

Standard American English Phoneme/Grapheme Chart

English has 44 phonemes and 26 letters

This chart follows the sequence of the Cox Campus video: 44 phonemes. Follow along with Yvette as she demonstrates how to pronounce the 44 phonemes of English <https://www.youtube.com/watch?v=wBuA589kfMg>
Percentages indicate the frequency of use in written English.

<u>Phoneme</u> the smallest unit of sound in spoken language	<u>Grapheme</u> smallest functional unit of written language
<u>Consonant Phoneme</u> articulated with a closure or narrowing of vocal tract	<u>Vowel Phoneme</u> sound with no obstruction by teeth, tongue, lips, or palate

Consonant Phonemes							
Phoneme	Articulation	Common Spelling (Grapheme)		Alternative Spellings (Graphemes)			
/b/	voiced stop lips together	b ball 97%		bb (ribbon), pb (raspberry)			
/d/	voiced stop tongue behind teeth	d dog 98%		dd (add), ed (filled), de (blonde)			
/f/	unvoiced fricative teeth on lip	f fish 78%		ph phone 12%	ff cliff 9%	gh (laugh), ft (often)	
/g/	voiced stop back of throat	g goat 88%		gg egg 5%	x exit 3%	gh (ghost), g (grape)	
/h/	unvoiced fricative glottis	h hand 98%		wh (who)			
/j/	voiced affricate tongue on roof of mouth	g giraffe 66%		j jelly 22%	dge badge 5%	di soldier 3%	gg (exaggerate)
/k/	unvoiced stop back of throat	c car 73%	k kite 13%	ck back 6%	ch choir 3%	x (box), cc (acclaim), qu (bouquet), q(u) (queen)	
/l/	voiced liquid tongue behind teeth	l leaf 91%		ll bull 9%			

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Consonant Phonemes						
/m/	voiced nasal lips together	m milk 94%	mm hammer 4%	mb (climb), mn (autumn)		
/n/	voiced nasal tongue behind teeth	n nail 97%	kn knight <1%	gn (gnat), pn (pneumonia), nn (funny)		
/ng/	voiced nasal tongue on roof of mouth	ng sing 59%	n sink 41%	ngue (tongue)		
/p/	unvoiced stop lips together	p pig 96%	pp happy 4%	pe (troupe)		
/r/	voiced liquid tongue on roof of mouth	r rain 97%	rr (carrot), wr (wrong), rh (rhyme)			
/s/	unvoiced fricative tongue behind teeth	s sun 97%	c cereal 17%	ss grass 7%	sc (science), se (horse), ps (psychology), ce (rice), st (listen)	
/zh/	voiced fricative tongue on roof of mouth	si division 64%	s treasure 33%	g garage 15%	xi (anxious), z (azure)	
/t/	unvoiced stop tongue behind teeth	t turtle 97%	th (Thomas), ed (tapped), bt (debt), pt (receipt)			
/v/	voiced fricative teeth on lip	v volcano 99.5%	f (of), ph (Stephen), ve (five)			
/w/	voiced glide lips together	w watch 92%	u quick 7.5%	o (choir), wh (why)		
/y/	voiced glide tongue on roof of mouth	i onion 55%	y yo-yo 44%	j (hallelujah)		
/z/	voiced fricative tongue behind teeth	s boys 64%	z zip 23%	x xylophone 4%	es boxes 4%	zz (buzz), se (cheese), ze (maze), ss (scissors)

Standard American English Phoneme/Grapheme Chart

Digraphs						
Phoneme	Articulation	Common Spelling (Grapheme)		Alternative Spellings (Graphemes)		
/ch/	unvoiced affricate tongue on roof of mouth	ch chair 55%	tu picture 31%	tch hatch 11%	ti (question), te (righteous)	
/sh/	unvoiced fricative tongue on roof of mouth	ti station 53%	sh shoes 26%	ci glacier 5%	ssi session 3%	ce (ocean), s (sure), ch (machine), sci (conscience)
/th/ (voiced)	voiced fricative tongue between teeth	th mother 100 %				
/th/ (unvoiced)	unvoiced fricative tongue between teeth	th three 100 %				

Vowels				
Phoneme	Articulation	Common Spelling (Grapheme)	Alternative Spellings (Graphemes)	
/ä/	lax	a apple 97%	a_e have 3%	ai (plaid)
/ë/	lax	e echo 91%	ea bread 4%	u (bury), ei (heifer), ie (friend), ae (aesthetic), ai (said), eo (leopard), a (many)
/ï/	lax	i itch 92%	y gym 2%	i_e (give), e (England), u (busy), o (women), ui (build), ie (sieve)
/ö/	lax	o octopus 94%	a swan 5%	ho (honest)
/ü/	lax	u up 86%	o monkey 8%	oo (flood), ou (trouble)

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Vowels						
/ā/	tense	a baby 45%	a_e cake 35%	ai rain 9%	ay hay 6%	eigh (weigh), ei (vein), ey (they), aigh (straight), au (gauge), et (croquet), ea (break)
/aw/	lax	o soft 41%	a ball 22%	au sauce 19%	aw saw 10%	ough (bought), augh (taught)
/ē/	tense	y happy 41%	e hero 40%	ea seat 6%	ee tree 6%	ey (key), ie (brief), eo (people), i (ski), oe (phoenix), ei (receive)
/ī/	tense	i spider 37%	i_e kite 37%	y fly 14%	igh light 6%	uy (buy), ie (pie), ai (aisle), eigh (height), ye (rye), is (island), ay (kayak)
/ō/	tense	o piano 73%	o_e bone 14%	oa boat 5%	ow bow 5%	oe (toe), ew (sew), ough (though), oo (brooch), eau (beau)
/yū	tense	u unicorn 59%	u_e cube 19%	ou (you), eau (beauty), iew (view), eu (feud), yu (yule), ew (few), eue (queue)		
/ōō/	tense	u tuna 59%	u_e flute 19%	oo broom 11%	ew screw 4%	oe (shoe), o_e (move), ue (blue), ough (through), ui (fruit), oo (whoop), ou (croup)
/ōō/	lax	u bush 61%	oo book 35%	o wolf 5%	ou (could)	
/ou/	diphthong	ou mouse 56%	ow cow 29%	ou_e house 13%	ough (bough)	
/oi/	diphthong	oi coin 62%	oy boy 32%			

Standard American English Phoneme/Grapheme Chart

R Controlled Vowels (pronunciation from dictionary.com)					
Phoneme	Articulation	Common Spelling (Grapheme)		Alternative Spellings (Graphemes)	
/ar/	r controlled	ar car 89%	are are 5%	ear heart 3%	er (sergeant)
/er/	r controlled	er fern 77%	or anchor 12%	ar dollar 8%	ear (pearl), ir (bird), our (journey), ur (surf)
/or/	r controlled	or fork 97%	ore core 3%		

Other Vowel Sounds								
/ə/	schwa	o lemon 24%	u lettuce 20%	a banana 19%	i dolphin 19%	e ticket 11%	ou nervous 5%	ui (biscuit), y (vinyl)

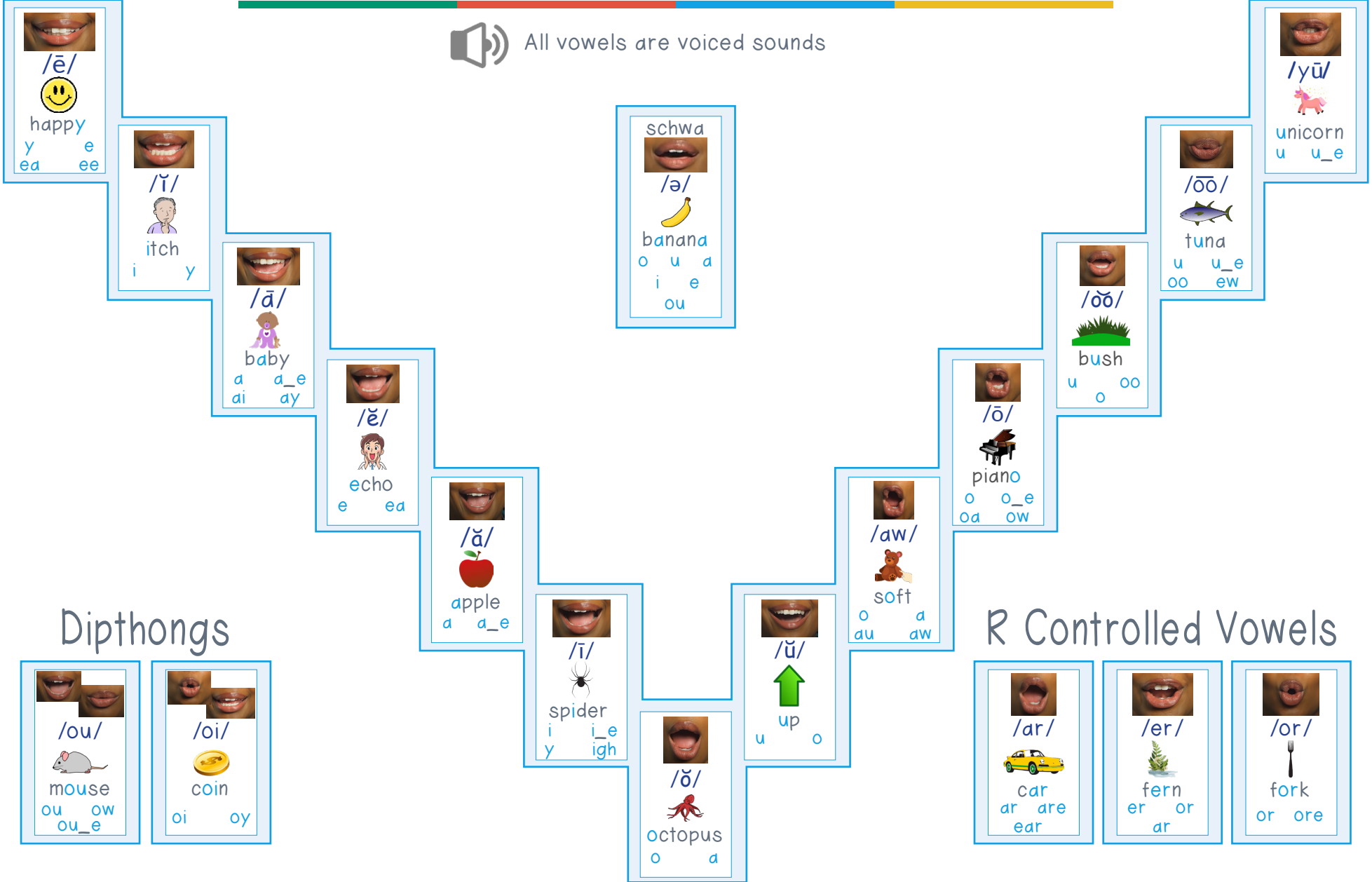
Tricky Graphemes			
Letter	Sounds		
x	/ks/ as in box, fox, fix	/g/ /z/ as in example	
q(u)	/kw/ as in queen	/k/ as in bouquet, marquis	

Percentages of spelling frequency came from Bruce Murray at Auburn University:
<https://wp.auburn.edu/rdggenie/home/teaching-ideas/spcat/>

Vowel Valley



All vowels are voiced sounds



Diphthongs

/ou/ (mouse) with letters ou, ow, ou_e.

/oi/ (coin) with letters oi, oy.

R Controlled Vowels

/ar/ (car) with letters ar, are, ear.

/er/ (fern) with letters er, or, ar.

/or/ (fork) with letters or, ore.

English Consonant Articulation Chart Sound Wall

Place of Articulation: Where is the sound produced	Stops	Nasals	Fricatives	Affricates	Glides	Liquids
Lips are together	 /b/🔊 /p/	 /m/🔊			 /w/🔊 /wh/	
Upper front teeth are on the lower lip			 /v/🔊 /f/			
Tongue is between the teeth			 /th/🔊 /th/			
Tongue is on the ridge behind the upper teeth	 /d/🔊 /t/	 /n/🔊	 /z/🔊 /s/			 /l/🔊
Tongue is against the roof of your mouth			 /zh/🔊 /sh/	 /j/🔊 /ch/	 /y/🔊	 /r/🔊
Tongue is against the palate in the back of the throat	 /g/🔊 /k/	 /ng/🔊				
Throat is open			 /h/			

NOTE: Voiced consonants are denoted by the speaker icon 🔊

English Consonant Classification Chart

Place of Articulation: Where is the Sound Produced?

Description	Consonants
Lips are together	/b/ /p/ /m/ /w/ /wh/
Upper front teeth are on the lower lip	/v/ /f/
Tongue is between the teeth	/th/ /th/
Tongue is on the ridge behind the upper teeth	/d/ /t/ /n/ /z/ /s/ /l/
Tongue is against the roof of your mouth	/zh/ /sh/ /j/ /ch/ /y/ /r/
Tongue is against the palate in the back of the throat	/g/ /k/ /ng/
Throat is open	/h/

Manner of Articulation: How is the Sound Produced?

Type	Description	Consonants
Stops	Airflow is stopped completely for a short period of time.	/b/ /p/ /d/ /t/ /g/ /k/
Nasals	Air is forced through the nasal cavity and your mouth is closed.	/m/ /n/ /ng/
Affricates	Airflow is stopped and then released.	/j/ /ch/
Fricatives	Air is forced through a narrow space.	/v/ /f/ / <u>th</u> / /th/ /z/ /s/ /zh/ /sh/
Glides	Airflow is not obstructed.	/wh/ /w/ /y/
Liquids	Float in the mouth. Highly effected by the consonants and vowels that surround them.	/l/ /r/

Manner of Articulation: How is the Sound Produced? Is the Sound Voiced or Unvoiced?

Type	Description	Consonants
Voiced	Vocal chords vibrate	/v/ / <u>th</u> / /z/ /zh/ /b/ /d/ /g/ /j/ /m/ /n/ /ng/ /y/ /w/ /l/ /r/
Unvoiced	Vocal chords do not vibrate	/f/ /th/ /s/ /sh/ /p/ /t/ /k/ /ch/ /h/ /wh/

Handout content based on Moats 2020.