

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

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

# **Cadet Music Theory Workbook**

## **Level Four**

*Updated 5 Dec 2019*

# Level 4

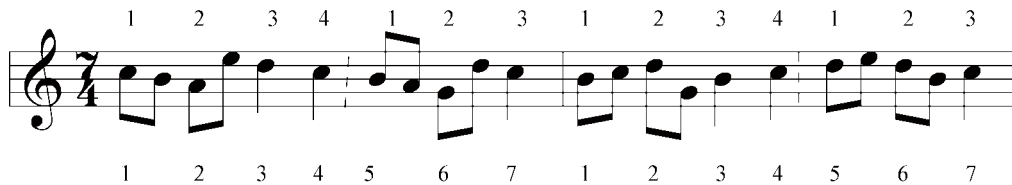
## *Irregular Time Signatures*

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.



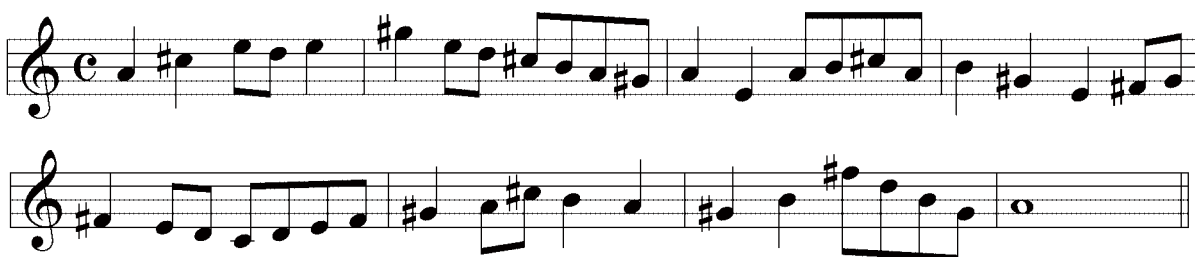
4. In the preceding measures, it is possible to indicate the irregular measures as simple measures: the upper figure indicates the number of beats or pulses in each measure. The lower figure indicates the kind of note that represents one beat. The lower figure can be a 1, 2, 4, 8, 16. The most common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

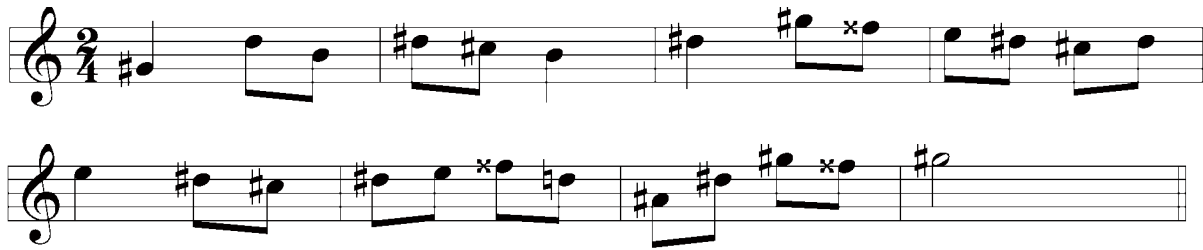
7. If after you have placed the sharps in order as in the example below you find B# does not belong. For example:



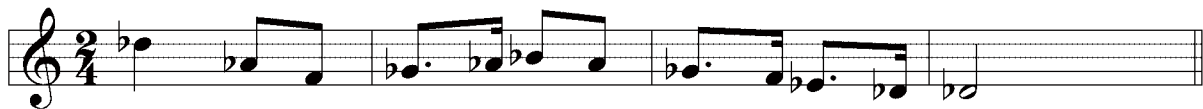
The sharps are F#, C#, G#, D#, B#. B sharp does not belong in the order of sharps; therefore, B# must be an accidental. If you raise B by a semitone to B#, you will find that you are in the key of C# minor.

*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 (\*). 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>b</sup>, E<sup>b</sup>, A<sup>b</sup>, and D<sup>b</sup>, the melody is written in A<sup>b</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>b</sup>, and A<sup>b</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>b</sup> or G minor.

A) Indicate the keys of the following melodies:



# Inverting Intervals

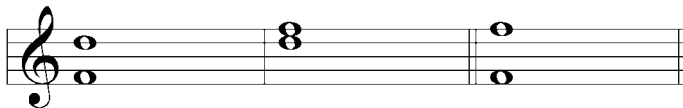
16. Here is a table to illustrate the nature of the intervals.

## 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 as 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>

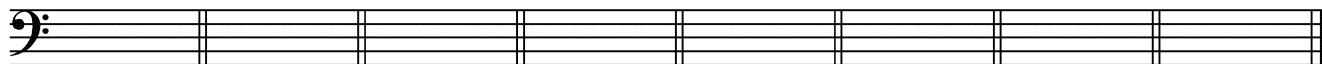


P4<sup>th</sup>    Maj 7<sup>th</sup>    Maj 3<sup>rd</sup>    P5<sup>th</sup>    min 2<sup>nd</sup>    min 2<sup>nd</sup>    Maj 6<sup>th</sup>    min 3<sup>rd</sup>

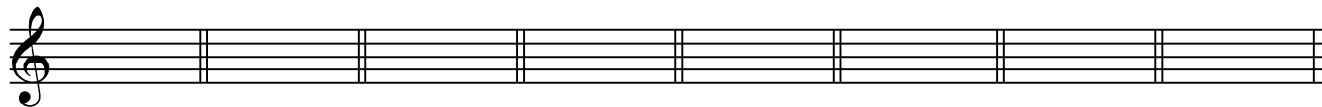
2. Invert the above intervals and name the new interval:



\_\_\_\_\_



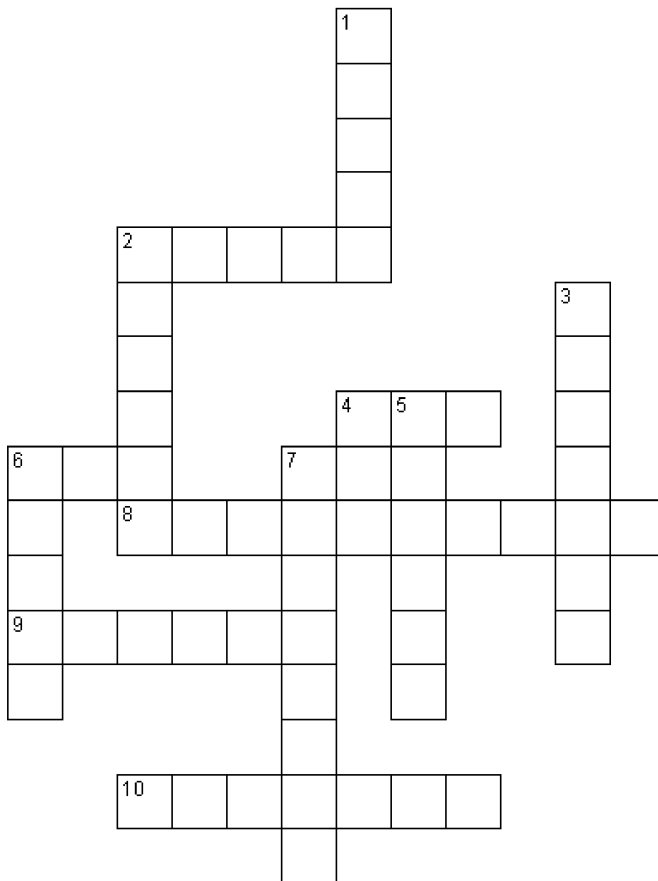
\_\_\_\_\_



\_\_\_\_\_



Complete the Crossword.



**Across**

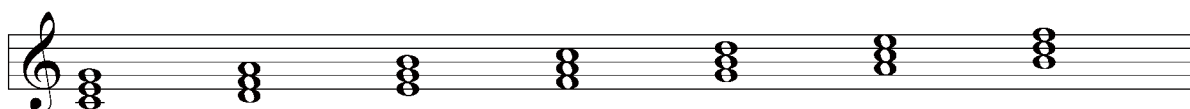
2. When a minor 3<sup>rd</sup> interval is inverted, it becomes a major \_\_\_\_\_.
4. Augmented is abbreviated to \_\_\_\_\_.
6. Minor is abbreviated to \_\_\_\_\_.
8. When an augmented interval is inverted, it becomes \_\_\_\_\_.
9. An interval is inverted by writing the bottom note of the interval 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.



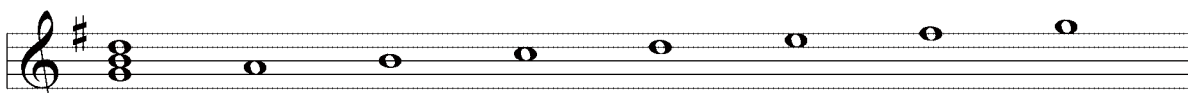
A musical staff in treble clef showing the seven chords of a major scale. The chords are: I Maj (C major), II min (D minor), III min (E minor), IV Maj (F major), V Maj (G major), VI min (A minor), and VII dim (B diminished). Each chord is represented by a vertical stack of three notes on the staff.

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.

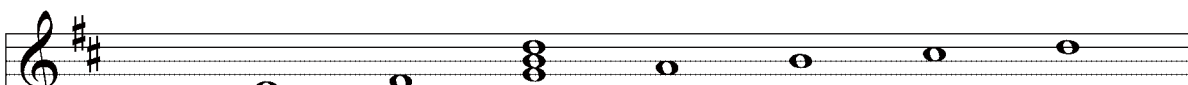
G major



A musical staff in treble clef showing the G major scale (one sharp). The tonic chord (I), G major, is highlighted with a vertical line and the letter 'I' below it.

I

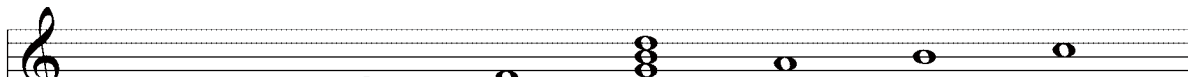
D major



A musical staff in treble clef showing the D major scale (two sharps). The sub-dominant chord (IV), D major, is highlighted with a vertical line and the letter 'IV' below it.

IV

C major

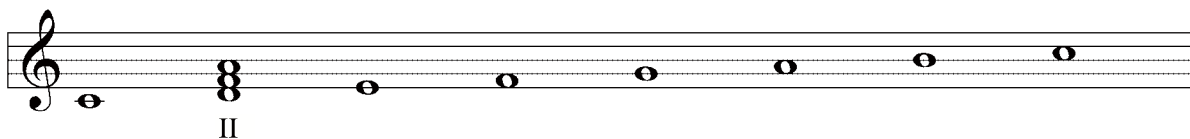


A musical staff in treble clef showing the C major scale (no sharps or flats). The dominant chord (V), G major, is highlighted with a vertical line and the letter 'V' below it.

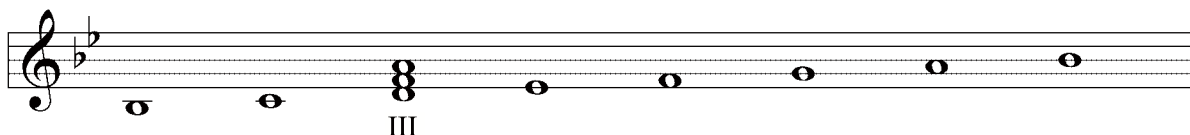
V

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 B $\flat$  major, and the sub-mediant in F major.

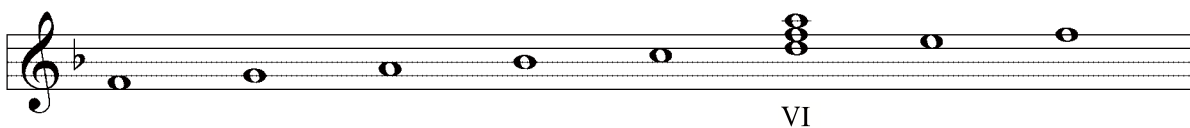
C major



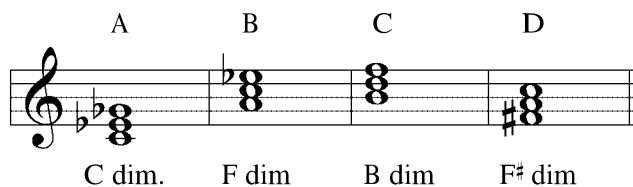
B $\flat$  major



F major



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.



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 $\flat$  major. Example B can belong to G $\flat$  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 studied by personal choice.

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

The image shows a musical staff with a treble clef and a key signature of one flat (B-flat). Seven chords are written on the staff, each with a label below it: I min, II dim, III aug, IV min, V maj, VI maj, and VII dim. The chords are: I min (B-flat, D, F), II dim (B-flat, D, F, A-flat), III aug (B-flat, D, F, A), IV min (B-flat, D, F, A-flat), V maj (B-flat, D, F, A), VI maj (B-flat, D, F, A), and VII dim (B-flat, D, F, A-flat).

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?

---

**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# minor = \_\_\_\_\_

4) B<sup>b</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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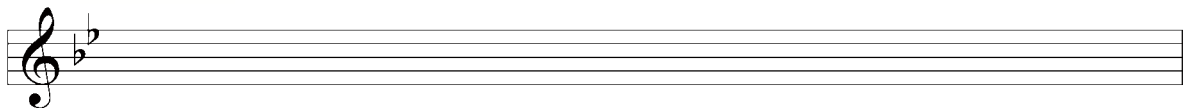
**F)** What does the chord of the 5th degree of the major scale and the chord of the 5th degree of the minor scale have in common?

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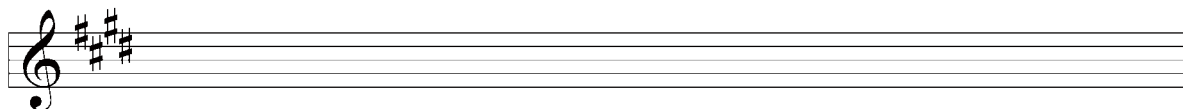
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**G)** Write out all the chords that we find in the following scales. Indicate their nature: (Example: A maj, F min, E dim, etc...)

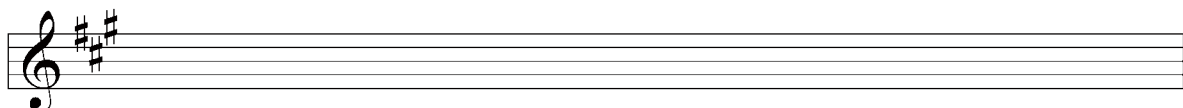
B<sup>b</sup> major



E major



A major

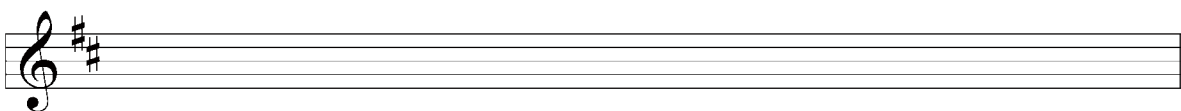


**H)** Write down the chords that are found on the I, IV, and V degrees of the following minor harmonic scales. Indicate their nature.

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 notes: C4, D4, E4, F4, G4, A4, B4, C5. A second staff in bass clef with notes: C3, D3, E3, F3, G3, A3, B3, C4. The notes are placed on the lines and spaces of the staves to indicate the root notes for augmented chords.

Add accidentals to make the following chords augmented:

A musical staff in treble clef with chord symbols: C, D, E, F, G, A, B, C. A second staff in bass clef with chord symbols: C, D, E, F, G, A, B, C. The chord symbols are placed above and below the staves to indicate the chords to be augmented.

### PART B

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

A musical staff in treble clef with notes: C4, D4, E4, F4, G4, A4, B4, C5. A second staff in bass clef with notes: C3, D3, E3, F3, G3, A3, B3, C4. The notes are placed on the lines and spaces of the staves to indicate the root notes for diminished chords.



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:

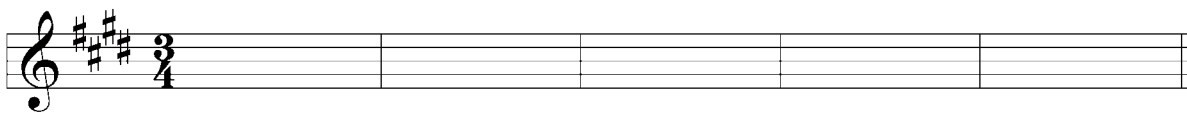
|   |   |   |  |   |
|---|---|---|--|---|
|   |   |   |   |   |
| Major   | Major   | Minor   | Major  | Major   |
|  |  |  |  |  |
| Minor   | Major   | Minor   | Major  | Major   |

## *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:



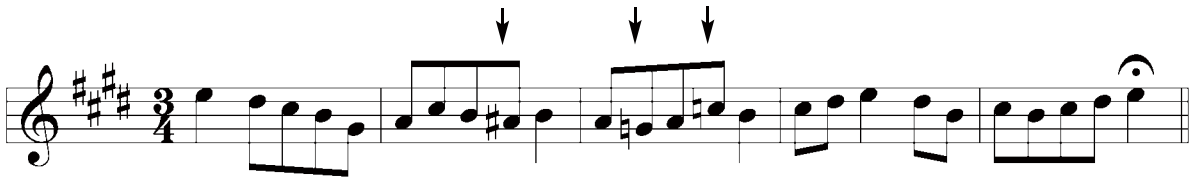
This example is in C major (step A). If you raise the C a major third higher, the new key will be E major (step B). Next, you write down the new key signature (step C).



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.

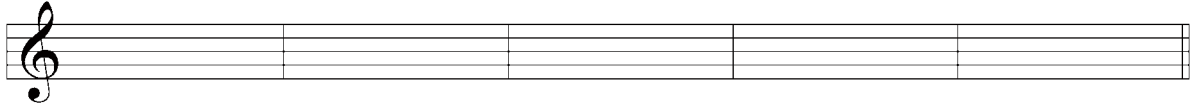


- 28.** To ensure that all your transpositions are correct, you must follow the step-by-step method outlined above.

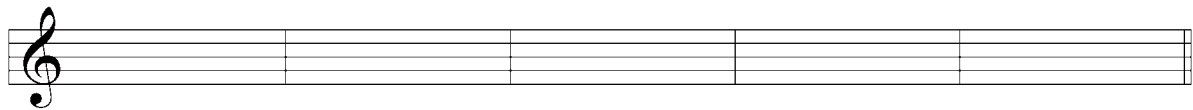
A) Transpose this melody by the requested interval.



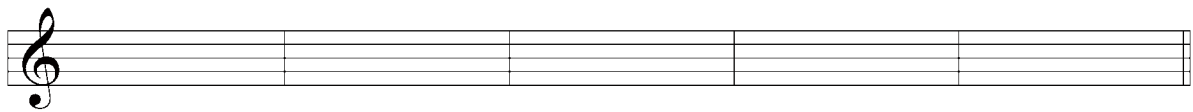
A perfect fourth higher



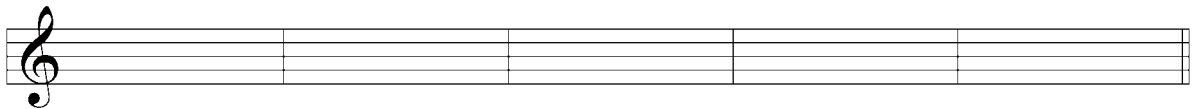
A perfect fifth higher



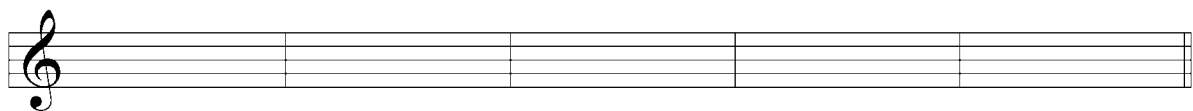
Major sixth higher



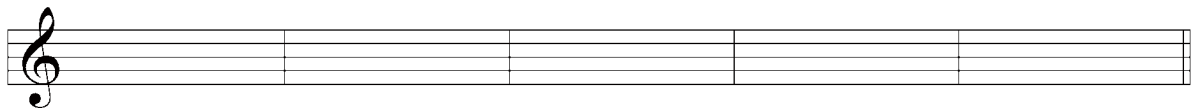
Minor third lower



Perfect fourth lower



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.

The image shows four examples of perfect cadences (V-I) in different keys, each in 3/4 time. The notation is presented in a grand staff format with a brace on the left side. Above each pair of staves, the key signature is indicated: C major, E minor, B $\flat$  major, and A $\flat$  major. The bass clef staff shows the bass note of the V chord, and the treble clef staff shows the other notes of the V and I chords. The cadences are: C major (V: C4, G4; I: C4, E4, G4), E minor (V: G3, B3, D4; I: E4, G4, B3), B $\flat$  major (V: F3, A3, C4; I: B $\flat$ 3, D4, F4), and A $\flat$  major (V: G $\flat$ 3, B $\flat$ 3, D4; I: C4, E4, G4). Below each pair of staves, the Roman numerals V and I are written to identify the chords.

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.

The image shows four examples of a Plagal Cadence (IV-I) in different keys, each spanning two measures. The keys are C major, E minor, B $\flat$  major, and A $\flat$  major. The notation includes treble and bass staves with chord symbols and Roman numerals (IV and I) indicating the chord 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:

1)

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3)

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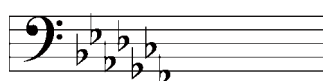
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## Detecting Errors in a Given Musical Passage

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?



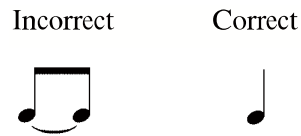
- c) Is the time signature right side up and AFTER the key signature?



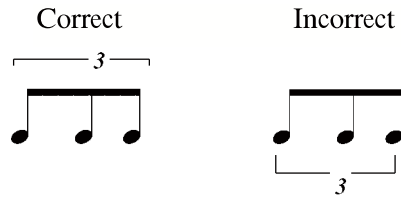
- d) Are there any bar lines omitted, or any extra ones put in?
- e) Are there any double bar lines in the middle of the tune, which should be replaced by a single bar line?
- f) Are the stems on all the notes facing in the right direction?
- g) Is there a double bar line at the end?
- h) Does the piece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



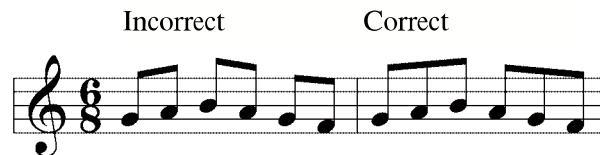
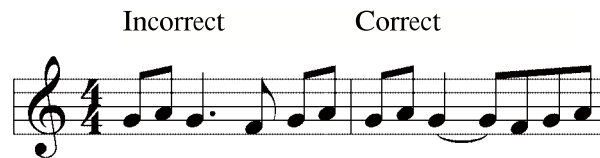
- i) Are there any tied notes which a single note of equal time value could correctly replace?



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



- 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?



Exception



- 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.\*

1) *Alegro*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2) *dolce*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3) *Lento*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4) *Alle Gretto*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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? \_\_\_\_\_

\_\_\_\_\_

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

\_\_\_\_\_

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

\_\_\_\_\_

H) Name and identify the following chords:

A musical staff in G major (one sharp) showing seven chords in the treble clef. The chords are: G4 (G-B-D), A4 (A-C-E), B4 (B-D-F#), C5 (C-E-G), D5 (D-F-A), E5 (E-G-B), and F#5 (F#-A-C).

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

A musical staff in G minor (two flats) showing seven chords in the treble clef. The chords are: G4 (G-B-D), A4 (A-C-E), Bb4 (Bb-D-F), C5 (C-E-G), D5 (D-F-A), Eb5 (Eb-G-B), and F#5 (F#-A-C).

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

A musical staff in G minor (two flats) showing seven chords in the treble clef. The chords are: G4 (G-B-D), A4 (A-C-E), Bb4 (Bb-D-F), C5 (C-E-G), D5 (D-F-A), Eb5 (Eb-G-B), and F#5 (F#-A-C).

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 = \_\_\_\_\_

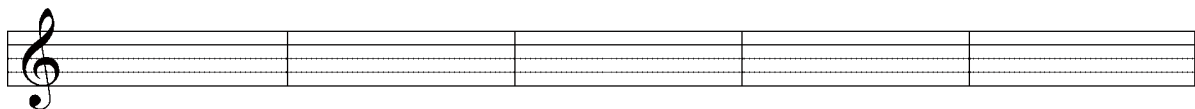
g) G dim. = \_\_\_\_\_

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

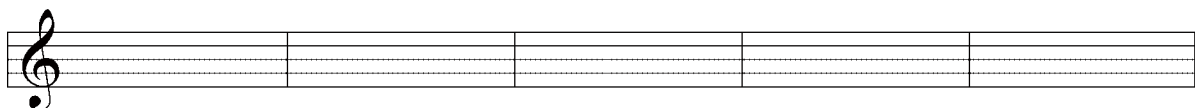
J) Transpose this melody in the given intervals:



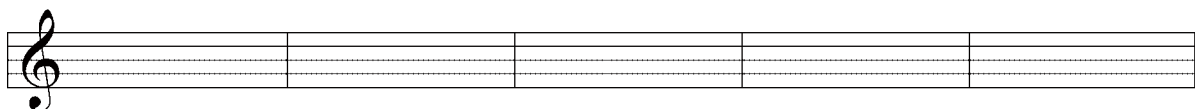
Perfect 5th higher



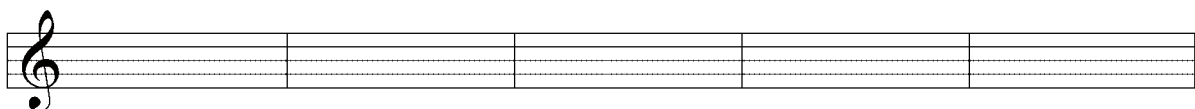
Major 3rd higher



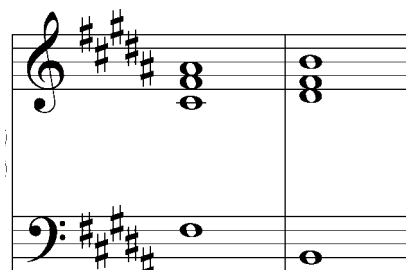
Minor 6th higher



Major 2nd higher



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



\_\_\_\_\_

\_\_\_\_\_