Riverside Music Theory Talk

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This document was prepared as a handout to accompany a session on practical music theory for those involved in leading worship music at Riverside Community Church. It was written with those in mind who already play music, with a view to filling knowledge-gaps, particularly in the areas of key identification and transposition. The document is largely self-contained and does not presuppose any ability to "read music." It is hoped that it may be useful as a self-study guide for any who could not attend the Riverside session. Many thanks are owed to Michael Tjahjadi for his numerous and thoughtful suggestions.
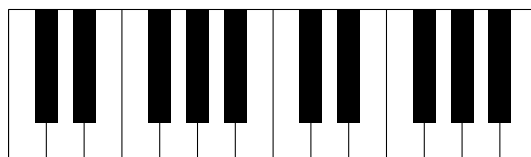
Concerning notes

Figure 1: Piano keys spanning two octaves. The leftmost key plays the note C.

- There are 12 notes, for which we use the symbols

$$C \quad \underline{C^\sharp/D^\flat} \quad D \quad \underline{D^\sharp/E^\flat} \quad E \quad F \quad \underline{F^\sharp/G^\flat} \quad G \quad \underline{G^\sharp/A^\flat} \quad A \quad \underline{A^\sharp/B^\flat} \quad B.$$

  The underlined notes are played by the black keys of the piano.

- The interval between adjacent notes is called a *half-step*. An octave, which represents the doubling or halving of pitch frequency, is traversed in 12 half-steps.

- Since there is only a half-step between E and F and between B and C, we may write E as $F^\flat$ and F as $E^\sharp$ as well as B as $C^\flat$ and C as $B^\sharp$, but we do not do this very often.

What notes are in a key?

- There is a major key corresponding to most of the note symbols. We will denote the major keys by

$$\mathbb{C} \quad \mathbb{C}^\sharp/\mathbb{D}^\flat \quad \mathbb{D} \quad \mathbb{E}^\flat \quad \mathbb{E} \quad \mathbb{F} \quad \mathbb{F}^\sharp/\mathbb{G}^\flat \quad \mathbb{G} \quad \mathbb{A}^\flat \quad \mathbb{A} \quad \mathbb{B}^\flat \quad \mathbb{B}/\mathbb{C}^\flat.$$

  It will later be explained why we do not encounter major keys called $\mathbb{B}^\sharp$, $\mathbb{D}^\sharp$, $\mathbb{E}^\sharp$, $\mathbb{F}^\flat$, $\mathbb{G}^\sharp$, and $\mathbb{A}^\sharp$.

- Each minor key corresponds to a single major key, so we can ignore minor keys for the present.

- There are 7 notes in each major key. We can reach all the notes in a major key by playing a *major scale* beginning on the note for which the key is named. A *major scale* is defined by a sequence of intervals between 7 notes as in this diagram:

$$1 \overset{W}{\frown} 2 \overset{W}{\frown} 3 \overset{H}{\frown} 4 \overset{W}{\frown} 5 \overset{W}{\frown} 6 \overset{W}{\frown} 7 \overset{H}{\frown} 1,$$

  where

$$W = \textit{whole-step}, \text{ i.e. two piano keys}$$
$$H = \textit{half-step}, \text{ i.e. one piano key}.$$

  The last H-interval in the diagram brings us back to the note on which we began, but one octave higher. We refer to the major scale beginning on the note X as the X-major scale.

  The X-major scale is played when we begin on the note X and make jumps of the sizes

$$W \quad W \quad H \quad W \quad W \quad W \quad H.$$

- Here are some examples:

  The C-major scale is

$$C \overset{W}{\frown} D \overset{W}{\frown} E \overset{H}{\frown} F \overset{W}{\frown} G \overset{W}{\frown} A \overset{W}{\frown} B \overset{H}{\frown} C,$$

  and these are the notes in the key of $\mathbb{C}$. Note that when we build the C-major scale, we do not step on any black keys:
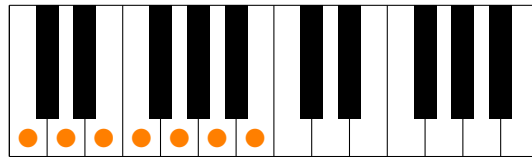

Figure 2: The 7 notes in the key of $\mathbb{C}$.

  The A-major scale is

$$A \overset{W}{\frown} B \overset{W}{\frown} C^\sharp \overset{H}{\frown} D \overset{W}{\frown} E \overset{W}{\frown} F^\sharp \overset{W}{\frown} G^\sharp \overset{H}{\frown} A,$$

  and these are the notes in the key of $\mathbb{A}$.

- Question: Why didn't we list the notes in the key of $\mathbb{A}$ as

$$A \quad B \quad D^\flat \quad D \quad E \quad F^\sharp \quad G^\sharp \quad A?$$

  Answer: Because it is convention that in listing the notes in a major key, each letter from A to G should appear once and only once.
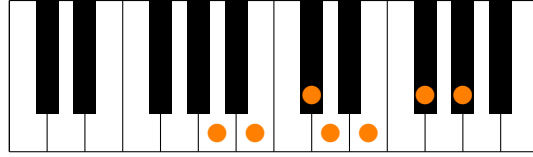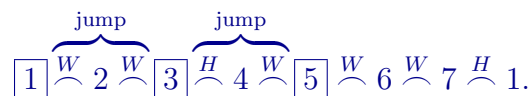
Figure 3: The 7 notes in the key of $\mathbb{A}$.

- The reason we "throw out" the keys $\mathbb{B}^\sharp$, $\mathbb{D}^\sharp$, $\mathbb{E}^\sharp$, $\mathbb{F}^\flat$, $\mathbb{G}^\sharp$, and $\mathbb{A}^\sharp$ is to observe the convention from the previous bullet point; if we tried to list the notes in the major scale beginning on $B^\sharp$, for example, we could not list them without skipping one of the letters from A to G or without having to use "double sharps" (try it!). The same thing happens when we try to list the notes in the major scales beginning with $D^\sharp$, $E^\sharp$, $F^\flat$, $G^\sharp$, and $A^\sharp$.

- **To remember from this section:** The major scale is defined by the sequence of intervals *whole, whole, half, whole, whole, whole, half*, and we reach all the notes in a major key by playing a major scale beginning on the note for which the key is named.

- Exercises: List the notes in each key: $\mathbb{G}$, $\mathbb{A}^\flat$, and $\mathbb{E}$.

What chords are in a key?

- A *chord* is a combination of notes played together.

- A special class of chords are the *triads*, which are chords of three notes, constructed in certain ways. Each of the 7 notes in a major key has an associated triad: 7 notes, 7 triads in a key.

- The chords we play, for example on the guitar, are often triads with some of the notes repeated across different octaves.

- The triads of a major key are constructed as follows: For each note in the key, the corresponding triad consists of

  1. that note,
  2. the note we reach when we jump over the next note in the key, and
  3. the note we reach when we again jump over the next note in the key.

So the first triad in a key is the chord composed of the 1st, 3rd, and 5th notes in the scale:

$$\boxed{1} \overset{W}{\frown} 2 \overset{W}{\frown} \boxed{3} \overset{H}{\frown} 4 \overset{W}{\frown} \boxed{5} \overset{W}{\frown} 6 \overset{W}{\frown} 7 \overset{H}{\frown} 1.$$

Each of the 7 triads is constructed in the same way, giving the following table of triads:

$$
1 \overset{W}{\frown} 2 \overset{W}{\frown} 3 \overset{H}{\frown} 4 \overset{W}{\frown} 5 \overset{W}{\frown} 6 \overset{W}{\frown} 7 \overset{H}{\frown} 1 \overset{W}{\frown} 2 \overset{W}{\frown} 3 \overset{H}{\frown} 4
$$

1	$\boxed{1} \overset{W}{\frown} 2 \overset{W}{\frown} \boxed{3} \overset{H}{\frown} 4 \overset{W}{\frown} \boxed{5}$											
2		$\boxed{2} \overset{W}{\frown} 3 \overset{H}{\frown} \boxed{4} \overset{W}{\frown} 5 \overset{W}{\frown} \boxed{6}$										
3			$\boxed{3} \overset{H}{\frown} 4 \overset{W}{\frown} \boxed{5} \overset{W}{\frown} 6 \overset{W}{\frown} \boxed{7}$									
4				$\boxed{4} \overset{W}{\frown} 5 \overset{W}{\frown} \boxed{6} \overset{W}{\frown} 7 \overset{H}{\frown} \boxed{1}$								
5					$\boxed{5} \overset{W}{\frown} 6 \overset{W}{\frown} \boxed{7} \overset{H}{\frown} 1 \overset{W}{\frown} \boxed{2}$							
6						$\boxed{6} \overset{W}{\frown} 7 \overset{H}{\frown} \boxed{1} \overset{W}{\frown} 2 \overset{W}{\frown} \boxed{3}$						
7							$\boxed{7} \overset{H}{\frown} 1 \overset{W}{\frown} \boxed{2} \overset{W}{\frown} 3 \overset{H}{\frown} \boxed{4}$					

- The triads in the key of $\mathbb{C}$ are:

$$
C \overset{W}{\frown} D \overset{W}{\frown} E \overset{H}{\frown} F \overset{W}{\frown} G \overset{W}{\frown} A \overset{W}{\frown} B \overset{H}{\frown} C \overset{W}{\frown} D \overset{W}{\frown} E \overset{H}{\frown} F
$$

1	$\boxed{C} \overset{W}{\frown} D \overset{W}{\frown} \boxed{E} \overset{H}{\frown} F \overset{W}{\frown} \boxed{G}$											
2		$\boxed{D} \overset{W}{\frown} E \overset{H}{\frown} \boxed{F} \overset{W}{\frown} G \overset{W}{\frown} \boxed{A}$										
3			$\boxed{E} \overset{H}{\frown} F \overset{W}{\frown} \boxed{G} \overset{W}{\frown} A \overset{W}{\frown} \boxed{B}$									
4				$\boxed{F} \overset{W}{\frown} G \overset{W}{\frown} \boxed{A} \overset{W}{\frown} B \overset{H}{\frown} \boxed{C}$								
5					$\boxed{G} \overset{W}{\frown} A \overset{W}{\frown} \boxed{B} \overset{H}{\frown} C \overset{W}{\frown} \boxed{D}$							
6						$\boxed{A} \overset{W}{\frown} B \overset{H}{\frown} \boxed{C} \overset{W}{\frown} D \overset{W}{\frown} \boxed{E}$						
7							$\boxed{B} \overset{H}{\frown} C \overset{W}{\frown} \boxed{D} \overset{W}{\frown} E \overset{H}{\frown} \boxed{F}$					

- Three types of triads occur in a major key, and they are defined by the intervals separating the notes:

  1. *Major triad* (M): Triad with intervals $W + W$ and $W + H$ between the notes.
  2. *Minor triad* (m): Triad with intervals $W + H$ and $W + W$ between the notes.
  3. *Diminished triad* (dim): Triad with intervals $W + H$ and $W + H$ between the notes.

  If we study triads 1 though 7 of a major key, we discover that they are of the types

$$
\underset{1}{\text{M}} \quad \underset{2}{\text{m}} \quad \underset{3}{\text{m}} \quad \underset{4}{\text{M}} \quad \underset{5}{\text{M}} \quad \underset{6}{\text{m}} \quad \underset{7}{\text{dim}}.
$$

- The 7 triads in the key of $\mathbb{C}$ are the triads

$$
\underset{1}{\text{C}} \quad \underset{2}{\text{Dm}} \quad \underset{3}{\text{Em}} \quad \underset{4}{\text{F}} \quad \underset{5}{\text{G}} \quad \underset{6}{\text{Am}} \quad \underset{7}{\text{Bdim}},
$$

where we have suppressed the "M" for "major" according to convention.

- We can quickly find the triads in the key of $\mathbb{X}$ by making a list of the notes in the X-major scale and coupling it with the sequence of triad types. For example, for the key of $\mathbb{E}$, we have:

	1	2	3	4	5	6	7
notes in $\mathbb{E}$:	E	$F^\sharp$	$G^\sharp$	A	B	$C^\sharp$	$D^\sharp$
triad types:	M	m	m	M	M	m	dim
triads in $\mathbb{E}$:	E	F$^\sharp$m	G$^\sharp$m	A	B	C$^\sharp$m	D$^\sharp$dim

- **To remember from this section**: Each of the 7 notes in a major key has a corresponding triad, and the types of the 7 triads follow the sequence *Major, minor, minor, Major, Major, minor, diminished.*

- Exercises: List the triads in each key: $\mathbb{B}^\flat$, $\mathbb{F}$, and $\mathbb{D}$.

- Numbering of notes within a triad: The first note in a triad—the note for which the triad is named—is called "the first". The next notes in the triad are called "the third" and "the fifth". This arises from the construction of a triad; if we count upwards from the starting note, beginning at "one", then we reach "three" at the second note in the triad and we reach "five" at the third note in the triad.

  For example, if we are building the triad in the key of $\mathbb{C}$ which begins on F, then F is the first, A is the third, and C is the fifth:

$$C \overset{W}{\frown} D \overset{W}{\frown} E \overset{H}{\frown} \overset{\text{"one"}}{\boxed{F}} \overset{W}{\frown} \overset{\text{"two"}}{G} \overset{W}{\frown} \overset{\text{"three"}}{\boxed{A}} \overset{W}{\frown} \overset{\text{"four"}}{B} \overset{H}{\frown} \overset{\text{"five"}}{\boxed{C}}$$

  Calling the notes in a triad "the first", "the third", and "the fifth", we may restate our definitions of the triad types:
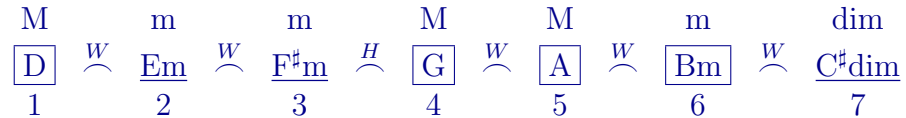
  1. A Major triad is a triad in which the third is two whole-steps up from the first and the fifth is three-wholes-and-a-half step above the first.
  2. A minor triad is a major triad with a flatted third (the third is dropped by a half-step).
  3. A diminished triad is a minor triad with a flatted fifth (the fifth is dropped by a half-step).

Key identification

- A great many worship songs played nowadays use chords which all reside in a single key (Later we will discuss some ways in which chords outside of the key are brought into a song to produce certain musical effects).

- For example, suppose a song uses the chords

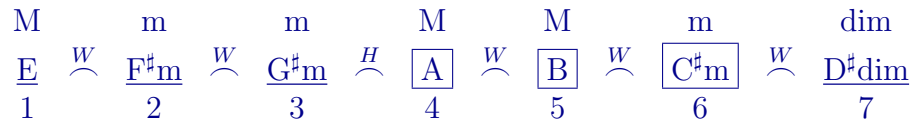$$\text{Bm} \quad \text{G} \quad \text{D} \quad \text{A.}$$

Into which major key does the song "fit"? Given the intervals between the notes B, G, D, and A and the chord types (Major, minor, or diminished), we see that Bm, G, D, and A fit only into the key of $\mathbb{D}$:

$$\boxed{\text{D}} \overset{W}{\frown} \underset{2}{\text{Em}} \overset{W}{\frown} \underset{3}{\text{F}^\sharp\text{m}} \overset{H}{\frown} \boxed{\text{G}} \overset{W}{\frown} \boxed{\text{A}} \overset{W}{\frown} \boxed{\text{Bm}} \overset{W}{\frown} \underset{7}{\text{C}^\sharp\text{dim}}$$

Positions (with quality labels above):
- 1: M — D
- 2: m — Em
- 3: m — F♯m
- 4: M — G
- 5: M — A
- 6: m — Bm
- 7: dim — C♯dim

- Determine the key of a song which uses the chords

$$\text{A} \quad \text{B} \quad \text{C}^\sharp\text{m}.$$

These chords only fit in positions 4, 5, and 6, so the key must be $\mathbb{E}$:

$$\underset{1}{\text{E}} \overset{W}{\frown} \underset{2}{\text{F}^\sharp\text{m}} \overset{W}{\frown} \underset{3}{\text{G}^\sharp\text{m}} \overset{H}{\frown} \boxed{\text{A}} \overset{W}{\frown} \boxed{\text{B}} \overset{W}{\frown} \boxed{\text{C}^\sharp\text{m}} \overset{W}{\frown} \underset{7}{\text{D}^\sharp\text{dim}}$$

Positions: 1: M — E; 2: m — F♯m; 3: m — G♯m; 4: M — A; 5: M — B; 6: m — C♯m; 7: dim — D♯dim

- Exercises: Determine the keys into which the following sets of chords fit (draw a diagram like those above!):

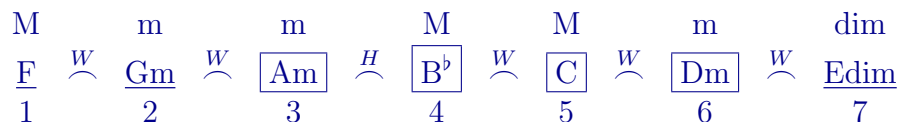 - F♯m, C♯m, D, E
  - B♭, F, Dm, Gm
  - F♯, G♯m, E

Transposition

- Steps to transposing a song:

  1. Identify the current key, thereby converting each chord to a number from 1 to 7.
  2. Convert the numbers to their associated chords in the new key.

- For example, suppose you wish to transpose into the key of $\mathbb{C}$ a song with the chords
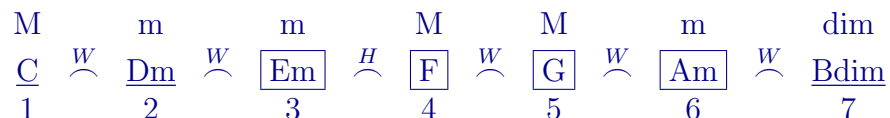
$$\text{B}^\flat \quad \text{C} \quad \text{Am} \quad \text{Dm}.$$

We follow the two steps:

  1. These chords only fit into positions 4, 5, 3, and 6 of $\mathbb{F}$:

$$\underset{1}{\text{F}} \overset{W}{\frown} \underset{2}{\text{Gm}} \overset{W}{\frown} \boxed{\text{Am}} \overset{H}{\frown} \boxed{\text{B}^\flat} \overset{W}{\frown} \boxed{\text{C}} \overset{W}{\frown} \boxed{\text{Dm}} \overset{W}{\frown} \underset{7}{\text{Edim}}$$

Positions: 1: M — F; 2: m — Gm; 3: m — Am; 4: M — B♭; 5: M — C; 6: m — Dm; 7: dim — Edim

  2. So the chords in $\mathbb{C}$ are the chords in positions 4, 5, 3, and 6 of $\mathbb{C}$, which are

$$\underset{1}{\text{C}} \overset{W}{\frown} \underset{2}{\text{Dm}} \overset{W}{\frown} \boxed{\text{Em}} \overset{H}{\frown} \boxed{\text{F}} \overset{W}{\frown} \boxed{\text{G}} \overset{W}{\frown} \boxed{\text{Am}} \overset{W}{\frown} \underset{7}{\text{Bdim}}$$

Positions: 1: M — C; 2: m — Dm; 3: m — Em; 4: M — F; 5: M — G; 6: m — Am; 7: dim — Bdim

So we did this:

$$\begin{array}{cccccccccccc}
\text{original chords in } \mathbb{F} & & & & \text{numbers} & & & & \text{new chords in } \mathbb{C} \\
\text{B}^\flat & \text{C} & \text{Am} & \text{Dm} & \mapsto & 4 & 5 & 3 & 6 & \mapsto & \text{F} & \text{G} & \text{Em} & \text{Am}
\end{array}$$

- The chords in $\mathbb{G}$ (G, Am, Bm, C, D, Em, F$^\sharp$dim) are comfortable for guitarists (well, with the exception of the occasionally-occurring, somewhat uncomfortable Bm and the almost-never-occurring, very awkward F$^\sharp$dim), so guitarists may wish to transpose a song into $\mathbb{G}$ in order to play the $\mathbb{G}$ chords, and then capo the guitar to bring the song back into the original key. Let's practice that:

  Transpose into $\mathbb{G}$ a song with the chords

  $$\text{G}^\sharp\text{m} \quad \text{E} \quad \text{B} \quad \text{F}^\sharp.$$

  We again follow our two steps:

  1. These chords only fit into positions 6, 4, 1, and 5 of $\mathbb{B}$:

M		m		m		M		M		m		dim
B	$\overset{W}{\frown}$	C$^\sharp$m	$\overset{W}{\frown}$	D$^\sharp$m	$\overset{H}{\frown}$	E	$\overset{W}{\frown}$	F$^\sharp$	$\overset{W}{\frown}$	G$^\sharp$m	$\overset{W}{\frown}$	A$^\sharp$dim
1		2		3		4		5		6		7

  2. So the chords in $\mathbb{G}$ are the chords in positions 6, 4, 1, and 5 of $\mathbb{G}$:

M		m		m		M		M		m		dim
G	$\overset{W}{\frown}$	Am	$\overset{W}{\frown}$	Bm	$\overset{H}{\frown}$	C	$\overset{W}{\frown}$	D	$\overset{W}{\frown}$	Em	$\overset{W}{\frown}$	F$^\sharp$dim
1		2		3		4		5		6		7

  So we did this:

  $$\begin{array}{ccccccccc}
  \text{original chords in } \mathbb{B} & & & & \text{numbers} & & & & \text{new chords in } \mathbb{G} \\
  \text{G}^\sharp\text{m} & \text{E} & \text{B} & \text{F}^\sharp & \mapsto & 6 & 4 & 1 & 5 & \mapsto & \text{Em} & \text{C} & \text{G} & \text{D}
  \end{array}$$

  Now: In order to play the song in the original key, but using the $\mathbb{G}$ chords, the guitarist should position that venerable tool, the capo, on the fourth fret, since B is four half-steps above G.

- **To remember from this section**: To transpose, do the steps

  $$\text{original chords} \quad \mapsto \quad \text{numbers} \quad \mapsto \quad \text{new chords.}$$

- Exercises: Perform the following transpositions.

  - A song with the chords A E Bm F$^\sharp$m into the key of $\mathbb{F}^\sharp$.
  - A song with the chords A$^\flat$ B$^\flat$ Gm into the key of $\mathbb{B}^\flat$.
  - A song with the chords F G Am into the key of $\mathbb{D}$.

- As we get used to assigning numbers to the chords in a song, we will begin to learn what each of the numbered chords sounds like. This will affect the way we listen to music; after a while, when we hear a song, we will be able to recognize the numbers of the chords being played. Once we are able to do this, it becomes much easier to learn new music. All we will need to do to learn a new song is jot down the numbers of the chords as we listen. Then we can play the song in any key we like.

- The most common chords used in worship music nowadays are the 1, 4, 5, and 6 chords; a great many songs use only these chords. Of the remaining chords, the 2 is the next most common, followed by the 3. The 7, the diminished chord, occurs very seldom.

Minor keys

- We sometimes encounter minor keys. We will denote the minor keys by

$$\text{Am} \quad \text{Am}^\sharp/\text{Bm}^\flat \quad \text{Bm} \quad \text{Cm} \quad \text{Cm}^\sharp \quad \text{Dm} \quad \text{Dm}^\sharp/\text{Em}^\flat \quad \text{Em} \quad \text{Fm} \quad \text{Fm}^\sharp \quad \text{Gm} \quad \text{Gm}^\sharp/\text{Am}^\flat.$$

- We can reach all the notes in a minor key by playing a *natural minor scale* beginning on the note for which the minor key is named. The natural minor scale is defined by the sequence of intervals

$$W \quad H \quad W \quad W \quad H \quad W \quad W$$

- We said before that every minor key corresponds to a single major key. If we consider playing a major scale across multiple octaves, we see that the sequence of intervals which defines the natural minor scale occurs beginning on the 6th note of the major scale:

$$1 \overset{W}{\frown} 2 \overset{W}{\frown} 3 \overset{H}{\frown} 4 \overset{W}{\frown} 5 \overset{W}{\frown} 6 \overset{W}{\frown} 7 \overset{H}{\frown} 1 \overset{W}{\frown} 2 \overset{W}{\frown} 3 \overset{H}{\frown} 4 \overset{W}{\frown} 5 \overset{W}{\frown} 6 \overset{W}{\frown} 7 \overset{H}{\frown} 1$$
$$W \quad H \quad W \quad W \quad H \quad W \quad W$$

  This means that if we play a natural minor scale beginning on the 6th note of a major scale, we will play all of the same notes that are played in the major scale.

- The minor key situated in this way with respect to a major key is called the *relative minor* of the major key. The 6th note in a major key is three half-steps down from the 1st note, so we can just remember that the relative minor key is the minor key three half-steps down from the major key.

- Example: The key Em is the relative minor of $\mathbb{G}$, since the note E is three half-steps down from the note G. If we play a natural minor scale beginning on the note E, we will play the notes

$$E \quad F^\sharp \quad G \quad A \quad B \quad C \quad D,$$

  and these are the notes in the key Em. These are the same notes as those in the key of $\mathbb{G}$, so the keys Em and $\mathbb{G}$ are really equivalent.

- **To remember from this section**: The relative minor key of a major key is the minor key three half-steps down from the major key, and it has the same notes as the major key; it is therefore equivalent to the major key.

Chords beyond triads

Triads are not all. 'Twould be sad if 'twere so! The following chord types represent modifications to triads which are frequently encountered in worship music nowadays. It is important to note that these prescribed modifications can most of the time be safely ignored (if one does not know how to finger them on the guitar, for example).

- *Suspended chord* (sus): Major triad with sharpened third.
  Fits into key when applied to 1st and 5th chords (It is common to play the 1st chord in the key, alternating between the suspended and "unsuspended" version, as a default interlude between verse and chorus).

- *Minor seventh chord* (m7): Minor triad with addition of the note a whole-step down from the first.
  Fits into key when applied to the 2nd, 3rd, and 6th chords (As often as you play the 2nd, 3rd, or 6th chord, do this).

- *Major second chord* (2): Major triad with third dropped by a whole-step.
  Fits into key when applied to the 1st, 4th, and 5th chords (Almost always sounds good applied to the 4th chord; it is rarely applied to the 1st or the 5th chord).

- *Major seventh chord* (maj7): Major triad with addition of the note a half-step down from the first.
  Fits into key when applied to the 1st and 4th chords (Sounds jazzy).

- *Major ninth chord* (maj9): Major seventh chord with addition of the note a whole-step above the first, an octave higher.

- *Dominant seventh chord* (7): Major triad with addition of the note a whole-step down from the first.
  Fits into key when applied to the 5th chord (Occurs most often in hymns and begs for resolution by the playing of the 1st chord).

Chords beyond the key

The majority of worship songs nowadays reside entirely within a single major key, but some songs feature occasional chords which do not fit into the key. Such chords can produce certain musical effects. Here are some examples:

- 3rd triad changed from minor to major (often made a dominant 7th).

  - God rest ye merry gentlemen:

        Bm   G   F$^\sharp$7
    God rest ye merry gentlemen, let nothing you dismay.

  - He will hold me fast

        F$^\sharp$m   E   A   D   C$^\sharp$ F$^\sharp$m
    I could never keep my hold through life's fearful path.

- 4th triad changed from major to minor.

  - Lift up the light (Shane and Shane):

    A   F$\sharp$m
    Lift up the light of Your countenance. Lift up the light of Your countenance
        D   Dm   A
    upon us, upon us, O Lord.

- 2nd triad changed from minor to major.

  - Majesty:

    Am G/B C   Am G/B C   D
    Now I've found the greatest love of all is mine, since you laid down your life,
                        F   G   F   G
    the greatest sacrifice.

  - Holy is the Lord:

    G   C   D   Em   C   D
    We bow down and worship Him now, how great, how awesome is He.
                        A   C
    And together we sing. . .

- A major chord a whole-step down from the 1st chord.

  - Lord I give you my heart:

    C   G/B Am   F C   G   Am   G/B C   B$\flat$maj9   F G
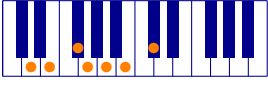   This is my desire, to honor you. Lord with all my heart, I worship you.
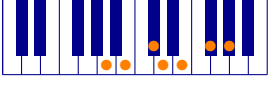
  - Shine Jesus shine:
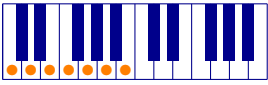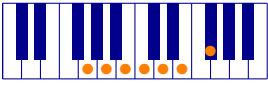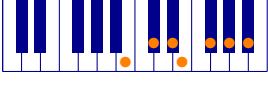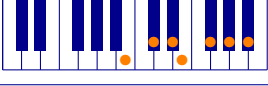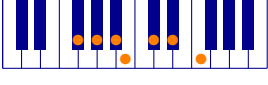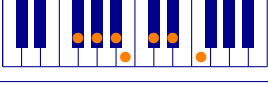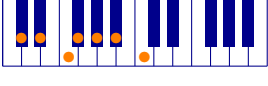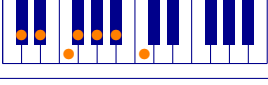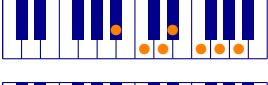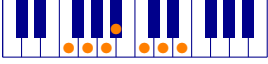
    D   E   C$\sharp$m   F$\sharp$m   G   E G   E
    Set us free by the truth you now bring us, shine on me. shine on me.

- Exercise: What is going on in the song below? (i) Identify the key, (ii) number the chords, and (iii) indicate which chords step outside the key and in what way.

    D   G   A   D   G   D   E7   A
    Great is Thy faithfulness, oh God my Father. There is no shadow of turning with Thee.
    A   D   G D   G
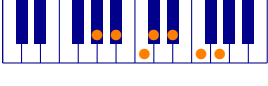   Thou changest not, Thy compassions they fail not.
    E   D   A7   D
    As Thou hast been, Thou forever wilt be.
    Em7   A   D   B   Em7
    Great is Thy faithfulness, great is Thy faithfulness.
    A   D   A   E7   A
    Morning by morning new mercies I see.
    A   D   G D   G   E   D   A7   D
    All I have needed Thy hand hath provided. Great is Thy faithfulness, Lord unto me.

Reference sheet of notes and chords in each major key

(ordered according to the circle of fifths)

	1	2	3	4	5	6	7	♭	♯	piano keys	minor
ℂ	C	Dm	Em	F	G	Am	Bdim				Am
𝔾	G	Am	Bm	C	D	Em	F♯dim		1		Em
𝔻	D	Em	F♯m	G	A	Bm	C♯dim		2		Bm
𝔸	A	Bm	C♯m	D	E	F♯m	G♯dim		3		F♯m
𝔼	E	F♯m	G♯m	A	B	C♯m	D♯dim		4		C♯m
𝔹	B	C♯m	D♯m	E	F♯	G♯m	A♯dim		5		G♯m
ℂ♭	C♭	D♭m	E♭m	F♭	G♭	A♭m	B♭dim	7			A♭m
𝔽♯	F♯	G♯m	A♯m	B	C♯	D♯m	E♯dim		6		D♯m
𝔾♭	G♭	A♭m	B♭m	C♭	D♭m	E♭m	Fdim	6			E♭m
ℂ♯	C♯	D♯	E♯m	F♯	G♯	A♯m	B♯dim		7		A♯m
𝔻♭	D♭	E♭m	Fm	G♭	A♭	B♭m	Cdim	5			B♭m
𝔸♭	A♭	B♭m	Cm	D♭	E♭	Fm	Gdim	4			Fm
𝔼♭	E♭	Fm	Gm	A♭	B♭	Cm	Ddim	3			Cm
𝔹♭	B♭	Cm	Dm	E♭	F	Gm	Adim	2			Gm
𝔽	F	Gm	Am	B♭	C	Dm	Edim	1			Dm

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Reference sheet of notes and chords in each major key

(condensed[1] and ordered chromatically)

	1	2	3	4	5	6	7	piano keys	minor
$\mathbb{C}$	C	Dm	Em	F	G	Am	Bdim		Am
$\mathbb{D}^\flat$	D$^\flat$	E$^\flat$m	Fm	G$^\flat$	A$^\flat$	B$^\flat$m	Cdim		B$^\flat$m
$\mathbb{D}$	D	Em	F$^\sharp$m	G	A	Bm	C$^\sharp$dim		Bm
$\mathbb{E}^\flat$	E$^\flat$	Fm	Gm	A$^\flat$	B$^\flat$	Cm	Ddim		Cm
$\mathbb{E}$	E	F$^\sharp$m	G$^\sharp$m	A	B	C$^\sharp$m	D$^\sharp$dim		C$^\sharp$m
$\mathbb{F}$	F	Gm	Am	B$^\flat$	C	Dm	Edim		Dm
$\mathbb{F}^\sharp$	F$^\sharp$	G$^\sharp$m	A$^\sharp$m	B	C$^\sharp$	D$^\sharp$m	E$^\sharp$dim		D$^\sharp$m
$\mathbb{G}$	G	Am	Bm	C	D	Em	F$^\sharp$dim		Em
$\mathbb{A}^\flat$	A$^\flat$	B$^\flat$m	Cm	D$^\flat$	E$^\flat$	Fm	Gdim		Fm
$\mathbb{A}$	A	Bm	C$^\sharp$m	D	E	F$^\sharp$m	G$^\sharp$dim		F$^\sharp$m
$\mathbb{B}^\flat$	B$^\flat$	Cm	Dm	E$^\flat$	F	Gm	Adim		Gm
$\mathbb{B}$	B	C$^\sharp$m	D$^\sharp$m	E	F$^\sharp$	G$^\sharp$m	A$^\sharp$dim		G$^\sharp$m

[1] The keys $\mathbb{C}^\flat$, $\mathbb{G}^\flat$, and $\mathbb{C}^\sharp$ have been omitted, as they are the same as $\mathbb{B}$, $\mathbb{F}^\sharp$, and $\mathbb{D}^\flat$, respectively, and are rarely encountered.