

Articulatory Phonetics: Manual Alphabet

LEVEL 1: Single-Syllable Words

A pronunciation guide and simplified phonetic system designed to support Deaf and hard-of-hearing learners in special education

Cheri Montgomery

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PREFACE

Articulatory Phonetics: Manual Alphabet is the fingerspelling and lipreading version of a university level phonetics program. It features a simplified phonetic system designed for diverse learners and provides instruction in the formation and articulation of each sound. Following is the preface to the pre-college version.

Today's middle and high school teachers serve students with diverse abilities and language backgrounds. How can one curriculum address such a wide range of learning needs? This series enables every learner to participate in the same lesson.

Individual learning needs are supported through four parallel workbooks created for students, parents, and teachers who are new to:

- braille
- manual signing and lipreading
- English language learning
- articulatory phonetics

Each workbook contains the same carefully ordered selection of words, phrases, and sentences. All exercises include only the sounds and spellings previously introduced. Sentences are deliberately constructed to avoid predictability and prevent guesswork. The intentional design supports early literacy development and proper pronunciation, while the separate formats enhance accessibility for students with distinct learning needs.

The parallel books provide unique instructions for:

- tactile training in braille with audio examples for those learning through touch and hearing
- manual-visual learning through signing and lipreading for those who rely on visual communication
- visual articulatory study using front and midsagittal views of the vocal tract with audio examples for those developing clarity of speech
- visual definition of vocabulary through carefully selected images with audio examples for those acquiring English in the multilingual classroom environment

Reading and Phonetics: Manual Alphabet, Level 1 focuses on fingerspelling and an introduction to lipreading. A structured fingerspelling system with phonetics supports the development of lipreading skills. Phonetic symbols are signed near the mouth. This placement assists lipreading by visually positioning phonetic symbols beside the articulators. Because lipreading alone cannot distinguish between voiced and voiceless consonants, this newly designed system provides an added visual cue to represent the contrast.

Vertical location is used to indicate the letter case required for the simplified phonetic system developed for this group of learners. Uppercase letters are signed near the forehead, while lowercase letters remain at mouth level. This distinction also separates the conventional spellings of words (signed at chest level) from the phonetic system used for lipreading (signed near the mouth).

Because the linguistic core is identical, all student groups can participate in the same lesson while engaging through the pathway best suited to their learning needs. For auditory learners, links to recordings of each sound, as pronounced in multiple languages, further strengthen comparison and deepen phonetic awareness. Additional sensory associations, including scent, touch, taste, and sound, provide alternate avenues for learning when visual or auditory cues are limited.

Level 1 covers the spellings and phonetic transcriptions of single-syllable words. Level 2 expands the vocabulary of single-syllable words, includes words with diphthongs, and provides additional opportunities for phonetic transcription. Level 3 extends the instruction to include words with multiple syllables. English Language Learners and those learning the manual alphabet would benefit from repeating the series using the articulation version. This would further support proper vowel and consonant formations.

Students are encouraged to sing their words as a way of developing clarity of speech. Singing slows the articulatory process, allowing vowels to be sustained and consonants to be articulated with energy and clarity.

The decision to offer this approach originates from more than two decades of experience teaching lyric diction at the Blair School of Music at Vanderbilt University. The concepts have been refined and shared through presentations for the National Opera Association, the National Association of Teachers of Singing, and the International Congress of Voice Teachers.

From this research emerged a phonetic system first developed for braille readers, now integrated throughout the series. Each workbook offers a simplified and accessible approach to the International Phonetic Alphabet (IPA). Uppercase and lowercase letters are used to represent the sounds of the English language. They are placed between brackets to distinguish phonetic content from conventional spelling. A conversion chart listing the standard IPA symbols with the simplified version is provided below.

The resources needed to create the exercises in this series originated from research developed for the *Lyric Diction Workbook Series* and the *IPA Scramble* game app by Montgomery. Computer-based search tools and a database of more than 87,000 English words with phonetic symbols were used to organize a graded approach to learning English spellings and phonetics.

This workbook follows the Moore teaching model, an interactive approach to instruction developed by

mathematician Robert Lee Moore and first implemented at the University of Pennsylvania in 1911. His methodology engages students in the learning process by giving each class member the opportunity to present individually assigned work.

Each class meeting follows a consistent routine. Students begin by presenting a written transcription assignment from one of twelve phrases provided in each unit. The teacher introduces new material in a brief lecture, followed by a guided phonetic reading activity. Finally, each student receives a unique phonetic assignment to prepare and present in the next class meeting. The twelve exercises in each unit are also suitable for independent study.

Note. This text focuses on fingerspelling and the signed representation of phonetic symbols. It does not attempt to teach American Sign Language or serve as a substitute for formal ASL instruction.

ABOUT THE AUTHOR

Cheri Montgomery is an author and lecturer specializing in voice and diction. She teaches voice and English, Italian, German, French, Latin, Spanish, and Russian lyric diction at the Blair School of Music at Vanderbilt University. This series is used in her articulatory phonetics course designed for Vanderbilt University students majoring in voice, English language learning, speech-language pathology, or special education.

Phonetic Conversion Chart								
IPA	Simplified	Example	IPA	Simplified	Example	IPA	Simplified	Example
[æ]	[a]	h <u>at</u>	[k ^h]	[k]	c <u>ake</u>	[θ]	[th]	th <u>ing</u>
[ɑ]	[A]	f <u>a</u> ther	[l̥]	[l]	l <u>i</u> ttle	[ð]	[Th]	th <u>i</u> s
[b ^h]	[b]	b <u>a</u> by	[m]	[m]	m <u>e</u> me	[u]	[u]	m <u>oo</u> n
[tʃ]	[tS]	ch <u>a</u> ir	[n]	[n]	n <u>o</u> te	[ʊ]	[U]	b <u>oo</u> k
[d ^h]	[d]	d <u>a</u> nce	[ŋ]	[N]	s <u>i</u> ng	[ʌ]	[x]	u <u>p</u>
[ɛ]	[E]	b <u>e</u> d	[ɔ]	[O]	ou <u>gh</u> t	[v]	[v]	v <u>a</u> se
[f]	[f]	f <u>i</u> g	[p ^h]	[p]	p <u>i</u> n	[w]	[w]	w <u>i</u> n
[g ^h]	[g]	g <u>oo</u> d	[ɹ]	[r]	r <u>i</u> ng	[j]	[j]	y <u>e</u> s
[h]	[h]	h <u>ea</u> rt	[ɜ]	[R]	ea <u>r</u> th	[z]	[z]	z <u>oo</u>
[i]	[i]	s <u>ea</u> t	[s]	[s]	c <u>e</u> ase	[ʒ]	[Z]	be <u>i</u> ge
[ɪ]	[I]	f <u>i</u> t	[ʃ]	[S]	sh <u>i</u> rt	stress: [']	[']	be'lieve
[dʒ]	[dZ]	j <u>ud</u> ge	[t ^h]	[t]	t <u>i</u> me	glottal: [ʔ]	[ʔ]	I, ever

TABLE OF CONTENTS

<u>Unit</u>	<u>Topic</u>	<u>Section</u>	<u>Page</u>
1	Spellings and phonetic symbols: a [a], i [I], b [b], d [d], g [g]	Instructional tools Symbols and spellings Presentation exercise Phrase assignments	2 3 4 5
2	Spellings and phonetic symbols: p [p], t [t]	Instructional tools Symbols and spellings Presentation exercise Phrase assignments	8 9 10 11
3	Spellings and phonetic symbol: c [k], k [k]	Instructional tools Symbol and spellings Presentation exercise Phrase assignments	14 15 16 16
4	Spelling and phonetic symbol: s [s]	Instructional tools Symbol and spelling Presentation exercise Phrase assignments	20 21 22 22
5	Spellings and phonetic symbol: z [z]	Instructional tools Symbol and spellings Presentation exercise Phrase assignments	26 27 28 28
6	Spelling r and phonetic symbols: [r], [R]	Instructional tools Symbols and spellings Presentation exercise Phrase assignments	32 33 34 34
7	Spelling and phonetic symbol: l [l]	Instructional tools Symbol and spelling Presentation exercise Phrase assignments	38 39 40 40
8	Spelling and phonetic symbol: n [n]	Instructional tools Symbol and spelling Presentation exercise Phrase assignments	44 45 46 46
9	Spelling and phonetic symbol: m [m]	Instructional tools Symbol and spelling Presentation exercise Phrase assignments	50 51 52 52

<u>Unit</u>	<u>Topic</u>	<u>Section</u>	<u>Page</u>
10	Spelling and phonetic symbol: w [w]	Instructional tools	56
		Symbol and spelling	57
		Presentation exercise	58
		Phrase assignments	58
11	Spelling and phonetic symbols: qu [kw]	Instructional tools	62
		Symbols and spelling	63
		Presentation exercise	64
		Phrase assignments	64
12	Phonetic symbol: [N]	Instructional tools	68
		Symbol and spellings	69
		Presentation exercise	70
		Phrase assignments	70
13	Spelling e and phonetic symbol: [i]	Instructional tools	74
		Symbol and spellings	75
		Presentation exercise	76
		Phrase assignments	76
14	Phonetic symbols: [E], silent e, and c as [s]	Instructional tools	80
		Symbols and spellings	81
		Presentation exercise	82
		Phrase assignments	82
15	Spelling and phonetic symbol: f [f]	Instructional tools	86
		Symbol and spelling	87
		Presentation exercise	88
		Phrase assignments	88
16	Spelling and phonetic symbol: v [v]	Instructional tools	92
		Symbol and spelling	93
		Presentation exercise	94
		Phrase assignments	94
17	Phonetic symbol: [O]	Instructional tools	98
		Symbol and spellings	99
		Presentation exercise	100
		Phrase assignments	100
18	Spellings and phonetic symbol: u [u]	Instructional tools	104
		Symbol and spellings	105
		Presentation exercise	106
		Phrase assignments	106
19	Phonetic symbol: [U]	Instructional tools	110
		Symbol and spellings	111
		Presentation exercise	112
		Phrase assignments	112

<u>Unit</u>	<u>Topic</u>	<u>Section</u>	<u>Page</u>
20	Phonetic symbol: [R]	Instructional tools	116
		Symbol and spellings	117
		Presentation exercise	118
		Phrase assignments	118
21	Spellings and phonetic symbols: h [h], th [th], [Th]	Instructional tools	122
		Symbols and spellings	123
		Presentation exercise	124
		Phrase assignments	124
22	Spellings and phonetic symbols: wh, gh, ch, ph	Instructional tools	128
		Symbols and spellings	129
		Presentation exercise	130
		Phrase assignments	130
23	Phonetic symbol: [x]	Instructional tools	134
		Symbol and spellings	135
		Presentation exercise	136
		Phrase assignments	136
24	Phonetic symbol: [A]	Instructional tools	140
		Symbol and spellings	141
		Presentation exercise	142
		Phrase assignments	142
25	Spellings and phonetic symbol: y, u, ew, [j]	Instructional tools	146
		Symbol and spellings	147
		Presentation exercise	148
		Phrase assignments	148
26	Phonetic symbols: [S] [tS]	Instructional tools	152
		Symbols and spellings	153
		Presentation exercise	154
		Phrase assignments	154
27	Spelling x and phonetic symbols: [Z] [dZ]	Instructional tools	158
		Symbols and spellings	159
		Presentation exercise	160
		Phrase assignments	160
28	Review and reading	Phonetic chart	164
		Short story	166
		Optional assignment	170
Bibliography			171

UNIT 1:

Spellings and phonetic symbols:

a [a]



i



[I]



b [b]



d [d]



g [g]



TOPIC

PAGE

Instructional tools

2

Symbols and spellings

3

Presentation exercise

4

Phrase assignments

5

BASIC PRINCIPLES FOR SIGNING LETTERS

Introduction

Letters are produced using one hand, the dominant hand, which should be used consistently. Most letters are static, while a few involve brief, controlled motion. Do not bounce the hand when transitioning from one letter to the next. The hand is held at chest height, slightly in front of the body, with fingers clearly shaped—neither collapsed nor overly tense. The second letter of duplicated letters is signed by moving the hand outward. These guidelines apply to fingerspelling, not full ASL.

Signing Uppercase and Lowercase Letters

This system distinguishes uppercase and lowercase letters through vertical location.

- Lowercase letters are produced at the standard signing location (chest height).
- Uppercase letters are produced by elevating the signing hand above the standard location.

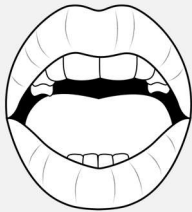
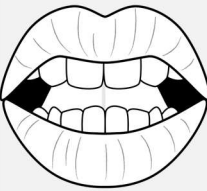
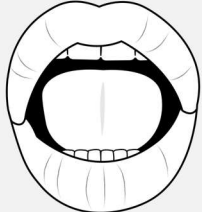
Signing Phonetic Symbols

Signed phonetic symbols are to be placed near the face. Lowercase phonetic symbols should be signed near the mouth. Uppercase phonetic symbols should be signed near the forehead. The phonetic symbols displayed in this text are placed in brackets.

Direction and Presentation-Based Modeling

For ease of presentation, the student may face the same direction as the observers while modeling phonetic symbols. When demonstrating from the front of the room, the student may stand with their back to the class, allowing observers to copy the signs directly from the signer's perspective. This orientation matches the images in the text and reduces the need for mental mirroring. Once ready, the student may rotate the wrist so that vowel and consonant symbols can be displayed near the mouth or forehead, visually aligned with the lip and tongue formation.

INSTRUCTIONAL TOOLS

	a [a]	i [I]	b [b]	d [d]	g [g]
PHONETIC SYMBOLS					
ARTICULATION	The tongue tip touches the lower front teeth while the front of the tongue forms a mildly sloped arch.	The tongue tip touches the lower front teeth while the front of the tongue forms a steep arch. The middle is lowered to form a furrow.	The lips lightly contact while the tongue tip touches the lower front teeth. Vocalized tone is released with aspiration.	The tongue tip touches the alveolar ridge. Vocalized tone is released with aspiration.	The tongue tip touches the lower front teeth while the back contacts the soft palate. The tone is released with aspiration.
LIP AND TONGUE FORMATION					
SCENT ASSOCIATION	<u>a</u> pple pie	<u>i</u> ncense	<u>b</u> acon	<u>d</u> ogwood	garlic
TACTILE ASSOCIATION	<u>s</u> and	<u>i</u> nch ruler	<u>b</u> ean <u>b</u> ag	<u>d</u> ominoes	<u>g</u> loves
TASTE ASSOCIATION	cran <u>b</u> erry	min <u>t</u>	bu <u>t</u> terscotch	<u>d</u> onuts	gr <u>a</u> pes
CHARACTER ASSOCIATION	<u>a</u> dventurous	<u>i</u> nqu <u>i</u> s <u>i</u> t <u>i</u> ve	<u>b</u> old	<u>d</u> ed <u>i</u> cated	grate <u>f</u> ul

SYMBOLS AND SPELLINGS

a [a], i [I], b [b], d [d], g [g]

Word signing: the hand is placed at chest level.

Phonetic signing: the hand is placed beside the mouth.

Uppercase letter signing: the hand is elevated.

Order of operations: sign to self, rotate wrist to sign for receiver, elevate hand for uppercase (underlined>, move hand toward mouth or forehead for phonetic symbols (in brackets).

| a | a | A | [a] (as in hat)

|  |  |  | []
| Self | Rotate | Lift | Cheek

| i | i | I | [I] (as in bit)

|  |  |  | []
| Self | Rotate | Lift | Forehead

| b | b | B | [b]

|  |  |  | []
| Self | Rotate | Lift | Cheek

| d | d | D | [d]

|  |  |  | []
| Self | Rotate | Lift | Cheek

| g | g | G | [g]

|  |  |  | []
| Self | No rotation | Lift | Cheek

Transcription Notes

Transcription is the process of converting the spelling of a word into its pronunciation using phonetic symbols. Phonetic symbols are enclosed in brackets. Each symbol represents one vowel or consonant sound.

Consonants that are doubled in spelling are not doubled in transcription. Silent vowels or consonants are not transcribed.

A glottal stop precedes a word that begins with a vowel. A glottal stop has a grunt-like sound. The glottal stop may be indicated with a question mark [ʔ]. The International Phonetic Alphabet symbol is [ʔ].

Provide phonetic symbols and sign the pronunciation of the following words:

| #1 | ab

|  |  | [ ]

| #3 | dad

|  |   | [  ]

| #2 | ad

|  |  | [ ]

| #4 | add

|  |   | [ ]

Teacher's Notes

This unit may be divided into multiple lessons to manage the many new symbols. Use the associations chart on the preceding page to create a scent, flavor, and activity of the day. Scents in the form of candle wax and small tactile objects can be stored in a labeled pill container. A sample is available at: <https://bit.ly/3MayfWw>

#5 | bad



#11 | did



#6 | dab



#12 | bid



#7 | bag



#13 | gig



#8 | gag



#14 | big



#9 | gab



#15 | dig



#10 | bib



#16 | Gib



PRESENTATION EXERCISE

Provide phonetic symbols and sign the pronunciation of the following words for the class:

1. dad

4. bag

7. dab

10. did

2. gag5. dig8. big11. add3. bib6. bid9. bad12. gab

PHRASE ASSIGNMENTS

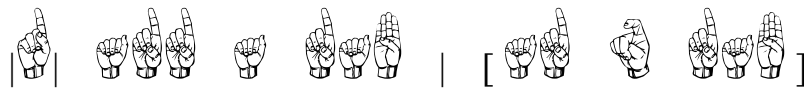
Provide spellings and phonetic symbols for the following phrases:

Group Exercise



See note
below

| #1 |



| #2 |



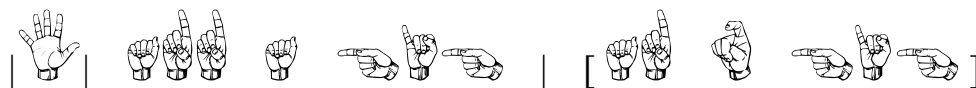
| #3 |



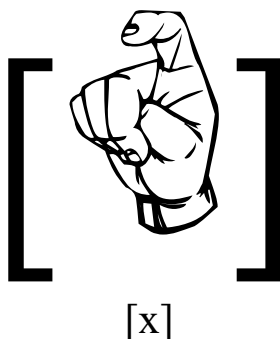
| #4 |



| #5 |



| #6 |



TEACHER'S NOTE

The word *a* is needed for the creation of phrases and sentences. It is a necessary sight word for beginning readers. The phonetic symbol for *a* is [x] (as in cup). The [x] sound is the stall vowel in English. It is the sound we make when we do not know what to say. It is the only vowel that has no tongue arch. The tongue lies flat on the floor of the mouth. Compare [x] to the formation of all other vowels by using an exercise called “tongue push-ups”. Alternate between [x] and the particular vowel to feel the formation of the tongue and shape of the lips.

#7|



#8|



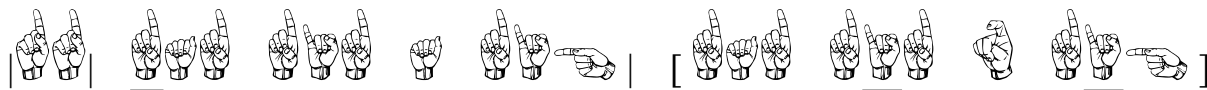
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#10|



#11|



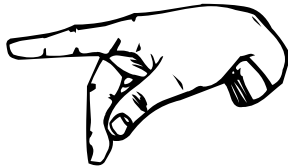
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UNIT 2:

Spellings and phonetic symbols:

p [p]



t [t]



TOPIC

PAGE

Instructional tools

8

Symbols and spellings

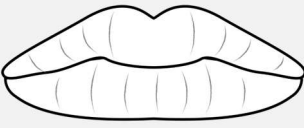
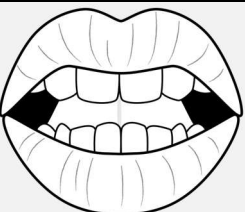
9

Presentation exercise

10

Phrase assignments

11

INSTRUCTIONAL TOOLS		
PHONETIC SYMBOLS	p [p] 	t [t] 
ARTICULATION	The lips contact while the tongue tip touches the lower front teeth. The breath is released with aspiration.	The tongue tip touches the alveolar ridge. The breath is released with aspiration.
LIP AND TONGUE FORMATION		
SCENT ASSOCIATION	peppermint	<u>t</u> hyme
TACTILE ASSOCIATION	puzzle piece	<u>t</u> assel
TASTE ASSOCIATION	pop corn	<u>t</u> offee
CHARACTER ASSOCIATION	patient	<u>t</u> rust <u>w</u> orthy

Full Manual Alphabet

The signed letters with a visual correspondence are highlighted below

SIGNS WITH VISUAL CORRESPONDENCE												
A	B	C		D	E	F	G	H	I		J	
			C							I		J
K		L		M		N		O		P	Q	R
	K		L		M		N		O			
S	T	U		V		W		X	Y		Z	
			U		V		W			Y		Z

SYMBOLS AND SPELLINGS

p [p] t [t]

p	p	P	[p]
			
Self	No rotation	Lift	Cheek

t	t	T	[t]
			
Self	Rotate	Lift	Cheek

Provide phonetic symbols and sign the pronunciation of the following words:

#1 | app





#6 | bat





#2 | pad





#7 | tad





#3 | dip





#8 | tag





#4 | pig





#9 | pat





#5 | tab





#10 | tap





#11 | it



#14 | tip



#12 | bit



#15 | tidbit



#13 | pit



#16 | tat



PRESENTATION EXERCISE

Provide phonetic symbols and sign the pronunciation of the following words for the class:

1. gap

4. tab

7. tip

10. pit

2. bit

5. dip

8. Pat

11. tad

3. pad

6. tap

9. tag

12. bat

PHRASE ASSIGNMENTS

Provide spellings and phonetic symbols for the following phrases:

Group Exercise



| #1 |



| #2 |



| #3 |



| #4 |



| #5 |



| #6 |



| #7 |



#8|



#9|



#10|



#11|



#12|



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