step-by-step method outlined above.

**A)** Transpose this melody by the requested interval.

A musical score for a single instrument, likely a woodwind or brass, featuring a treble clef, a key signature of one flat, and a 3/4 time signature. The score consists of two staves of music, with the second staff continuing the melody from the first. The music includes various note values such as eighth and sixteenth notes, rests, and grace notes. The first staff ends with a repeat sign and a double bar line, indicating a section repeat.

## A perfect fourth higher

A blank musical staff consisting of five horizontal lines. A treble clef is positioned at the top left. The staff is empty, with no notes or rests present.

## A perfect fifth higher

A blank musical staff consisting of a treble clef at the top and five horizontal lines below it, all of which are empty.

## Major sixth higher

A blank musical staff consisting of five horizontal lines and four spaces, starting with a treble clef on the top line.

### Minor third lower

A blank musical staff consisting of five empty measures. It features a treble clef at the beginning and five horizontal lines for the staff.

## Perfect fourth lower

A blank musical staff with a treble clef at the beginning. The staff consists of five horizontal lines and four spaces. There are no notes or other markings on the staff.

## Major seventh higher

## ***Tempo and Style***

**29.** Throughout your musical training, you will have to recognize and understand new Italian words that you will frequently find in musical pieces. These terms are the composer's way of expressing the interpretation of the musical piece. Certain words correspond to tempo, variation of tempo, and style, etc.

**30.** The following are words that you might find in a musical piece at your level.

### *Variation in tempo*

Italian	English
rubato or tempo rubato	robbed time (taking a portion of time from one note and giving it to another) (at the discretion of the musical director)

### *Style*

Italian	English
brillante	glittering, sparkling
cantabile	in a singing style
con brio	with vigour, spirit
con espressione	with expression
dolce	sweetly
grave	slow and solemn
grazioso	gracefully

### *Adverbs used in conjunction with other words*

Italian	English
sempre	always
quasi	as if, almost

## *Cadences*

31. Similar to the English language, music is composed around phrases. A cadence represents the punctuation of the musical phrase being it a comma or a period.
32. A CADENCE is a two-chord ending phrase. The second of these chords is nearly always on the accented beat.
33. There are two categories of cadences that may be classified as “final” and “non-final”. The two types of “Final” cadences, which may be found at the end of a sentence or at the end of a piece of music, are PERFECT AND PLAGAL. Here in Level Four, you will simply study the different types. In Level Five, you will learn how to write the different cadences.

**Note:** Take note on how the notes are placed on the staff. The bass note is usually written in the bass clef and the other notes of the chord are usually written in the treble clef.

34. The **PERFECT CADENCE** is the most common of all cadences. It is sometimes called an authentic cadence. It is a conclusive cadence because it gives a strong impression that the musical piece is ended. It consists of the **DOMINANT** chord, followed by the **TONIC** chord (V-I). In certain situations, this cadence can also be called an imperfect cadence.

Chord progression diagram showing four measures of music in 3/4 time. The progression is: C major (V), E minor (I), B<sup>b</sup> major (V), and A<sup>b</sup> major (I). The bass line is also shown below the treble clef staff.

Chord progression diagram showing four measures of music in 3/4 time. The progression is: C major (V), E minor (I), B<sup>b</sup> major (V), and A<sup>b</sup> major (I). The bass line is also shown below the treble clef staff.

35. The PLAGAL CADENCE is the other kind of “final” cadence. It consists of the Subdominant chord followed by the Tonic chord (IV-I). It is sometimes referred to as the “church” cadence because one can recognize it when they hear AMEN.

1. **Harmonization:** The piece begins in C major (3/4 time) with a I-IV-V-I progression. It then moves to E minor (2/4 time) with a IV-I progression. It returns to C major with a IV-I progression. It then moves to B<sup>♭</sup> major (6/8 time) with a IV-I progression. It returns to A<sup>♭</sup> major (6/8 time) with a IV-I progression.

**38.** To identify a cadence, it is important to clearly know each chord in its key context. The root of the chord (found at the bass clef) will usually state the type of chord. Once all the chords are indicated and characterized, then you can determine the cadence type.

**A)** Identify the following cadences and state the key below the staff:

A musical score for 'The Star-Spangled Banner' is shown. The top staff is in treble clef, G major (one sharp), and the bottom staff is in bass clef, C major (no sharps or flats). The score consists of two measures. In the first measure, the treble staff has a G note (4th line) and a B note (3rd space). The bass staff has a D note (4th line) and an F note (3rd space). In the second measure, the treble staff has a G note (4th line) and a B note (3rd space). The bass staff has an E note (4th line) and a G note (3rd space).

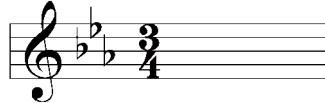
## *Detecting Errors in a Given Musical Passage*

**39.** There exists certain principals for writing music correctly. These conventions must be known and any errors on the score can therefore be detected. Here are some questions to ask yourself when studying a musical piece.

- a) Is the clef in its correct position on the staff?
- b) Do the sharps or flats in the key signature occur in the right order, and in their proper place?



c) Is the time signature right side up and AFTER the key signature?



- d) Are there any bar lines omitted, or any extra ones put in?
- e) Are there any double bar lines in the middle of the tune, which should be replaced by a single bar line?
- f) Are the stems on all the notes facing in the right direction?
- g) Is there a double bar line at the end?
- h) Does the piece start with an incomplete bar? If it does, does the last bar contain the fraction of time necessary to complete it?



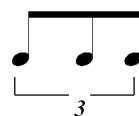
i) Are there any tied notes which a single note of equal time value could correctly replace?

Incorrect      Correct



j) Is the tie of the triplet joined at the stems or the heads?

Correct      Incorrect



k) Are the dynamics written under the staff?

l) Are the tempo words written above the staff (allegro, adagio)?

m) Are the articulations written in the opposite direction of the stems?

n) Are the notes and rests correctly grouped and conforming with the rules established? Is the separation of each beat, especially that of the second and third beat, clearly defined?

Incorrect      Correct



Incorrect      Correct

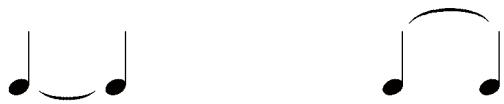


Exception

Incorrect      Correct



o) Are there any slurs or ties joining the stems of the notes instead of the heads?



p) Are there any accidentals (or enharmonic changes) that do not logically fit?

D major      Incorrect      Correct



**A)** Rewrite the following passages correctly.\*

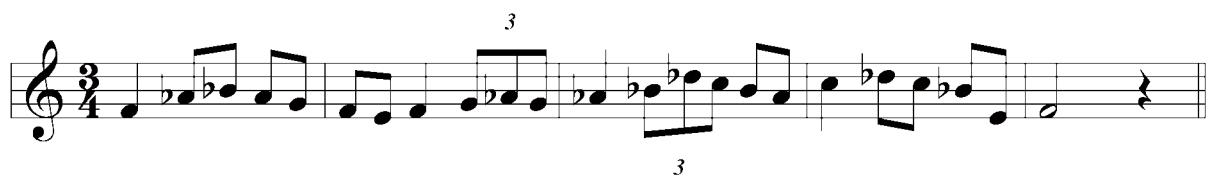
2) *dolc*

A musical score for 'Alle Gretto' in 8/6 time, treble clef, and key of G major (two sharps). The score consists of two staves of music. The first staff begins with a quarter note followed by a sixteenth-note pattern. The second staff begins with a quarter note followed by a sixteenth-note pattern. The music concludes with a final cadence and a repeat sign.

**A)** Place the bar lines at the appropriate place:



**B)** State the key of these musical examples:



**E)** How do you build a major chord? \_\_\_\_\_

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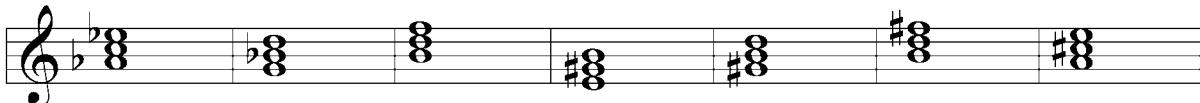
**F)** How do you build a minor chord? \_\_\_\_\_

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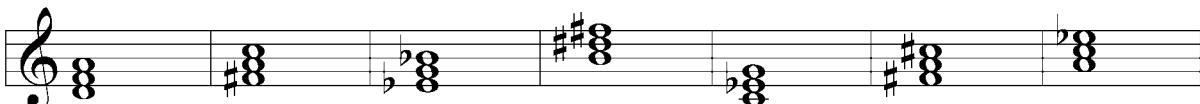
**G)** What is a diminished chord? \_\_\_\_\_

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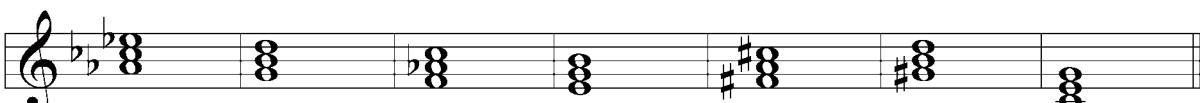
**H)** Name and identify the following chords:



1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_ 6 \_\_\_\_\_ 7 \_\_\_\_\_



8 \_\_\_\_\_ 9 \_\_\_\_\_ 10 \_\_\_\_\_ 11 \_\_\_\_\_ 12 \_\_\_\_\_ 13 \_\_\_\_\_ 14 \_\_\_\_\_



15 \_\_\_\_\_ 16 \_\_\_\_\_ 17 \_\_\_\_\_ 18 \_\_\_\_\_ 19 \_\_\_\_\_ 20 \_\_\_\_\_ 21 \_\_\_\_\_

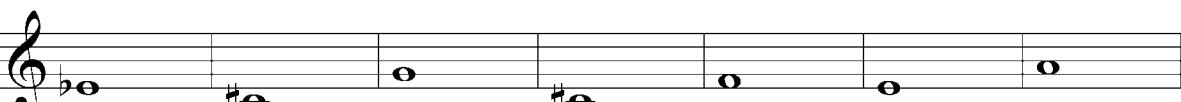
I) Complete the following chords:



Major      Minor      Minor      Major      Major      Minor      Dim



Major      Minor      Minor      Dim      Major      Minor      Dim



Minor      Dim      Minor      Major      Dim      Major      Dim

J) To which keys can the following chords belong to. State their degrees:

a) F minor = \_\_\_\_\_

b) E major = \_\_\_\_\_

c) B minor = \_\_\_\_\_

d) E<sup>b</sup> major = \_\_\_\_\_

e) C<sup>#</sup> dim. = \_\_\_\_\_

f) A<sup>b</sup> major = \_\_\_\_\_

g) G dim. = \_\_\_\_\_

h) D<sup>b</sup> major = \_\_\_\_\_

Transpose this melody in the given intervals:

## Perfect 5th higher

A blank musical staff consisting of five measures. It features a treble clef on the left and five horizontal lines with four spaces in the middle. Each measure is indicated by a vertical bar line on the far left and a vertical bar line on the far right.

### Major 3rd higher

A blank musical staff consisting of five horizontal lines and four spaces, starting with a treble clef on the top line.

## Minor 6th higher

A blank musical staff consisting of a treble clef, a key signature of one sharp (F#), a common time signature, and five empty measures. The staff is positioned above a set of five horizontal dotted lines.

## Major 2nd higher

A blank musical staff consisting of five horizontal lines and four spaces, starting with a treble clef on the top line.

**L)** Identify the following cadences. Write the key under the staff.

A musical score for 'The Star-Spangled Banner' on two staves. The top staff is in treble clef with a key signature of seven sharps. The bottom staff is in bass clef with a key signature of seven sharps. Both staves have a '4' time signature. The music consists of a single line of notes: a treble clef, a bass clef, a '4' time signature, a measure of music with a bass note and a treble note, and a bass note.