## Full Table of Phone Makeup and Length

SAMPLEExampleArticulationVoicelessBlockBlockCat.Weightppen, spân, tipplosivevoicededblockblockCon.8ddo, oddplosivevoicedesblockblockCon.7dEchin, sature, teachaffricatevoicelessblockblockCon.6dZgin, joy, edgeaffricatevoicelessblockcont fricCon.8ggo, get, begplosivevoicelessblockblockCon.7ffol, enough, leaffricativevoicelesscont friccont fricCon.3ggo, get, begplosivevoicelesscont friccont fricCon.4Tthing, breathfricativevoicelesscont friccont fricCon.3gsee, city, passfricativevoicelesscont friccont fricCon.3gplosure, beigefricativevoicelesscont friccont fricCon.3gplosure, beigefricativevoicelesscont friccont fricCon.3gplosure, beigefricativevoicelesscont friccont fricCon.3gplosure, beigefricativevoicelesscont friccont friccon.1gplosure, beigefricativevoicelesscont friccont friccon.1gplosure, ring<			Type/					
p         pen, spin, tip         plosive         voicedess         block         block         Con.         8           b         but, web         plosive         voicedelss         block         block         Con.         7           t         two, sting, bet         plosive         voiceless         block         block         Con.         7           t         sto, add, nature, teach         affricate         voiceded         block         cont fric         Con.         6           dZ         gin, jov, edge         affricate         voiced         block         block         Con.         7           f         fool, enough, leaf         fricative         voiceless         cont fric         cont fric         cont fric         con.         4           v         voice, have, of         fricative         voicedes         cont fric         cont fric         con.         4           D         thing, breath         fricative         voicedes         cont fric         cont fric         cont fric         con.         1           z         por, see, city, pass         fricative         voiced         cont fric         cont fric         con.         con.         con.         1	CAMDA	E.comp.l.o	Manner of	Voiced/	Starta aa	Enda oa	Cat	Moiabt
b		<b>-</b>						
t         two, sting, bet         plosive         voiceless         block         block         Con.         8           d         do, odd         do, odd         plosive         voiceless         block         block         Con.         7           dZ         gin, joy, edge         affricate         voiceds         block         cont fric         Con.         5           k         eat,kill, queen,thick         plosive         voiced         block         block         block         Con.         7           f         fool, enough, leaf         fricative         voiced         cont fric         cont fric         con.         4           v         voice, have, of         fricative         voiceless         cont fric         cont fric         con.         4           b         thing, breath         fricative         voicedes         cont fric         cont fric         con.         4           s         se, city, pass         fricative         voiced         cont fric         cont fric         cont fric         cont fric         con.         3           s         se, city, pass         fricative         voiced         cont fric         cont fric         con.         2         con.			-	_				
d         do, odd         plosive         voiced         block         Con.         7           tS         chair, nature, teach affricate         affricate         voicedes         block         cont fric         Con.         5           dZ         gin, joy, edge         affricate         voicedes         block         cont fric         Con.         5           g         go, get, beg         plosive         voicedes         block         block         Con.         7           f         fool, enough, leaf         fricative         voicedes         cont fric         cont fric         Con.         4           v         voice, have, of         fricative         voiced         cont fric         cont fric         Con.         4           b his, breath         fricative         voiced         cont fric         cont fric         Con.         4           z co, rose         fricative         voiceless         cont fric         con.         fric         con.         3           s she, sure, emotion, leash         fricative         voiceless         cont fric         con.         fric         con.         fric         con.         fric         con.         fric         con.         fric         c			-					
tS         chair, nature, teach         affricate         voiceless         block         cont fric         Con.         6           dz         gin, joy, edge         affricate         voiced block         block         Con.         8           g go, get, beg go, go,			<del>-</del>					
dZ         gin, joy, edge         affricate         voiced         block         cont fric         Con.         5           k         cat,kill,queen,thick         plosive         voiceds         block         block         Con.         7           f         fool, enough, leaf         fricative         voiceds         cont fric         cont fric         Con.         4           v         voice, have, of         fricative         voiceds         cont fric         cont fric         Con.         4           D         this, breath         fricative         voiced         cont fric         cont fric         Con.         4           z         zoo, rose         fricative         voiced         cont fric         cont fric         Con.         3           z         pleasure, beige         fricative         voiced         cont fric         cont fric         Con.         4           z         pleasure, beige         fricative         voiced         cont fric         cont fric         con.         4           z         pleasure, beige         fricative         voiced         cont fric         cont fric         con.         4           z         pleasure, beige         fricative         voi			-					
g go, get, beg plosive voiced block cont fric con. 7  f fool, enough, leaf fricative voiceless cont fric cont fric Con. 4  v voice, have, of fricative voiced cont fric cont fric Con. 3  T thing, breath fricative voiced cont fric cont fric Con. 4  D this, breath fricative voiced cont fric cont fric Con. 3  s see, city, pass fricative voiced cont fric cont fric Con. 3  s see, city, pass fricative voiced cont fric cont fric Con. 3  S she, sure, emotion, leash fricative voiceds cont fric cont fric Con. 3  S she, sure, beige fricative voiceds cont fric cont fric Con. 3  T thing, breath fricative voiced cont fric cont fric Con. 4  Z z zoo, rose fricative voiced cont fric cont fric Con. 3  S she, sure, emotion, leash fricative voiceless cont fric cont fric Con. 4  T pleasure, beige fricative voiced cont fric cont fric Con. 4  M man, ham nasal voiced redirect redirect Con. 1  I left, bell lateral voiced continuous continuous Con. 0  T run, very approximant voiced continuous continuous Con. 0  Y we semivowel voiced continuous continuous Con. 0  Y we semivowel voiced continuous continuous Con. 0  Y what (Scottish) approximant voiced continuous end Con. 2  Y what (Scottish) fricative voiceless cont fric Con. 4  A father, not, law short Vow. 0.25  Y city short Sort Vow. 0.25  Y about short Vow. 0.25  Y run, enough short Sort Vow. 0.25  Y run, enough short Vow. 0.75  Y run, enough short Sort Sort Sort Sort Sort Sort Sort S	dz		affricate	voiced	block		Con.	5
f         fool, enough, leaf         fricative         voiceless         cont fric         cont fric         Con.         4           v         voice, have, of         fricative         voiced         cont fric         cont fric         Con.         3           T         thing, breath         fricative         voiceless         cont fric         cont fric         Con.         4           D         this, breathe         fricative         voiced         cont fric         cont fric         Con.         3           s         see, city, pass         fricative         voiced         cont fric         cont fric         Con.         4           z         zoo, rose         fricative         voiced         cont fric         con fric         Con.         4           z         pleasure, beige         fricative         voiced         cont fric         con fric         Con.         4           h         ham         fricative         voiced         cont fric         con.         1           n         no, tin         nasal         voiced         redirect         redirect         con.         1           I         left, bell         lateral         voiced         continuous         co	k	<pre>cat,kill,queen,thick</pre>	plosive	voiceless	block	block	Con.	8
v         voice, have, of thing, breath         fricative roiceless cont fric cont fr	g	go, get, beg	plosive	voiced	block	block	Con.	7
T         thing, breath         fricative         voiceless         cont fric         cont fric         Con.         4           D         this, breathe         fricative         voiced         cont fric         con.         3           s         see, city, pass         fricative         voiced         cont fric         con.         4           z         zoo, rose         fricative         voiced         cont fric         cont fric         Con.         3           b         she, sure, emotion, leash         fricative         voiced         cont fric         cont fric         Con.         4           m         ham         fricative         voiced         cont fric         con.         1           n         ham         fricative         voiced         redirect         con.         1           n         singer, ring         nasal         voiced         redirect         con.         1           left, bell         lateral         voiced         continuous         continuous<	f	fool, enough, leaf	fricative	voiceless	cont fric	cont fric	Con.	4
D	v	<pre>voice, have, of</pre>	fricative	voiced	cont fric	cont fric	Con.	3
s         see, city, pass         fricative         voiceless         cont fric         Con.         4           z         zoo, rose         fricative         voiced         cont fric         cont fric         Con.         3           S         she, sure, emotion, leash         fricative         voiced         cont fric         cont fric         Con.         3           h         ham         fricative         voiced         cont fric         con fric         Con.         3           h         ham         fricative         voiced         redirect         con.         1           n         nan, ham         nasal         voiced         redirect         redirect         Con.         1           n         singer, ring         nasal         voiced         centirect         redirect         Con.         1           r         run, very         approximant         voiced         continuous         continuous         con.         0         0           w         wat         (Scottish)         approximant         voiced         continuous         end         Con.         2           yes         semivowel         voiced         continuous         end         Con.	T	thing, breath	fricative	voiceless	cont fric	cont fric	Con.	4
z         zoo, rose         fricative         voiced         cont fric         Con.         3           S         she, sure, emotion, leash         fricative         voiced         cont fric         con.         4           Z         pleasure, beige         fricative         voiced         cont fric         con.         4           h         ham         fricative         voiced         cont fric         con.         1           m         man, ham         nasal         voiced         redirect         redirect         con.         1           n         no, tin         nasal         voiced         redirect         redirect         con.         1           n         singer, ring         nasal         voiced         continuous         continuous         con.         1           r         run, very         approximant         voiced         continuous         continuous         con.         0         0           w         we         semivowel         voiced         continuous         continuous         con.         0         0         0           y         what (Scottish)         approximant         voiceless         continuous         con.         0         <	D	this, breathe	fricative	voiced	cont fric	cont fric	Con.	3
S         she,sure,emotion,leash         fricative         voiceless         cont fric         Con.         4           Z         pleasure, beige         fricative         voiced         cont fric         con.         3           h         ham         fricative         voiceds         cont fric         con.         4           m         man, ham         nasal         voiced         redirect         con.         1           n         no, tin         nasal         voiced         redirect         con.         1           l         left, bell         lateral         voiced         continuous         continuous         con.         0           w         we         semivowel         voiced         continuous         continuous         con.         0           yes         semivowel         voiced         continuous         end         Con.         2           w         what (Scottish)         approximant         voiceless         continuous         end         Con.         2           i         yes         semivowel         voiceless         continuous         end         Con.         2           i         bed         short         yes	s	see, city, pass	fricative	voiceless	cont fric	cont fric	Con.	4
Z         pleasure, beige had fricative woiced had ham fricative woiceless cont fric cont fric con. 4         Con. 4         A           m         man, ham man, ham nasal no, tin no, tin no, tin nasal woiced redirect redirect con. 1         redirect redirect con. 1         I           N         singer, ring nasal voiced redirect redirect con. 1         I         left, bell lateral voiced continuous con	z	zoo, rose	fricative	voiced	cont fric	cont fric	Con.	3
h         ham         fricative         voiceless         cont fric         Con.         4           m         man, ham         nasal         voiced         redirect         redirect         Con.         1           n         no, tin         nasal         voiced         redirect         redirect         Con.         1           N         singer, ring         nasal         voiced         continuous         continuous         con.         0           r         run, very         approximant         voiced         continuous         continuous         continuous         con.         0           w         we         semivowel         voiced         continuous         end         Con.         2           j         yes         semivowel         voiced         continuous         end         Con.         2           what (Scottish)         approximant         voicedes         continuous         end         Con.         2           What (Scottish)         fricative         voiceless         cont fric         Con.         2           j         yes         short         yow         0.25         2           Lot         Short         yow         0	S	<pre>she,sure,emotion,leash</pre>	fricative	voiceless	cont fric	cont fric	Con.	4
m         man, ham         nasal         voiced         redirect         redirect         Con.         1           n         no, tin         nasal         voiced         redirect         redirect         Con.         1           N         singer, ring         nasal         voiced         redirect         redirect         Con.         1           1         left, bell         lateral         voiced         continuous         continuous         Con.         0           w         we         semivowel         voiced         continuous         end         Con.         2           yes         semivowel         voiced         continuous         end         Con.         2           w         what (Scottish)         approximant         voiced         continuous         end         Con.         2           W         what (Scottish)         approximant         voiced         continuous         end         Con.         2           A         father, not,         short         voiceless         cont fric         Con.         2         Vow.         0.25           I         city         short         Short         Vow.         Vow.         0.25 <tr< th=""><th>Z</th><th>plea<b>s</b>ure, bei<b>ge</b></th><th>fricative</th><th>voiced</th><th>cont fric</th><th>cont fric</th><th>Con.</th><th>3</th></tr<>	Z	plea <b>s</b> ure, bei <b>ge</b>	fricative	voiced	cont fric	cont fric	Con.	3
n         no, tin         nasal         voiced         redirect         redirect         Con.         1           N         singer, ring         nasal         voiced         redirect         con.         1           1         left, bell         lateral         voiced         continuous         continuous         con.         0           r         run, very         approximant         voiced         continuous         end         Con.         2           w         we         semivowel         voiced         continuous         end         Con.         2           W         what (Scottish)         approximant         voiceless         continuous         end         Con.         2           A         father, not, law         short         voiceless         cont fric         Con.         2           A         father, not, law         short         voiceless         cont fric         Con.         4           A         father, not, law         short         voiceless         cont fric         Con.         4           B         bed         short         vow.         0.25           E         bed         short         vow.         0.25	h	ham					Con.	4
N         singer, ring         nasal         voiced         redirect         continuous         Con.         1           1         left, bell         lateral         voiced         continuous         continuous         Con.         0           r         run, very         approximant         voiced         continuous         continuous         continuous         con.         2           yes         semivowel         voiced         continuous         end         Con.         2           W         what (Scottish)         approximant         voiceless         continuous         end         Con.         2           A         father, not, law         short         voiceless         cont fric         Con.         4           A         father, not, law         short         short         Vow.         0.25           E         bed         short         Vow.         0.25           E         bed         short         Vow.         0.25           I         sid, winner         short         Vow.         0.25           I         lad, cat, ran         short         semivowel         short         Vow.         0.25           I         see	m	man, ham					Con.	
1         left, bell         lateral         voiced         continuous         continuous         Con.         0           r         run, very         approximant         voiced         continuous         continuous         Con.         0           w         we         semivowel         voiced         continuous         end         Con.         2           W         what (Scottish)         approximant         voiceless         continuous         end         Con.         2           W         what (Scottish)         fricative         voiceless         continuous         end         Con.         2           A         father, not, law         short         voiceless         cont fric         Con.         3           E         bed         short         voiceless         cont fric         Con.         4           E         bed         short         vow.         0.25         Vow.         0.25           E         bed         short         short         vow.         0.25         Vow.         0.25           I         lad, cat, ran         short         short         vow.         0.25         Vow.         0.25         Vow.         0.25								
rrun, veryapproximantvoicedcontinuouscontinuousCon.0wwesemivowelvoicedcontinuousendCon.2jyessemivowelvoicedcontinuousendCon.2Wwhat (Scottish)approximantvoicelesscontinuousendCon.3xloch (Scottish)fricativevoicelesscont fricCon.4Afather, not, lawshortvoicelesscont fricCon.4Afather, not, lawshortvoicelesscont fricCon.4Icityshortvoicelesscont friccon fricCon.4Bdistanceshortvoicelesscont friccont fricCon.4Bdistanceshortvoicelesscont friccont fricCon.4Bdistanceshortvoicelesscont friccont friccont friccon friccon0Bbedshortshortvoicelesscont friccont fric<								
w         semivowel         voiced         continuous         end         Con.         2           j         yes         semivowel         voiced         continuous         end         Con.         2           W         what (Scottish)         approximant         voiceless         continuous         end         Con.         3           x         loch (Scottish)         fricative         voiceless         cont fric         Con.         4           A         father, not, law         short         voiceless         cont fric         Con.         4           B         dather, not, law         short         voiceless         cont fric         Con.         4           B         dether, not, law         short         short         Vow.         0.25           E         bed         short         Vow.         0.25           E         bed         short         Vow.         0.25           {         lad, winner         short         Vow.         0.25           {         lad, cat, ran         short         semivowel         short         Vow.         0.25           jU/ju         use, pupil         diphthong         semivowel         short								
j         yes         semivowel         voiced         continuous         end         Con.         2           W         what (Scottish)         approximant         voiceless         continuous         end         Con.         3           X         loch (Scottish)         fricative         voiceless         cont fric         Con.         4           A         father, not, law         short         voiceless         cont fric         Con.         4           A         father, not, law         short         vow.         0.25         Vow.         0.25           E         bed         short         vow.         0.25         Vow.         0.25         Vow.         0.25           E         bed         short         short         Vow.         0.25         Vow.         0.25           {         lad, cat, ran         short         short         Vow.         0.25         Vow.         0.25           Q         about         short         semivowel         short         pip.         0.5           jU/ju         use, pupil         diphthong         semivowel         short         pip.         0.5           V         run, enough         short	r							
W         what (Scottish)         approximant         voiceless         continuous         end         Con.         3           x         loch (Scottish)         fricative         voiceless         cont fric         Con.         4           A         father, not, law         short         voiceless         cont fric         con fric         Con.         4           A         father, not, law         short         vow.         0.25         Vow.         0.25           E         bed         short         vow.         0.25         Vow.         0.25           E         bed         short         vow.         0.25         Vow.         0.25           I         lad, cat, ran         short         vow.         0.25         Vow.         0.25           Q         about         short         short         vow.         0.25         Vow.         0.25           Q         about         short         semivowel         short         Dip.         0.5           I         see         long         vow.         0.75         Vow.         0.75           Q         put         long         vow.         0.75         Vow.         0.75      <								
x         loch (Scottish)         fricative         voiceless         cont fric         Con.         4           A         father, not, law         short         vow.         0.25           I         city         short         vow.         0.25           E         bed         short         vow.         0.25           3^/r         bird, winner         short         vow.         0.25           4         lad, cat, ran         short         vow.         0.25           u         soon, through         short         vow.         0.25           e         about         short         semivowel         short         pip.         0.5           jU/ju         use, pupil         diphthong         semivowel         short         pip.         0.5           v         run, enough         short         semivowel         short         pip.         0.5           v         run, enough         short         run, enough         short         vow.         0.75           v         run, enough         short         run, enough	_	_						_
A         father, not, law         short         Vow.         0.25           I         city         short         Vow.         0.25           E         bed         short         Vow.         0.25           3^/r         bird, winner         short         Vow.         0.25           4         lad, cat, ran         short         Vow.         0.25           u         soon, through         short         Vow.         0.25           e         about         short         Vow.         0.25           jU/ju         use, pupil         diphthong         semivowel         short         Dip.         0.5           v         run, enough         short         Vow.         0.75         0.25		,						
T		·		voiceless	cont iric	cont iric		
E         bed         short         Vow.         0.25           3^^r         bird, winner         short         Vow.         0.25           {         lad, cat, ran         short         Vow.         0.25           u         soon, through         short         Vow.         0.25           e         about         short         Vow.         0.25           jU/ju         use, pupil         diphthong         semivowel         short         Dip.         0.5           i         see         long         semivowel         short         Vow.         0.75           v         run, enough         short         long         vow.         0.75           u         put         long         long         vow.         0.75           u         put         long         long         vow.         0.75           u         put         long         long         long         long           u         put         long         long         long         long           u         long         short         long         long           u         long         long         long         long								
3`/`r bird, winner short		<del>-</del>						
\[ \begin{array}{cccccccccccccccccccccccccccccccccccc								
u         soon, through         short         Vow.         0.25           d         about         short         Vow.         0.25           jU/ju         use, pupil         diphthong         semivowel         short         Dip.         0.5           v         run, enough         short         Vow.         0.75           v         run, enough         short         Vow.         0.75           e         day         long         Vow.         0.75           o         or, shore         long         Vow.         0.75           a         DNE in GenAm         long         long         short         Dip.         1           oI         boy         diphthong         long         short         Dip.         1           oU/ou         boat         diphthong         short         long         Dip.         1								
@aboutshortVow.0.25jU/juuse, pupildiphthongsemivowelshortDip.0.5iseelongvow.0.75Vrun, enoughshortvow.0.25Uputlongrunvow.0.75edaylongrunvow.0.75Oor, shorelongrunrunvow.0.75aDNE in GenAmlongshortDip.1OIboydiphthonglongshortDip.1oU/ouboatdiphthongshortlongDip.1								
jU/ju         use, pupil         diphthong         semivowel         short         Dip.         0.5           i         see         long         Vow.         0.75           V         run, enough         short         Vow.         0.25           U         put         long         Vow.         0.75           e         day         long         Vow.         0.75           O         or, shore         long         Vow.         0.75           a         DNE in GenAm         long         short         Dip.         1           OI         boy         diphthong         long         short         Dip.         1           OU/ou         boat         diphthong         short         long         Dip.         1	a							
i         see         long         Vow.         0.75           V         run, enough         short         Vow.         0.25           U         put         long         Vow.         0.75           e         day         long         Vow.         0.75           o         or, shore         long         Vow.         0.75           a         DNE in GenAm         long         long         short         Dip.         1           OI         boy         diphthong         long         short         Dip.         1           oU/ou         boat         diphthong         short         long         Dip.         1		use, pupil			semivowel	short	Dip.	
V         run, enough         short         Vow. 0.25           U         put         long         Vow. 0.75           e         day         long         Vow. 0.75           O         or, shore         long         Vow. 0.75           a         DNE in GenAm         long         Vow. 0.75           aI         my, height         diphthong         long         short         Dip. 1           OI         boy         diphthong         long         short         Dip. 1           oU/ou         boat         diphthong         short         long         Dip. 1							_	
edaylongVow.0.75Oor, shorelongVow.0.75aDNE in GenAmlongVow.0.75aImy, heightdiphthonglongshortDip.1OIboydiphthonglongshortDip.1oU/ouboatdiphthongshortlongDip.1	v	r <b>u</b> n, en <b>ou</b> gh	=				Vow.	
O         or, shore         long         Vow.         0.75           a         DNE in GenAm         long         Vow.         0.75           aI         my, height         diphthong         long         short         Dip.         1           OI         boy         diphthong         long         short         Dip.         1           oU/ou         boat         diphthong         short         long         Dip.         1	U	p <b>u</b> t	long				Vow.	0.75
aDNE in GenAmlongVow. 0.75aImy, heightdiphthonglongshortDip. 1OIboydiphthonglongshortDip. 1oU/ouboatdiphthongshortlongDip. 1	е	day	long				Vow.	0.75
aImy, heightdiphthonglongshortDip. 1OIboydiphthonglongshortDip. 1oU/ouboatdiphthongshortlongDip. 1	0	or, shore	long				Vow.	0.75
OI boy diphthong long short Dip. 1 oU/ou boat diphthong short long Dip. 1	a	DNE in GenAm	long				Vow.	0.75
oU/ou boat diphthong short long Dip. 1	aI	m <b>y</b> , h <b>ei</b> ght	diphthong		long	short	Dip.	1
		boy			=	short	Dip.	1
<b>aU</b> now diphthong long long Dip. 1.5	oU/ou	b <b>oa</b> t			short	long	Dip.	1
	аU	now	diphthong		long	long	Dip.	1.5
= ridden semivowel Vow. 0.25	=	ridd <b>en</b>	semivowel				Vow.	0.25