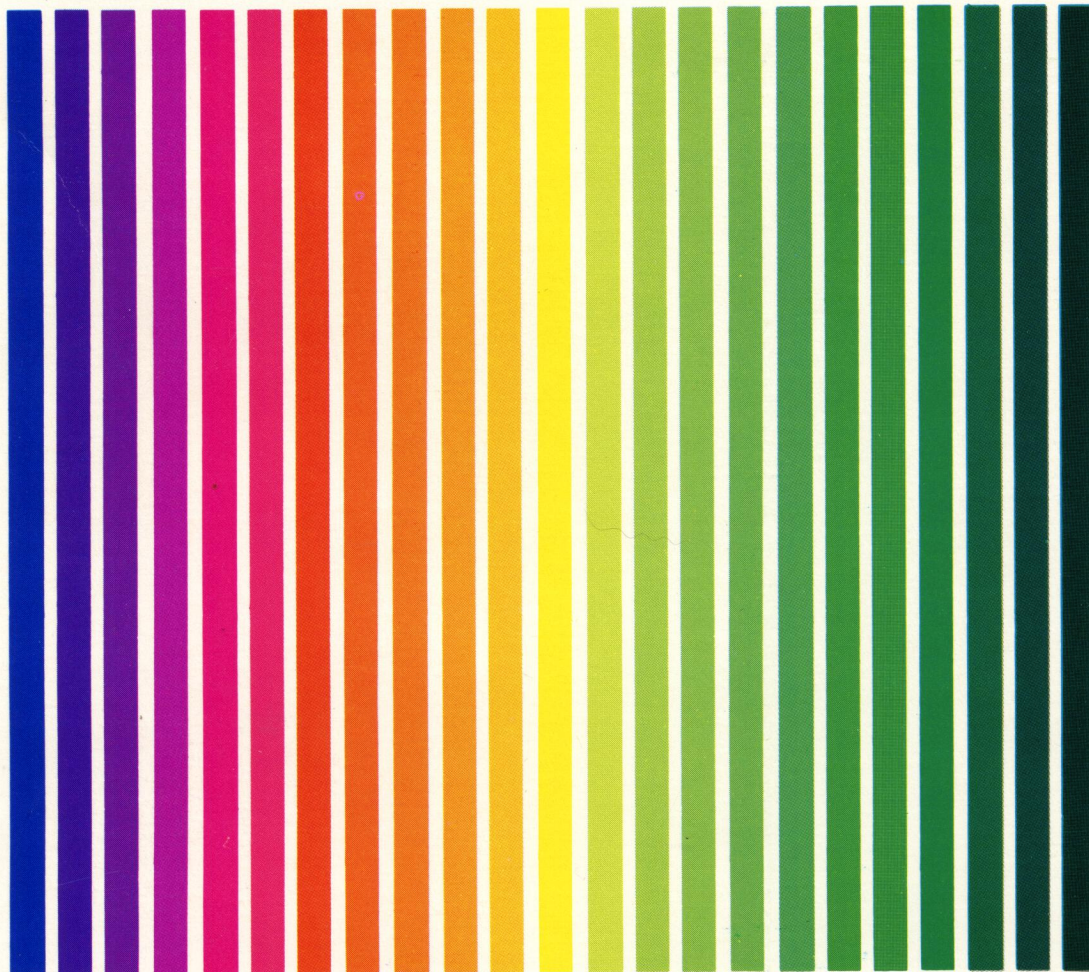


# APX ATARI® PROGRAM EXCHANGE



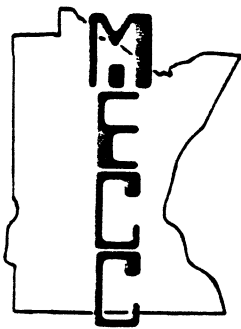
Minnesota Educational Computing Consortium

## **MUSIC III - SCALES & CHORDS**

Five practices for recognizing musical tones

Diskette: 16K (APX-20161)

User-Written Software for ATARI Home Computers



MINNESOTA  
EDUCATIONAL  
COMPUTING  
CONSORTIUM



Developed for the ATARI® Computer

### **Distributed By**

The ATARI Program Exchange  
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**MUSIC III: SCALES & CHORDS**

**Version 1**



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## INTRODUCTION

Music III: Scales and Chords is the third of a series of three modules to be developed by MECC Instructional Services for music theory drill and practice. The diskettes of programs make use of the capabilities of the ATARI Computer to generate tone and produce high-resolution graphics. Each program is designed to allow students to choose the difficulty of the problems to be presented and to select exercises of increasing difficulty as skills improve.

Music theory is a skill-oriented discipline that requires much practice. Typically this practice is not a solitary activity. A teacher must evaluate the student's efforts and, in the case of ear training, also present the music to be heard. This is a tedious and time-consuming task. The ATARI Computer presents both visual and aural stimuli and provides instant feedback to student responses. In addition, it can produce many problems of a given type randomly, relieving the teacher of tedious drill work while providing students with individualized activities.

Handout pages in this booklet are numbered sequentially in the upper right corner and may be duplicated for use with students.

## **INDEX TO PROGRAMS ON DISKETTE**

### **INTRODUCTION**

acquaints students with the ATARI computer and demonstrates the capabilities of the computer that are used on some of the programs on the three music theory diskettes.

The following music theory programs are listed in order of suggested use (see General Description).

### **WHOLE-HALF**

provides aural drill in differentiating between whole and half steps.

### **FIND THE HALF**

provides aural drill in finding the half step in a series of whole steps.

### **TRIADS**

provides drill in aural recognition of arpeggiated major, minor, augmented, and diminished triads.

### **SCALES**

provides aural practice in identifying major scales, three minor scales (harmonic, natural, and melodic), and four modes (dorian, phrygian, lydian, and mixolydian).

### **SEVENTHS**

provides aural practice in identifying major, minor, dominant, half diminished, and full diminished seventh chords.



# GENERAL DESCRIPTION...

The three diskettes of music programs for the ATARI Computer can be used singly or in a combination to drill students at successive levels of difficulty.

Below is one possible sequence of instruction for using the five programs on Music I: Terms and Notations; the seven programs on Music II: Rhythm and Pitch; and the five programs on Music III: Scales and Chords. Each diskette has a menu of programs with an END option. The END option provides for ending work on the current diskette and inserting another. Instruction on the three diskettes is divided into nine levels. The student does Level One first and when all parts of Level One are successfully completed, moves on to Level Two, etc. While a student is using a program, the computer keeps track of which problems have been answered correctly and selects subsequent problems from ones the student has not tried or has answered incorrectly.

<u>Sequence of Instruction</u>		<u>MUSIC Diskette</u>
Level One	- NOTE TYPES (all sets)	I
	- NAME THE NOTE (all sets)	I
	- ENHARMONICS (all sets)	I
Level Two	- TERMS (set 1)	I
	- KEY SIGNATURES (major only)	I
	- COUNTING (all time signatures)	II
	- AURAL INTERVALS (major and minor 2nds)	II
	- VISUAL INTERVALS (2nds)	II
	- WHOLE-HALF	III
Level Three	- WRONG NOTE (2nds)	II
	- MISSING NOTE (2nds)	II
	- RHYTHM (set 1)	II
	- RHYTHM PLAY (set 1)	II
	- AURAL INTERVALS (3rds, and a mixture of 2nds and 3rds)	II
	- VISUAL INTERVALS (3rds, maximum of 1 sharp or flat)	II
Level Four	- WRONG NOTE (3rds, maximum 1 sharp or flat)	II
	- MISSING NOTE (3rds, maximum 1 sharp or flat)	II
	- RHYTHM (set 2)	II
	- RHYTHM PLAY (set 2)	II
	- AURAL INTERVALS (4ths and 5ths)	II
	- VISUAL INTERVALS (4ths, maximum of 1 sharp or flat)	II

Sequence of InstructionMUSIC  
Diskette

<b>Level Five</b>	-	WRONG NOTE (4ths, maximum 1 sharp or flat)	II
	-	MISSING NOTE (4ths, maximum 1 sharp or flat)	II
	-	RHYTHM (set 3)	II
	-	RHYTHM PLAY (set 3)	II
	-	FIND THE HALF (3 notes)	III
	-	TERMS (set 2)	I
	-	VISUAL INTERVALS (5ths, maximum 1 sharp or flat)	II
<b>Level Six</b>	-	WRONG NOTE (5ths, maximum 2 sharps or flats)	II
	-	MISSING NOTE (5ths, maximum 2 sharps or flats)	II
	-	FIND THE HALF (4 notes)	III
	-	VISUAL INTERVALS (6ths, maximum 3 flats or sharps)	II
	-	AURAL INTERVALS (sixths)	II
	-	TRIADS (major and minor only, both fixed and random root)	III
<b>Level Seven</b>	-	WRONG NOTE (6ths, maximum 3 sharps or flats)	II
	-	MISSING NOTE (6ths, maximum 3 sharps or flats)	II
	-	FIND THE HALF (5 notes)	III
	-	VISUAL INTERVALS (7ths, and mixture of 6ths and 7ths)	II
	-	AURAL INTERVALS (7ths, and mixture of 6ths and 7ths)	II
	-	TRIADS (all types, both fixed and random root)	III
<b>Level Eight</b>	-	WRONG NOTE (7ths, maximum 4 sharps or flats)	II
	-	MISSING NOTE (7ths, maximum 4 sharps or flats)	II
	-	SCALES (major and minor)	III
	-	SEVENTHS (major, minor, dominant, both fixed and random root)	III
	-	AURAL INTERVALS (all intervals)	II
	-	KEY SIGNATURES (set 2)	I
	-	TERMS (set 3)	I
<b>Level Nine</b>	-	SCALES (major, minor, and modal)	III
	-	SEVENTHS (major, minor, dominant, half diminished, full diminished, both fixed and random root)	III

## Sequence of Instruction

## MUSIC Diskette

<b>Level Nine</b> (continued)	- KEY SIGNATURES (set 3)	I
	- VISUAL INTERVALS (7ths, maximum 6 flats or sharps)	II
	- WRONG NOTE (7ths, maximum 6 flats or sharps)	II
	- MISSING NOTE (7ths, maximum 6 flats or sharps)	II

## Recording Sheets

A student Recording Sheet is provided for each music theory program so that teachers have a record of student progress and students are given direction and can see progress.

The preceding Sequence of Instruction is one example of a plan for moving students through nine levels using the three diskettes of the music theory programs. To use the programs effectively, students will need direction. While teachers know that students should be familiar with the sounds of fourths and fifths in order to use these intervals in a program like WRONG NOTE (see Music II: Scales and Chords), students may not know this. Students who try programs that are beyond their level of competence usually gain nothing and feel they have failed. Therefore, if the three diskettes of the music programs are to be used with students, a plan should be devised for each student individually or for the class as a whole.

After the decision has been made on which programs to use and in what order, a Recording Sheet should be prepared for each program each student is to use.

Here is how a Recording Sheet might be filled out for a hypothetical student named Sue Collins who has advanced through the beginning levels of the music theory programs. Sue is now ready to work with AURAL INTERVALS on the Music II: Rythmn and Pitch diskette.

Sue has some background in intervals and can usually identify major and minor 2nds. She can identify a third but has trouble distinguishing between major and minor thirds. Sue is very weak on most other intervals. One plan for Sue could be the following:

1. Give her a few drills to discriminate between major and minor 2nds (both low to high and high to low). This will give her familiarity with the equipment and build her confidence.
2. Give drill on a mixture of major and minor 2nds and minor 3rds (1h and hl).

3. Give drill on major and minor 3rds (lh and hl).
4. Give drill on major 3rds, minor 3rds and perfect 4ths (hl and lh).
5. Drill on perfect 4ths and 5ths (hl and lh).
6. Drill on all intervals, minor 2nd through perfect 5th, excluding the tritone (lh and hl).
7. Drill perfect 4ths, perfect 5ths, minor 6ths (lh and hl).
8. Drill minor 6ths, major 6ths (lh and hl).
9. Drill perfect 4th, perfect 5th, major 6th, minor 6th, minor 7th (lh and hl).
10. Drill minor 7th and major 7th (lh and hl).
11. Drill major 6th, minor 6th, major 7th, minor 7th, tritone (hl and lh).
12. Drill all intervals (lh and hl).

Structure and sequence are provided through the student recording sheets. The instructor fills in:

The student's name

The number of problems to do each session

The total needed for mastery

The sequence of instruction

At each computer session students use the Recording Sheet for the directions the instructor has filled in at the top. After work is finished on each program, students enter their scores and mark NO if mastery is not achieved and repeat the session. If mastery is achieved, they mark YES and move on to the program that is next in the sequence by returning to the menu and

1. pressing the number of the new program, or
2. selecting the END option on the menu and inserting a different diskette.

# INTRODUCTION

## MUSIC VIA MICROCOMPUTER

---

Specific Topic: ATARI capabilities on Music Volume I, II and III

Type: Demonstration

Reading Level: 7-8 (Dale-Chall)

### DESCRIPTION...

INTRODUCTION acquaints the student with the ATARI computer in a non-threatening setting. It also demonstrates the capabilities that will be used in the other programs.

### OBJECTIVES...

1. to become familiar with the operation of the ATARI Computer.
2. to learn how to use the ATARI keyboard.



## INTRODUCTION

### BACKGROUND INFORMATION...

Microcomputer capabilities make music theory a fruitful area for computer-enhanced curriculum. Visual and listening skills are combined in the drill and practice routines presented for mastery of music fundamentals. This program demonstrates the use of high resolution graphics and tone and does not require prior work with computers.

## INTRODUCTION

### SAMPLE RUNS

#### THE COMPUTER CAM DISPLAY TEXT RAPIDLY

However, you will still be able to read at your own pace and learn to recognize musical terms like these...

Allegro	Al Segno
Adagio	Cantabile
Dolore	Crescendo
Piano	Forte

Press **RETURN** to continue.

After a brief introduction to the music theory diskettes, students see an example of the text.

### EXAMPLES OF SCREEN OUTPUT

#### THE COMPUTER CAM DISPLAY MUSIC NOTATION



## W H O L E - H A L F

### SCALES

---

Specific Topic:     Hearing whole and half steps

          Type:       Drill and Practice

Reading Level:     5-6 (Dale-Chall)

### DESCRIPTION...

WHOLE-HALF provides aural drill in differentiating between whole and half steps. The student is presented with two pitches and must determine whether the interval between them is a whole step or a half step.

### OBJECTIVE...

to distinguish a half step from a whole step by ear.

## W H O L E - H A L F

### BACKGROUND INFORMATION...

To work with this program students should know the definitions of whole and half steps. Being able to differentiate between whole and half steps is the key skill in aural scale identification. The program presents two tones, either a whole or a half step apart. Students listen and decide if the interval is a whole or half step.

### USE IN AN INSTRUCTIONAL SETTING...

Instructors should fill in the top of Handout 1, the recording sheet for WHOLE-HALF, before students are sent to the computer. Space is provided for recording results for six sessions on WHOLE-HALF. If more practice is needed to achieve the expected total needed for mastery, an additional Recording Sheet should be prepared for students. WHOLE-HALF completes Level Two of the suggested sequence of instruction outlined in the General Description for the music theory programs.

## WHOLE-HALF RECORDING SHEET

Name \_\_\_\_\_

Number of problems to do \_\_\_\_\_ (24 maximum)

Total needed for mastery \_\_\_\_\_

Session \_\_\_\_\_

Number Tried \_\_\_\_\_

Number Correct \_\_\_\_\_

Session \_\_\_\_\_

Number Tried \_\_\_\_\_

Number Correct \_\_\_\_\_

Session \_\_\_\_\_

Number Tried \_\_\_\_\_

Number Correct \_\_\_\_\_

Session \_\_\_\_\_

Number Tried \_\_\_\_\_

Number Correct \_\_\_\_\_

Session \_\_\_\_\_

Number Tried \_\_\_\_\_

Number Correct \_\_\_\_\_

Session \_\_\_\_\_

Number Tried \_\_\_\_\_

Number Correct \_\_\_\_\_

Record date mastery is achieved \_\_\_\_\_



## W H O L E - H A L F

### SAMPLE RUNS

#### Whole-Half

You will hear two tones which will be either a whole or a half step apart. If the interval is a whole step, answer by entering the letter, 'W'. If the interval is a half step, answer by entering the letter, 'H'.

Press **RETURN** to continue.

In each exercise, the microcomputer plays two tones. The tones are either a whole or a half step apart. The student must decide if the interval is a whole or half step, and enter "W" if the interval is a whole step or "H" if it is a half step.

#### EXAMPLES OF SCREEN OUTPUT

How many problems do you want? 99  
Enter a number between 1 and 24.

Students specify the number of problems by typing a number from 1 to 24.

## W H O L E - H A L F

### SAMPLE RUNS

A sound is being played. Please  
adjust the volume on the TV set.

Students can control the  
volume of what is  
played.

Press **RETURN** to continue.

### EXAMPLES OF SCREEN OUTPUT

Press 'P' to play the interval again.

Is the interval a whole or half step? H

The sound of the interval  
can be repeated before  
students select their  
answers.

# FIND THE HALF

## SCALES

---

Specific Topic: Hearing half steps

Type: Drill and Practice

Reading Level: 5-6 (Dale-Chall)

## DESCRIPTION...

FIND THE HALF provides aural drill in finding a half step in a series of whole steps.

## OBJECTIVE...

to hear a series of five pitches that ascend by step and to determine between which two pitches a half-step interval occurred.

## **F I N D   T H E   H A L F**

### **BACKGROUND INFORMATION...**

Working with this program requires the ability to distinguish between a half-step and a whole step by ear (see WHOLE-HALF). Identifying scales by ear is based on the ability to hear a half-step in a series of whole steps. The computer plays a series of from three to five notes that ascend by step. With the exception of one, all the intervals between notes are whole steps. The student determines between which two pitches a half step occurred. The student specifies the number of notes (3-5) to be used for the exercises.

### **USE IN AN INSTRUCTIONAL SETTING...**

Instructors should fill in the top of Handout 2, the recording sheet for FIND THE HALF, before students are sent to the computer. Space is provided for recording results for two sessions at Level Five, two sessions at Level Six, and two sessions at Level Seven, if students are following the suggested sequence of instruction.

## FIND THE HALF RECORDING SHEET

Name \_\_\_\_\_

Number of problems to do \_\_\_\_\_

3-Note Set \_\_\_\_\_ (12 max.)

4-Note Set \_\_\_\_\_ (12 max.)

5-Note Set \_\_\_\_\_ (12 max.)

Total needed for mastery \_\_\_\_\_

3-Note Set:      Session \_\_\_\_\_  
 (Level Five)    Number Tried \_\_\_\_\_  
                   Number Correct \_\_\_\_\_

3-Note Set:      Session \_\_\_\_\_  
 (Level Five)    Number Tried \_\_\_\_\_  
                   Number Correct \_\_\_\_\_

4-Note Set:      Session \_\_\_\_\_  
 (Level Six)    Number Tried \_\_\_\_\_  
                   Number Correct \_\_\_\_\_

4-Note Set:      Session \_\_\_\_\_  
 (Level Six)    Number Tried \_\_\_\_\_  
                   Number Correct \_\_\_\_\_

5-Note Set:      Session \_\_\_\_\_  
 (Level Seven)    Number Tried \_\_\_\_\_  
                   Number Correct \_\_\_\_\_

5-Note Set:      Session \_\_\_\_\_  
 (Level Seven)    Number Tried \_\_\_\_\_  
                   Number Correct \_\_\_\_\_

Record date mastery is achieved \_\_\_\_\_



## FIND THE HALF

### SAMPLE RUNS

The computer will play a series of notes which are part of a scale. Every interval between the notes in the series will be a whole step, except one. You must determine between which two notes you hear an interval of a half step.

Press **RETURN** to continue.

Instructions are given for entering answers.

### EXAMPLES OF SCREEN OUTPUT

You may choose to work with a series of three notes, four notes, or five notes in a set of problems. Usually, more notes in the series makes the interval more difficult to find.

Press **RETURN** to continue.

For each set of problems, students choose to have three, four, or five notes in the series.

## FIND THE HALF

### SAMPLE RUNS

How many notes in a series? ■

Students specify the number of problems they want in the set: 3, 4, or 5.

### EXAMPLES OF SCREEN OUTPUT

press 'P' to hear the series again.

after which note in the series does  
the half-step occur? ■

Students are directed to type the number of the note which was played just before the half-step interval.

**CHORDS**

---

Specific Topic: Aural recognition of triads

Type: Drill and Practice

Reading Level: 7-8 (Dale-Chall)

**DESCRIPTION...**

TRIADS provides drill in aural recognition of arpeggiated major, minor, augmented, and diminished triads in root position. Students decide whether or not to include augmented and diminished triads in the drill.

**OBJECTIVE...**

to identify by ear the following arpeggiated triads:

major  
minor  
augmented  
diminished

# TRIADS

## BACKGROUND INFORMATION...

Requisite to working with this program is understanding the definitions of major, minor, augmented, and diminished triads and being able to recognize major and minor thirds by ear.

A triad in root position consists of three notes played together as a chord. The interval between the lowest and middle notes is a third, as is the interval between the middle and highest notes. The type of triad is determined by the **types** of thirds used. The chart below shows these.

Interval lowest and middle	Interval middle and highest	Triad type
major 3rd	major 3rd	augmented
major 3rd	minor 3rd	major
minor 3rd	major 3rd	minor
minor 3rd	minor 3rd	diminished

## Examples

The image shows a single musical staff with a treble clef. It contains four triads, each represented by a vertical line with three dots indicating the notes. Below each triad is a label: 'major', 'minor', 'augmented', and 'diminished'. The triads are positioned on the staff as follows: the major triad is on the first line (C4, E4, G4), the minor triad is on the first line with a flat (C4, B3, G4), the augmented triad is on the first line with a sharp (C4, E4, G#4), and the diminished triad is on the first line with a flat and a double flat (C4, Bb3, Gbb4).

# TRIADS

Looking at the triads that are built on the various degrees of the scale, we find:

Degree of Scale	Triad Type
1	major
2	minor
3	minor
4	major
5	major
6	minor
7	diminished

## Examples

major      minor      minor      major      major      minor      diminished

The augmented triad does not occur naturally on any degree of the major scale.

Students decide if both augmented and diminished triads are to be included in the drills and specify the number of problems to be presented.

Students decide whether or not the root of the triads is to be fixed. If the root of the triads is fixed, all triads heard will be some type of triad based on C, e.g., C-major, C-minor, etc. When first learning triads, students find it easier to differentiate between them if the root is fixed. More advanced students can request different roots. If different roots are used, then the first triad could be a C major, the second a G-minor, etc.

**USE IN AN INSTRUCTIONAL SETTING...**

Instructors should fill in the top of Handout 3, the recording sheet for TRIADS, before students are sent to the computer. Space is provided for recording results for two sessions at Levels Six and Seven if students are following the suggested sequence of instruction.

# TRIADS RECORDING SHEET

Name \_\_\_\_\_

	Chord	Root
Number of problems to do	Set 1 - major & minor	Fixed _____ (24 max.)
	Set 2 - major & minor	Random _____ (24 max.)
	Set 3 - all types	Fixed _____ (24 max.)
	Set 4 - all types	Random _____ (24 max.)

Total needed for mastery \_\_\_\_\_

Session _____	Session _____
Set 1: Number Tried _____	Set 1: Number Tried _____
(Level Six) Number Correct _____	(Level Six) Number Correct _____
Set 2: Number Tried _____	Set 2: Number Tried _____
(Level Six) Number Correct _____	(Level Six) Number Correct _____
Set 3: Number Tried _____	Set 3: Number Tried _____
(Level Seven) Number Correct _____	(Level Seven) Number Correct _____
Set 4: Number Tried _____	Set 4: Number Tried _____
(Level Seven) Number Correct _____	(Level Seven) Number Correct _____

Record date mastery is achieved \_\_\_\_\_

## TRIADS

### SAMPLE RUNS

In each exercise, a triad is played as a series of notes - root, third, fifth, third, and root. You must identify the triad.

Press **RETURN** to continue.

In each exercise, the computer plays an arpeggiated triad in root position. Students may hear the triad repeated as many times as needed.

### EXAMPLES OF SCREEN OUTPUT

The exercises cover these triads: major, minor, augmented, and diminished. In addition, you may choose to have the root of all the triads be the same note [fixed] or have a different root note used for each triad.

Press **RETURN** to continue.

Students decide whether or not the root of the triads is to be fixed.



**TRIADS**  
**SAMPLE RUNS**

Sets of triads:

1. Major and minor triads only.
2. Major, minor, augmented, and diminished triads.

Which choice of triads do you want? ■

After specifying the number of problems, students also specify which set of triads are to be presented.

**EXAMPLES OF SCREEN OUTPUT**

In each exercise, a triad is played as a series of notes - root, third, fifth, third, and root. You must identify the triad.

Press **RETURN** to continue.

Students also specify the type of root note for all the triads.

**T R I A D S**  
**SAMPLE RUNS**

**Enter your answers using these numbers:**

- 1. Major**
- 2. Minor**
- 3. Augmented**
- 4. Diminished**

**Press 'P' to hear the triad.**

**What type of triad did you hear? ■**

Students get one try per problem. If the response is wrong, the correct answer is displayed.

**EXAMPLE OF SCREEN OUTPUT**

## SCALES AND MODES

---

Specific Topic: Identifying scales and modes

Type: Drill and Practice

Reading Level: 7 - 8 (Dale-Chall)

### DESCRIPTION...

SCALES provides aural practice in identifying major scales, three types of minor scales (harmonic, natural, and melodic) and four modes (dorian, phrygian, lydian, and mixolydian). Students can decide whether or not the modes are to be included.

### OBJECTIVE...

to recognize by ear the following scales and modes:

- major scale
- harmonic minor scale
- natural minor scale
- melodic minor scale
- dorian mode
- phrygian mode
- lydian mode
- mixolydian mode

### **BACKGROUND INFORMATION...**

To work with this program students should know the definitions of the scales and modes to be studied and be able to differentiate between whole and half step intervals. (See WHOLE-HALF and FIND THE HALF).

Four different types of scales and four modes are commonly used in music. The descriptions in the following pages of each scale or mode include definitions, examples and descriptions of what to listen for in identifying the scale or mode.

### **USE IN AN INSTRUCTIONAL SETTING...**

Instructors should fill in the top of Handout 4, the recording sheet for SCALES, before students are sent to the computer. Space is provided for recording results for two sessions at Levels Eight and Nine if students are following the suggested sequence of instruction.

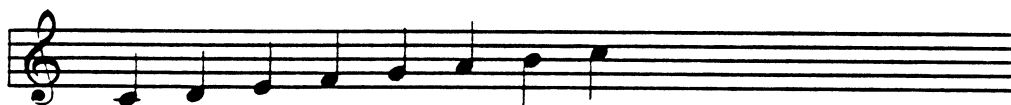
## S C A L E S

**KEY:** W=whole, h=half

### Major Scale

Ascending pattern: w w h w w w h  
Descending pattern: h w w w h w w

#### Example



Things to listen for:

1. The interval between the 2nd and 3rd degrees is a whole step.
2. The interval between the 7th and 8th degrees is a half step.
3. The major scale is most easily confused with mixolydian mode.

### Harmonic Minor Scale

Ascending pattern: w h w w h augmented-2nd h  
Descending pattern: h augmented-2nd h w w h w

#### Example



Things to listen for:

This scale is easily recognized by the augmented 2nd between its 6th and 7th degrees. The harmonic minor scale is the only scale that has such an interval. The augmented 2nd sounds like a minor 3rd and gives the scale the sound of music that conjures up the image of a snake charmer.

## SCALES

Key: w=whole, h=half

### Natural or Pure Minor Scale

Ascending pattern: w h w w h w w  
Descending pattern: w w h w w h w

#### Example



Things to listen for:

1. The step between the 2nd and 3rd degrees is a half step.
2. The step between the 7th and 8th degrees is a whole step.
3. The step between the 6th and 7th degrees is a whole step.
4. The natural or pure minor scale is most easily confused with the dorian mode.

### Melodic Minor Scale

Ascending pattern: w h w w w w h  
Descending pattern: w w h w w h w

#### Example



Things to listen for:

The ascending and descending scales do not use the same notes. The melodic minor scale is the only one that does not use the same notes both ascending and descending.

## S C A L E S

**Key:** w=whole, h=half

### Dorian Mode

Ascending pattern: w h w w w h w  
Descending pattern: w h w w w h w

#### Example



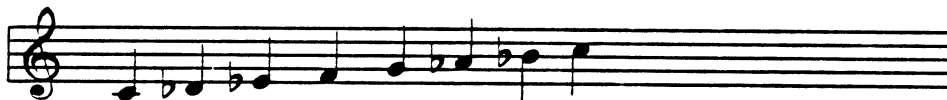
Things to listen for:

This sounds much like a pure minor scale. The distinguishing feature is the half step between the 6th and 7th degrees.

### Phrygian Mode

Ascending pattern: h w w w h w w  
Descending pattern: w w h w w w h

#### Example



Things to listen for:

The phrygian mode is the only mode or scale that has a half step between its 1st and 2nd degrees.

## S C A L E S

**Key:** w=whole, h=half

### Lydian Mode

Ascending pattern: w w w h w w h  
Descending pattern: h w w h w w w

#### Example



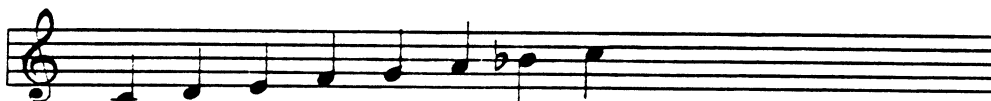
Things to listen for:

The lydian mode is the only mode that begins with 3 whole steps.

### Mixolydian Mode

Ascending pattern: w w h w w h w  
Descending pattern: w h w w h w w

#### Example



Things to listen for:

The mixolydian mode sounds very much like a major scale, as the first six degrees are the same. The interval between the 7th and 8th degrees, however, is a whole rather than a half step.



## SCALES RECORDING SHEET

Name \_\_\_\_\_

Number of problems to do      Set 1 \_\_\_\_\_ (24 max.)  
Set 2 \_\_\_\_\_ (24 max.)

Total needed for mastery \_\_\_\_\_

Session \_\_\_\_\_

Session \_\_\_\_\_

Set 1: Number Tried \_\_\_\_\_

Set 1: Number Tried \_\_\_\_\_

Number Correct \_\_\_\_\_

Number Correct \_\_\_\_\_

Set 2: Number Tried \_\_\_\_\_

Set 2: Number Tried \_\_\_\_\_

Number Correct \_\_\_\_\_

Number Correct \_\_\_\_\_

Record date mastery is achieved \_\_\_\_\_

## S C A L E S

### SAMPLE RUNS

Sets of scales:

1. Major and minor scales only.
2. Major and minor scales, and the four modes.

Which set do you want? ■

Students specify whether or not to include the modes in the exercises presented.

### EXAMPLES OF SCREEN OUTPUT

Enter your answers using these numbers:

1. Major
2. Harmonic minor
3. Natural minor
4. Melodic minor

If students specify set 1, they are given these scales to identify.

## SCALES

### SAMPLE RUNS

Enter your answers using these numbers:

- |                   |                    |
|-------------------|--------------------|
| 1. Major          | 5. Dorian Mode     |
| 2. Harmonic Minor | 6. Phrygian Mode   |
| 3. Natural Minor  | 7. Lydian Mode     |
| 4. Melodic Minor  | 8. Mixolydian Mode |

If set 2 is selected four scales and four modes are presented for students to identify.

### EXAMPLES OF SCREEN OUTPUT

Enter your answers using these numbers

- |                   |                    |
|-------------------|--------------------|
| 1. Major          | 5. Dorian mode     |
| 2. Harmonic minor | 6. Phrygian mode   |
| 3. Natural minor  | 7. Lydian mode     |
| 4. Melodic minor  | 8. Mixolydian mode |

Which scale or mode was played? 8  
No, the correct number was 2.

Press 'P' to play the scale again,  
or

Press **RETURN** to continue.

The scale can be repeated as many times as students wish to hear it. When students select the incorrect answer, they are shown the number of the correct answer.

## SEVENTHS

### CHORDS

---

Specific Topic: Aural recognition of seventh chords

Type: Drill and Practice

Reading Level: 9-10 (Dale-Chall)

### DESCRIPTION...

SEVENTHS gives students aural practice in identifying arpeggiated major, minor, dominant, half diminished, and full diminished seventh chords in root position. Students decide whether or not half and full diminished seventh chords are to be used and whether or not to use the same root note for all examples presented.

### OBJECTIVE...

to distinguish by ear the following arpeggiated 7th chords:

- major
- minor
- dominant
- half diminished
- full diminished

# SEVENTHS

## BACKGROUND INFORMATION...

Working with this program requires the ability to identify by ear major, minor, augmented and diminished triads. (See TRIADS).

Seventh chords consist of a triad plus the note that is a 7th above the root of the triad.

The type of the 7th chord is determined by the type of the triad and the type of the 7th. Study the chart below.

Type of Triad	Type of Seventh	Type of 7th chord
major	major	major (or major-major)
major	minor	dominant (or major-minor)
minor	minor	minor (or minor-minor)
diminished	minor	half diminished
diminished	diminished	full diminished

## Examples



major

dominant

minor

half  
diminished

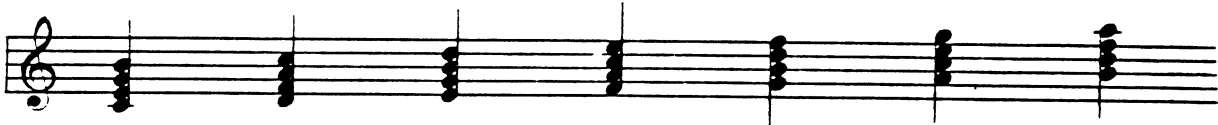
full  
diminished

## S E V E N T H S

The seventh chords that can be constructed on the various degrees of the scale are as follows:

Degree of scale	Seventh chord
1	major
2	minor
3	minor
4	major
5	dominant
6	minor
7	half diminished

### Examples



major      minor      minor      major      dominant      minor      half diminished

In sheet music, symbols are used for 7th chords. A plain 7th chord, such as G7, indicates a **dominant** 7th chord. Major and minor 7ths are marked maj7 and min7 respectively.

## **S E V E N T H S**

### **USE IN AN INSTRUCTIONAL SETTING...**

Students should be able to identify triads (see TRIADS) to work with this program. Instructors should fill out the top of Handout 5, the recording sheet for SEVENTHS, before students are sent to the computer. Space is provided for recording results for two sessions at Level Eight and Nine if students are following the suggested sequence of instruction.

## SEVENTHS RECORDING SHEET

Name \_\_\_\_\_

	Chord	Root
Number of problems to do	Set 1 - major, minor & dominant 7ths (12 max.)	Fixed _____
	Set 2 - major, minor & dominant, half diminished, & full diminished (12 max.)	Random _____

Total needed for mastery \_\_\_\_\_

Session _____	Session _____
Set 1: Number Tried _____	Set 1: Number Tried _____
(Level Eight) Number Correct _____	(Level Eight) Number Correct _____
Set 2: Number Tried _____	Set 2: Number Tried _____
(Level Nine) Number Correct _____	(Level Nine) Number Correct _____

Record date mastery is achieved \_\_\_\_\_



## SEVENTHS

### SAMPLE RUNS

In each exercise, you will hear a chord played as a series of seven notes - root, third, fifth, seventh, fifth, third, and root. You must try to identify the chord.

Press **RETURN** to continue.

In each exercise, the micromputer plays an arpeggiated 7th chord in root position. Students may request to hear it as many times as needed.

### EXAMPLES OF SCREEN OUTPUT

Sets of chords:

1. Major, minor, and dominant 7ths.
2. Major, minor, dominant, half diminished, and full diminished 7ths.

Which set do you want? ■

Students decide whether or not half and full diminished 7th chords are to be included in the exercises.

## SEVENTHS

### SAMPLE RUNS

Type of root note:

1. Fixed root note for every chord.
2. Different root note for each chord

Which type do you want? ■

Students decide whether or not to use the same root note for all chords presented. If the same root note is used, all chords will be some form of a C 7th chord, e.g., C major, C half diminished, etc. If students decide to use different roots, then the first chord could be an F minor, the second a D dominant, etc.

### EXAMPLES OF SCREEN OUTPUT

Enter your answers using these numbers

1. Major 7th
2. Minor 7th
3. Dominant 7th
4. Half diminished 7th
5. Full diminished 7th

Press 'P' to hear the chord again.

What type of seventh did you hear? 1

No, the correct answer is 5.

Press **RETURN** to continue.

Set 2 presents five types of sevenths, and students identify which type of 7th chord was played. Students get one try per problem. If the response is wrong, the correct answer is displayed.



## **APPENDICES**

GETTING TO KNOW YOUR ATARI COMPUTEREquipment

**ATARI COMPUTER CONSOLE:** The computer and keyboard.

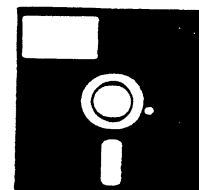
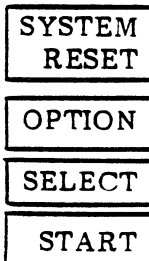
**BASIC LANGUAGE CARTRIDGE:** A cartridge (containing the BASIC computer language) that is inserted into the console above the keyboard.



**TELEVISION:** A television set used to display information.

**DISK DRIVE:** A unit that holds and reads the diskette.

**DISKETTE:** A 5¼ inch "record" that contains a series of computer programs.

ATARI Computer Keyboard

The ATARI Computer keyboard looks much like the keyboard of a typewriter. Some special keys are noted below:



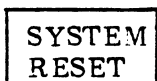
**RETURN Key**—When you are finished typing either a response to a question or a line in a program, you send the information to the computer by pressing the **RETURN** key.



**BACK S (Backspace) Key**—Each time you press the **BACK S** key, the cursor backs up one space and erases each letter it passes over. This feature allows you to correct typographical errors easily.



**BREAK** Key—Press this key to stop the execution of a program. The program will remain in the computer memory and may be run again. If **BREAK** doesn't work to stop the program, try the **RESET** key.




**RESET** Key—Like the **BREAK** key, the **RESET** key stops program execution. It also clears the screen. To restart, type RUN"D:HELLO".



**ESC** (Escape) Key—While you are using MECC diskettes, press the **ESCAPE** key in response to a question to stop program execution. The computer will ask whether you wish to run the program again. If you do not, the computer will display the diskette menu, and you may choose another program.



**SHIFT** Key—Use the computer **SHIFT** key like that of a typewriter. If a key displays two characters, you may hold down the **SHIFT** key while typing to print the upper character. For example, holding down the **SHIFT** key and typing  will print !.



**CAPS/LOWR** (Capitals/Lower case) Key—When you press this key, the computer begins typing in lower-case letters. To capitalize individual letters, you must hold down the **SHIFT** key as with a typewriter. To switch back to all capitals, hold down the **SHIFT** key, and press the **CAPS/LOWR** key again.



**CTRL** (Control) Key—Hold down the **CONTROL** key while pressing another key if indicated by the computer instructions.

### Keys That Can Cause Confusion



**0** (Zero)—The zero is on the top row of keys. Do not use the letter **O** interchangeably with this number key.



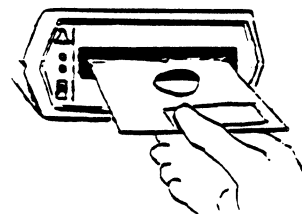
**1** (One)—The number one is on the top row of keys. Do not use it interchangeably with a lower-case **L** (l).

USING A MECC DISKETTEUsing the Computer

1. Make certain that the ATARI Computer, BASIC language cartridge, disk drive and television are plugged in and connected to each other properly. (See the ATARI Computer New User's Guide by MECC for detailed instructions.)
2. Turn on the television.
3. Turn on the disk drive. The PWR ON and BUSY lights will come on. After about 10 seconds the BUSY light will go off, and the whirling sound will stop.

**Turn on the disk drive before you turn on the computer.**

4. Press the rectangular release button below the disk drive to open the door. Insert a diskette into the disk drive, exposed oval part first, with the diskette label up. Diskettes are sensitive to dust, heat, cold and magnetic fields, so handle them with care. (See the User's Guide for information on diskette care.)



5. Close the door on the disk drive.
6. Turn on the ATARI Computer. The power switch is located on the right side near the power cord. The disk BUSY light will turn on, and you will hear a whirling sound from the disk drive.

If the disk BUSY light does not go off in about 10 seconds, turn the computer off, and make sure that the diskette is placed correctly in the disk drive. Then turn the computer on.

If no display appears on your television screen at this point, and the television is set at channel 2 or 3, the computer may be set for the wrong channel. The channel select switch is on the back of the ATARI 400 Computer. Switch it to the opposite position.

7. A MECC logo will appear on the screen with the diskette name. Then a "menu" will appear. The menu gives a list of programs on the diskette. To run a program, type the number shown in front of the program name, then press the **RETURN** key. To access any available teacher options on the diskette, hold down the **CTRL** key and type A.
8. Follow the directions given in the program. Remember to press the **RETURN** key after each answer.
9. To return to the menu while running a program, press the **ESC** (Escape) key in response to any question.

The screen will then ask whether the current program is to be run again or not. If not, the menu is automatically displayed.

10. To use a different diskette, select the END option from the menu, and follow the directions on the screen.

Turning Off The Computer

1. Take the diskette out of the disk drive, and store it in its protective envelope.
2. Turn off the ATARI Computer, the disk drive and the television.



### DEFINITIONS OF TERMS

BACKGROUND INFORMATION—The information that explains or enriches program content or provides technical information on the program.

COURSEWARE—A collection of computer programs together with accompanying support materials.

DOCUMENTATION—The written material for the teacher to use with the computer program (also called a support booklet or support materials).

DRILL AND PRACTICE—A computer program that provides repetitive practice on a skill or a set of facts.

EDUCATIONAL GAME—A computer program that presents an instructional purpose in a game format.

GRADE LEVEL—The range of grades for which the program was designed.

HANDOUTS—The pages of the support booklet that may be duplicated for student or teacher use.

MODULE—The package containing the computer program(s) and the support booklet.

OBJECTIVES—The results to be achieved by using the program and support materials.

PROBLEM SOLVING—A computer program that processes data for a problem defined by the student.

PROGRAM—The routines and operations that instruct the computer.

READING LEVEL—The readability of the text that appears on the computer screen.

SAMPLE RUNS—The pages of the support booklet that show examples of computer screen output and accompanying explanations to outline the program flow.

SELO—Some Essential Learner Outcomes prepared by the Minnesota State Department of Education. When applicable these are included with the objectives in MECC support booklets.

SIMULATION—A computer program that approximates a real-world environment for examination.

SUPPORT BOOKLET—The written material (also called documentation) that provides the information a teacher may need to use the program in a classroom.

TEACHER AID—A computer program designed to assist a teacher with classroom management tasks.

TUTORIAL—A computer program that provides new information to teach a concept and may include drill and practice.

MUSIC III - SCALES AND CHORDS

TECHNICAL INFORMATION

INTRODUCTION

Main Program: INTRO  
Binary Files: FFS.BIN  
MUSIC.FNT

WHOLE HALF

Main Program: WHOLEHAF

FIND THE HALF

Main Program: FINDHAF

TRIADS

Main Program: TRIADS

SCALES

Main Program: SCALES

SEVENTHS

Main Program: SEVENTH

CREDITS

MUSIC III: SCALES AND CHORDS

Music III: Scales and Chords for the ATARI Computer was converted from a series of programs developed by Linda Borry Hausmann, formerly of the MECC staff.

Testing and evaluation of the original programs with students was greatly aided by Elwood Johnson of Minneapolis Roosevelt High School.

Ona Pinsoneault, an instructor of music theory at Normandale Community College, Minneapolis, served as consultant and principal reviewer for the project.

The diskette for the Atari computer was programmed by Cynthia Schroeder and Lee Jensen of the MECC staff.

The support booklet was compiled by Shirley Keran of the MECC staff.

This module is a production of the MECC Instructional Services Division.

MECC INSTRUCTIONAL SERVICES ACTIVITIES

**PURPOSE:** The primary purpose of the Minnesota Educational Computing Consortium (MECC) is to assist users and educational member systems in coordinating and using computing resources through cooperative planning and decision making. MECC also provides current computing methods and materials.

**SERVICES:** All MECC activities in instructional computing are the responsibility of the Director of Instructional Services (Telephone: **612/376-1105**). Direct any questions related to MECC policy, procedures, or regulations to this office. The MECC Instructional Services Division is organized as follows:

Instructional Systems Development—This group is responsible for the production, coordination, and refinement of MECC instructional computing courseware products, computer programs, and their related user support material. Direct any questions on operations within this area to the Manager, Instructional Systems Development (Telephone: **612/376-1103**).

Technical Services—This group is responsible for operation and operating systems maintenance of the MECC Timeshare System (MTS), a 400+ port, all-purpose, multiple language computer, which serves all Minnesota public higher education institutions and 300 school districts. Technical Services also establishes and maintains the MTS telecommunications network. Direct any questions on operations within this area to the Manager, Technical Services (Telephone: **612/376-1141**).

User Services—This group is responsible for timeshare and microcomputer user communications and training and the distribution of computing equipment and MECC courseware products. A staff of instructional computing coordinators is located throughout Minnesota to promote and facilitate computer usage. Direct all questions on operations in this area to the Manager, User Services (Telephone: **612/376-1101**).

**GENERAL INFORMATION:** MECC provides the above information to assist individuals who wish to contact the MECC office with specific questions. Direct all written requests for information to the appropriate office at MECC, 2520 Broadway Drive, St. Paul, MN 55113. The following two items address many routine questions:

MECC Publications and Programs Price List

MECC distributes this free list upon request and suggests that you obtain it quarterly. Contact the MECC Publications Office (Telephone: **612/376-1118**).

MECC USERS Newsletter

MECC distributes this free newsletter regularly during the school year to individuals on the mailing list. Contact the User Services Office (Telephone: **612/376-1117**).

All requests for visits to MECC must be scheduled in advance by calling 612/376-1130.



**Limited Warranty on Media and Hardware Accessories.** We, Atari, Inc., guarantee to you, the original retail purchaser, that the medium on which the APX program is recorded and any hardware accessories sold by APX are free from defects for thirty days from the date of purchase. Any applicable implied warranties, including warranties of merchantability and fitness for a particular purpose, are also limited to thirty days from the date of purchase. Some states don't allow limitations on a warranty's period, so this limitation might not apply to you. If you discover such a defect within the thirty-day period, call APX for a Return Authorization Number, and then return the product along with proof of purchase date to APX. We will repair or replace the product at our option.

You void this warranty if the APX product: (1) has been misused or shows signs of excessive wear; (2) has been damaged by use with non-ATARI Home Computer products; or (3) has been serviced or modified by anyone other than an Authorized ATARI Computer Service Center. Incidental and consequential damages are not covered by this warranty or by any implied warranty. Some states don't allow exclusion of incidental or consequential damages, so this exclusion might not apply to you.

**Disclaimer of Warranty and Liability on Computer Programs.** Most APX programs have been written by people not employed by Atari, Inc. The programs we select for APX offer something of value that we want to make available to ATARI Home Computer owners. To offer these programs to the widest number of people economically, we don't put APX products through rigorous testing. Therefore, APX products are sold "as is," and we do not guarantee them in any way. In particular, we make no warranty, express or implied, including warranties of merchantability and fitness for a particular purpose. We are not liable for any losses or damages of any kind that result from use of an APX product.

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**For the complete list of current  
APX programs, ask your ATARI retailer  
for the APX Product Catalog**

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## EVALUATION SHEET

Please comment on this manual and the accompanying diskette. MECC will carefully consider user suggestions and incorporate them into future documentation whenever practical.

### COMMENTS ON COMPUTER PROGRAM

Diskette Name \_\_\_\_\_ Vol. No. \_\_\_\_\_ Version \_\_\_\_\_  
Program Name \_\_\_\_\_

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### COMMENTS ON MANUAL

Title of Manual \_\_\_\_\_  
Program Name \_\_\_\_\_  
Page No. \_\_\_\_\_

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From: Name \_\_\_\_\_  
Institution \_\_\_\_\_  
Address \_\_\_\_\_  
ZIP \_\_\_\_\_

Please detach and mail to MECC.



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First Class  
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Necessary

Minnesota Educational Computing Consortium  
Manager, Instructional Systems Development  
2520 Broadway Drive  
St. Paul, Minnesota 55113

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## Review Form

We're interested in your experiences with APX programs and documentation, both favorable and unfavorable. Many of our authors are eager to improve their programs if they know what you want. And, of course, we want to know about any bugs that slipped by us, so that the author can fix them. We also want to know whether our

instructions are meeting your needs. You are our best source for suggesting improvements! Please help us by taking a moment to fill in this review sheet. Fold the sheet in thirds and seal it so that the address on the bottom of the back becomes the envelope front. Thank you for helping us!

1. Name and APX number of program.

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2. If you have problems using the program, please describe them here.

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3. What do you especially like about this program?

---

---

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4. What do you think the program's weaknesses are?

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5. How can the catalog description be more accurate or comprehensive?

---

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6. On a scale of 1 to 10, 1 being "poor" and 10 being "excellent", please rate the following aspects of this program:

- \_\_\_\_\_ Easy to use
- \_\_\_\_\_ User-oriented (e.g., menus, prompts, clear language)
- \_\_\_\_\_ Enjoyable
- \_\_\_\_\_ Self-instructive
- \_\_\_\_\_ Useful (non-game programs)
- \_\_\_\_\_ Imaginative graphics and sound

7. Describe any technical errors you found in the user instructions (please give page numbers).

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8. What did you especially like about the user instructions?

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9. What revisions or additions would improve these instructions?

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10. On a scale of 1 to 10, 1 representing "poor" and 10 representing "excellent", how would you rate the user instructions and why?

---

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11. Other comments about the program or user instructions:

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From

---

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STAMP

ATARI Program Exchange  
P.O. Box 3705  
Santa Clara, CA 95055

[seal here]