



Appendix E Phoneme Charts*

Scholars disagree about how many phonemes are in the English language. Counts range from forty to forty-five, depending on how they parse and classify different sounds. Tables E.1 through E.4 (pages 2–8) list forty-four English phonemes in four categories.

1. Voiced consonants (fifteen)
2. Unvoiced consonants (nine)
3. Single vowels (twelve)
4. Diphthongs (eight)

In addition, table E.5 (page 8) lists four blends. These are not technically phonemes; they are combinations of phonemes. However, we included the blends because they are often spelled with a single letter (such as X to represent /ks/ or /gz/) or a combination of letters that always appears together (such as QU to represent /kw/).

We constructed the tables in this appendix using a number of sources. They present a straightforward, easy-to-remember set of phonemes that are useful to educators as they teach students about English phonemes and their myriad spellings.

Voiced Consonants

Voiced means that your vocal cords vibrate when you say the sound of the letter. Put your hand on your throat and say a sound to determine if it is voiced. If you feel your vocal cords vibrate, the sound is voiced.

*Source: *The content of this appendix is adapted from Cole, S. (2013, January 29). The key sounds of English: 44 phonemes and 4 blends [Blog post]. Accessed at <https://storyhouracademy.com/44-phonemes-and-4-blends> on January 18, 2018. Used with permission.*

Table E.1: Voiced Consonants

Phoneme (in English Characters)	Spellings (Nonexhaustive List)	International Phonetic Alphabet Symbol
B—/b/	b as in <i>bat, ball, big</i> bb as in <i>ribbon, rubber</i>	b
D—/d/	d as in <i>dim, dog</i> dd as in <i>add</i> ed as in <i>filled, named</i>	d
Hard G—/g/	g as in <i>gum, go</i> gg as in <i>egg</i> gh as in <i>ghost</i> gu as in <i>guest</i> gue as in <i>league, catalogue</i>	g
J or Soft G—/j/	j as in <i>jam, jet</i> g as in <i>gerbil, giraffe</i> dge as in <i>edge, judge</i> ge as in <i>surgeon, barge</i> gi as in <i>religion</i> gg as in <i>exaggerate</i> di as in <i>soldier</i>	ɟʒ
L—/l/	l as in <i>lot, leaf, leg</i> ll as in <i>spell, bell</i>	l
M—/m/	m as in <i>man, monkey</i> mm as in <i>summer, hammer</i> mb as in <i>limb, climb, lamb</i> mn as in <i>hymn, autumn</i> lm as in <i>palm</i>	m
N—/n/	n as in <i>nut, nest, no</i> nn as in <i>funny, dinner</i> gn as in <i>gnome, gnat</i> kn as in <i>knit, knight, knee</i> pn as in <i>pneumonia</i>	n
R—/r/	r as in <i>rat, robot, run</i> rr as in <i>carrot, marry</i> rh as in <i>rhyme</i> wr as in <i>write, wrong</i>	r
V—/v/	v as in <i>van, vet</i> f as in <i>of</i> ph as in <i>Stephen</i> ve as in <i>give</i>	v
W—/w/	w as in <i>win, wet, swim</i> wh as in <i>whale, why, what, when, where</i>	w
Consonant Y—/y/	y as in <i>yet, yes</i> i as in <i>onion, opinion</i> j as in <i>hallelujah</i>	j

continued →

Phoneme (in English Characters)	Spellings (Nonexhaustive List)	International Phonetic Alphabet Symbol
Z—/z/	z as in <i>zip, zebra</i> zz as in <i>buzz, fizz</i> s as in <i>is, has, laser, was</i> ss as in <i>scissors</i> x as in <i>xylophone, xerox</i> ze as in <i>sneeze</i> se as in <i>please</i>	z
NG—/ŋg/	ng as in <i>king, ring, sing</i> n as in <i>pink, sink, monkey</i> ngue as in <i>tongue</i>	ŋ
ZH—/zh/	s as in <i>measure, treasure, visual</i> si as in <i>division, Asia</i> ge as in <i>mirage, garage</i> z as in <i>azure</i>	ʒ
Voiced TH—/th/	th as in <i>the, feather, this, then</i>	ð

Unvoiced Consonants

Unvoiced means that your vocal cords do not vibrate when you say the sound of the letter. You produce the sounds that these letters represent in other ways (for example, position of the teeth, tongue, and lips). Put your hand on your throat and say a sound to determine if it is unvoiced. If you don't feel your vocal cords vibrate, the sound is unvoiced.

Table E.2: Unvoiced Consonants

Phoneme (in English Characters)	Spellings (Nonexhaustive List)	International Phonetic Alphabet Symbol
F—/f/	f as in <i>fan, fish</i> ff as in <i>cliff</i> ph as in <i>phone</i> gh as in <i>laugh</i> lf as in <i>calf</i>	f
H—/h/	h as in <i>hut, hat, hot</i> j as in <i>fajita</i> wh as in <i>who</i>	h
K or Hard C—/k/	c as in <i>cat, cop, cup</i> k as in <i>kit, kite, kitten</i> ch as in <i>chorus, Christmas, school</i> ck as in <i>rock, back, duck</i> cu as in <i>biscuit</i> qu as in <i>bouquet, marquis</i> que as in <i>cheque, antique</i> cc as in <i>acclaim, occur</i> lk as in <i>folk</i>	k
P—/p/	p as in <i>pin, pig, pie</i> pp as in <i>happy, apple</i>	p

continued →

Phoneme (in English Characters)	Spellings (Nonexhaustive List)	International Phonetic Alphabet Symbol
S or Soft C—/s/	s as in <i>sat, sun</i> c as in <i>city, cent, ice</i> ss as in <i>mess, dress</i> ps as in <i>psalm</i> sc as in <i>science</i> ps as in <i>psychology</i> st as in <i>listen</i> se as in <i>mouse</i>	s
T—/t/	t as in <i>tap, top</i> tt as in <i>batter, letter</i> th as in <i>Thomas</i> ed as in <i>sniffed, tapped, stopped</i> pt as in <i>pterodactyl</i> bt as in <i>doubt</i>	t
CH—/ch/	ch as in <i>much, cheese, chip</i> cc as in <i>bocci</i> tch as in <i>witch, watch, match</i> tu as in <i>future</i> ti as in <i>question</i> te as in <i>righteous</i>	tʃ
SH—/sh/	sh as in <i>push, shark, ship</i> ce as in <i>ocean</i> ch as in <i>chef, machine</i> ci as in <i>social, special</i> ssi as in <i>session, mission</i> ti as in <i>motion, station</i> s as in <i>sure</i>	ʃ
Unvoiced TH—/th/	th as in <i>moth, thumb, thin, thing</i>	θ

Single Vowels

Vowels are sounds that you make with the mouth open; the teeth, tongue, lips, palate, and other articulators do not block the flow of air out of the mouth. A single vowel sound can be short or long; *single vowel* simply indicates that the vowel is not a diphthong (that is, a blend of two vowel sounds).

Table E.3: Single Vowels

Phoneme (in English Characters)	Spellings (Nonexhaustive List)	International Phonetic Alphabet Symbol
Short A—/ă/	a as in <i>am, cat</i> ai as in <i>plaid</i> au as in <i>aunt, laugh</i>	æ
Short E—/ě/	e as in <i>egg, bed, left</i> ae as in <i>aesthetic</i> ai as in <i>said</i> ay as in <i>says</i> ea as in <i>deaf, bread</i> ei as in <i>heifer</i> ie as in <i>friend</i> u as in <i>bury</i> a as in <i>many</i> eo as in <i>leopard</i>	ɛ
Short I—/i/	i as in <i>if, igloo</i> ei as in <i>forfeit</i> ie as in <i>kerchief, sieve</i> ui as in <i>build</i> y as in <i>gym, hymn</i> e as in <i>England</i> o as in <i>women</i> u as in <i>busy</i>	ɪ
Short O—/ô/	o as in <i>on, hot</i> eau as in <i>bureaucracy</i> ough as in <i>bought</i> a as in <i>swan, ball, want, father</i> ho as in <i>honest</i> aw as in <i>paw, draw</i> augh as in <i>taught, caught</i> au as in <i>sauce, haul, auto</i> ah as in <i>blah</i>	ɒ
Short U—/ü/	u as in <i>up</i> o as in <i>son</i> oe as in <i>does</i> oo as in <i>blood</i> ou as in <i>touch</i>	ʌ
Schwa or Unstressed Short U—/ə/	a as in <i>about</i> ai as in <i>mountain</i> e as in <i>oven</i> i as in <i>pencil</i> o as in <i>carrot</i> u as in <i>supply</i> y as in <i>vinyl</i>	ə
Short OO—/öö/	oo as in <i>book</i> u as in <i>put, bush</i> ou as in <i>could</i> o as in <i>wolf</i>	ʊ

continued →

Phoneme (in English Characters)	Spellings (Nonexhaustive List)	International Phonetic Alphabet Symbol
Long E—/ē/ /ɛ/	ee as in <i>see, bee, feet</i> e as in <i>me</i> ae as in <i>algae</i> ay as in <i>quay</i> ea as in <i>sea, seat, beat</i> ei as in <i>seize, receive</i> ey as in <i>turkey, key</i> i as in <i>radio, ski</i> ie as in <i>movie, brief, chief</i> y as in <i>puppy, lady, baby</i> oe as in <i>phoenix</i> eo as in <i>people</i> e_e as in <i>these</i>	i
Long OO—/ōō/ /oo/	oo as in <i>moon</i> u as in <i>brutal, truth</i> ew as in <i>grew, screw, chew</i> ue as in <i>blue</i> eu as in <i>neutral</i> o as in <i>womb, who</i> oe as in <i>canoe, shoe</i> oo as in <i>boo</i> ou as in <i>you, croup</i> ough as in <i>through</i> ui as in <i>fruit</i> u_e as in <i>flute, rule</i> oeu as in <i>manoeuvre</i>	u
R-Controlled A—/ar/ /ɑr/	ar as in <i>car</i> er as in <i>sergeant</i> ear as in <i>heart</i>	ɑ
R-Controlled E—/er/ /ɛr/	er as in <i>her, term, fern</i> ear as in <i>heard, pearl</i> ir as in <i>first, bird</i> or as in <i>color, word, mirror, work</i> our as in <i>courage, journey, tourist</i> ur as in <i>blur, burn</i> yr as in <i>syrup, myrtle</i> ure as in <i>treasure, measure</i> ar as in <i>dollar</i>	ɜ
R-Controlled O—/or/ /ɔr/	or as in <i>for, fork</i> aur as in <i>aura</i> oar as in <i>roar, board</i> oor as in <i>door</i> our as in <i>four</i> ore as in <i>more, core</i> ar as in <i>war</i>	ɔ

Diphthongs

Diphthongs (DIF-thongs) are sounds that you make by gliding from one vowel sound to the next. For example, if you glide from the short e sound (as in *egg*) to the short i sound (as in *ship*), you end up making the long a sound (as in *cake*), which is a diphthong.

Table E.4: Diphthongs

Phoneme (in English Characters)	Spellings (Nonexhaustive List)	International Phonetic Alphabet Symbol
Long A—/ā/	ai as in <i>aim, train</i> a as in <i>ape, baby, bacon</i> aigh as in <i>straight</i> au as in <i>gauge</i> ay as in <i>day, hay</i> ea as in <i>great, break</i> ei as in <i>veil, vein</i> eigh as in <i>weigh, eight</i> et as in <i>ballet, croquet</i> ey as in <i>they</i> a_e as in <i>cake, late</i>	eɪ
Long I—/ī/	ie as in <i>pie</i> i as in <i>spider, find</i> i_e as in <i>ice, kite, ride</i> ai as in <i>aisle</i> ay as in <i>cayenne</i> ei as in <i>feisty</i> eigh as in <i>height</i> ey as in <i>geyser</i> igh as in <i>light, night</i> ui as in <i>guide</i> uy as in <i>buy</i> y as in <i>cry, fly</i> ye as in <i>rye</i> is as in <i>island</i>	aɪ
Long O—/ō/	oa as in <i>oat, boat</i> o as in <i>oval, open, no, go</i> au as in <i>chauffeur</i> eau as in <i>bureau, beau</i> ew as in <i>sew</i> oe as in <i>toe</i> oo as in <i>brooch</i> ou as in <i>soul</i> ough as in <i>dough, though</i> ot as in <i>depot</i> ow as in <i>snow, low, row</i> o_e as in <i>bone, note</i>	oʊ
OW—/ow/	ow as in <i>how, cow</i> ou as in <i>out, mouse, house</i> au as in <i>sauerkraut</i> ough as in <i>drought, bough</i>	aʊ
OY—/oy/	oy as in <i>toy</i> oi as in <i>boil, coin</i>	ɔɪ

continued →

Phoneme (in English Characters)	Spellings (Nonexhaustive List)	International Phonetic Alphabet Symbol
R-Controlled AI—/air/	air as in <i>hair, chair, air, fair</i> er as in <i>concerto</i> ear as in <i>bear, pear</i> eir as in <i>their</i> are as in <i>square, care</i> ere as in <i>where</i> ayer as in <i>prayer</i>	eə
R-Controlled EA—/ear/	ear as in <i>hear</i> eer as in <i>cheer, steer</i> ere as in <i>here</i> eir as in <i>weird</i> ir as in <i>mirror</i> ier as in <i>pier</i> yr as in <i>lyric</i>	ɪə
R-Controlled EU—/yur/	eu as in <i>euro</i> u_e as in <i>cure</i>	ʊə

Blends

The four sounds in table E.5 are not technically single phonemes; they are blends of phonemes. However, they are often spelled with a single letter or combination of letters that always appears together (such as QU). For example, X represents two blends: /ks/ as in *fox* and /gz/ as in *exit*.

Table E.5: Blends

Phoneme Blend (in English Characters)	Spellings (Nonexhaustive List)	International Phonetic Alphabet Symbol
QU—/kw/	qu as in <i>queen</i> cho as in <i>choir</i>	kw
YU—/yōō/	u as in <i>uniform, unicorn, human</i> yew as in <i>yew</i> eu as in <i>feud</i> eau as in <i>beauty</i> ew as in <i>few</i> ut as in <i>debut</i> iew as in <i>view</i> you as in <i>you</i> yu as in <i>yule</i> eue as in <i>queue</i> ieu as in <i>adieu</i> u_e as in <i>use</i>	ju
Hard X—/ks/	x as in <i>box, fox, fix</i>	ks
Soft X—/gz/	x as in <i>exit, example, exam, exact</i>	gz

References

DSF Literacy Resources. (n.d.). *The 44 sounds (phonemes) of English*. Accessed at www.dyslexia-reading-well.com/support-files/the-44-phonemes-of-english.pdf on January 18, 2018

Phonemic Chart. (n.d.). *Phonemic chart keyboard*. Accessed at <http://phonemicchart.com> on January 18, 2018

Reithaug, D. (2002). *The 44* phonemes*. Accessed at www.boardman.k12.oh.us/userfiles/363/Phonological%20Awareness/44Phonemes.pdf on January 18, 2018.