Study the consonant chart. ***Know how to describe each consonant by voicing, place of articulation and manner of articulation (in that order)***. Practice describing each consonant sound, for example: */p/ is a voiceless bilabial plosive (stop); /z/ is a voiced alveolar fricative*. There are 24 consonant sounds in RP. ***Memorize them.*** This is important because if you know the description of each sound, you can use that info to identify which sound is being presented in a sagittal diagram. (And, you will be able to describe any consonant sound given to you when you retake the oral.)

			PLACE							
	MANNER	**VOICE**	bilabial	labio-dental	dental	alveolar	post-alveolar	palatal	velar	glottal
OBSTRUENTS	plosive	–	p			t			k	
		+	b			d			g	
	fricative	–		f	θ	s	ʃ			h
		+		v	ð	z	ʒ			
	affricate	–					tʃ			
		+					dʒ			
SONORANTS	nasal	+	m			n			ŋ	
	lateral approximant	+				l				
	approximant	+	w				r	j		

*chart is from Roach

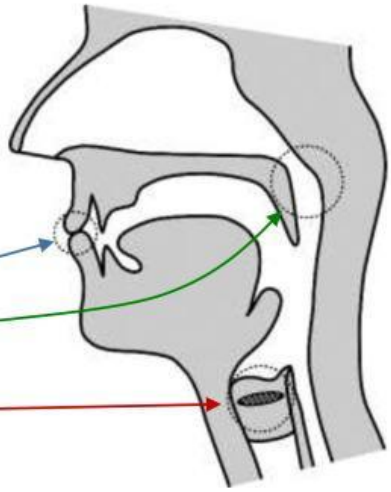
For example, look at the sagittal diagram to the right. How can you know which sound is being represented?

Look for the 3 characteristics that you memorized from the chart...

Is it voiced or voiceless?

Where is the sound produced?

How is the sound produced?



The diagram shows a sound that is voiced, bilabial, and nasal.

Which sound is a voiced, bilabial, nasal? The /m/.

There is a blank chart on the following page. Try to write the consonant sounds in the correct position. On the page after that, you will find a list of the English consonant sounds. Practice describing them with the three characteristics. Do these exercises over and over until you have all the consonant sounds memorized. (I have included a link to an interactive version of this document so that you can repeat these exercises as often as necessary.) Then you can continue to the following pages, which provide mid-sagittal diagrams for you to identify the sounds.

Write (or move in the interactive version) the symbol to its position.

w ð r s g ŋ dʒ d h v b k

n ʒ θ l t f m tʃ j p z ʃ

			PLACE							
	MANNER	**VOICE**	bilabial	labio-dental	dental	alveolar	post-alveolar	palatal	velar	glottal
OBSTRUENTS	plosive	–								
		+								
	fricative	–								
		+								
	affricate	–								
		+								
SONORANTS	nasal	+								
	lateral approximant	+								
	approximant	+								

Describe each consonant sound.

Sound	Voicing	Place of Articulation	Manner of Articulation
/ b /			
/ k /			
/ d /			
/ f /			
/ g /			
/ h /			
/ dʒ /			
/ l /			
/ m /			
/ n /			
/ ŋ /			
/ p /			
/ r /			
/ s /			
/ t /			
/ v /			
/ w /			
/ j /			
/ z /			
/ ʃ /			
/ ʒ /			
/ ð /			
/ θ /			
/ tʃ /			

If you get nervous in the exam...

- take a deep breath
- in your mind, identify / list the three characteristics of the sound
- then describe the sound to your professor by listing those characteristics.

If your professor wants a more detailed description, simply define the characteristics...

- consonant sounds are made by blocking air in some way—constricting, obstructing or diverting it—as it leaves the body
- the place of articulation tells you which articulators are involved in the blockage
    - bilabial = both lips
    - labiodental = lips and teeth
    - dental = teeth and tongue
    - alveolar = tongue and alveolar ridge
    - post-alveolar = tongue and post-alveolar ridge
    - palatal = tongue and palate
    - velar = tongue and velum (or soft palate)
    - glottal = larynx
- the manner of articulation tells you *how* the articulators block the air
    - plosive / stop = air flow is completely stopped and then released
    - fricative = air flow is squeezed through a small gap
    - affricate = starts as a plosive and ends as a fricative (so air flow is stopped and released through a small gap)
    - nasal = air flows through the nose
    - lateral approximant = air flows around the sides of the tongue
    - approximant = air flow is not fully blocked

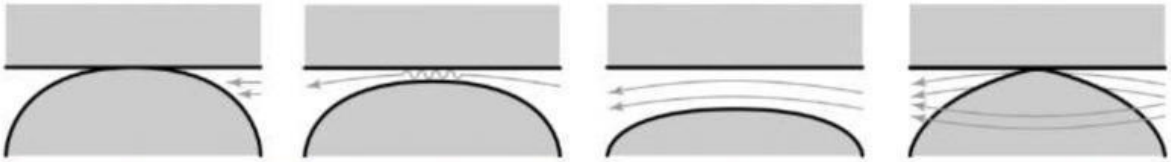


Figure 3.10. Manners of articulation, from left to right: stop, fricative, central approximant, and lateral approximant.

- "voiced" means that the vocal cords vibrate;

If you know the chart / characteristics of each consonant—and stay calm—you can describe any sound.

For example, if your professor asks you to describe the /g/, begin by listing the characteristics: */g/ is a voiced, velar, plosive.*

If she asks you to give more details, describe those three words, one-by-one: *the vocal cords vibrate, and the (back of the) tongue touches the velum, completely stopping the air flow before being released.*

If you are asked to describe the /h/, the characteristics are: */h/ is a voiceless, glottal*[1]*, fricative. The vocal cords do not move, and air is constricted at the larynx.*

[1] The space between the vocal folds is the glottis. English has two sounds made at the glottis. One is easy to hear: /h/, as in *high* and *history*. The other is called a glottal stop [ʔ] and this sound occurs before each of the vowel sounds in *uh-oh* or in the middle of a word like *cotton*. (You haven't studied this yet.)

Fricatives (21-30) squeeze air through a small gap:

21) /f/ first	23) /θ/ thick	25) /s/ saw	27) /ʃ/ she	29) /h/ hard
22) /v/ van	24) /ð/ these	26) /z/ zen	28) /ʒ/ casual	

Plosives (32-38) fully stop then release air:

30) /p/ pick	32) /t/ team	34) /k/ code	45) [ʔ] witness
31) /b/ bed	33) /d/ dine	35) /g/ get	

Affricates / plosive directly followed by fricative

36) /tʃ/ choose	37) /dʒ/ jet

Approximants / vowel-like sound without full block

38) /w/ watch	39) /r/ rug	40) /j/ yet

Lateral Approximants / sides of tongue release air

41) /l/ look	46) [ɬ] tall

Nasals / nose releases air

42) /m/ mode	43) /n/ neck	44) /ŋ/ song

I include this page for 2 reasons:

- I like the simple definition of each, and
- I like that the voiced and voiceless version are paired—f/v; s/z, ð/ θ, etc.—which may help in memorization.

Now, on to the sagittal diagrams… Identify each of the sounds depicted in the images that follow: circle (or select) the sound / symbol and list (or select) its characteristics.

	b	k	d	f	
	g	h	l	m	
	n	p	r	s	
	t	v	w	j	
	z	tʃ	ʃ	dʒ	
	ʒ	ŋ	ð	θ	
	b	k	d	f	
	g	h	l	m	
	n	p	r	s	
	t	v	w	j	
	z	tʃ	ʃ	dʒ	
	ʒ	ŋ	ð	θ	
	b	k	d	f	
	g	h	l	m	
	n	p	r	s	
	t	v	w	j	
	z	tʃ	ʃ	dʒ	
	ʒ	ŋ	ð	θ	

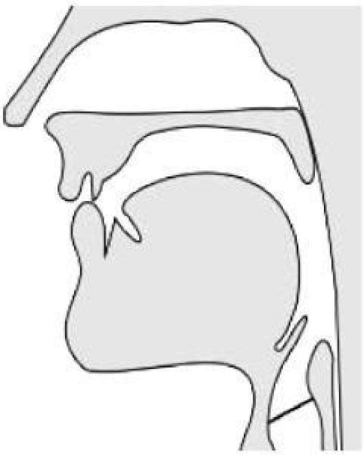
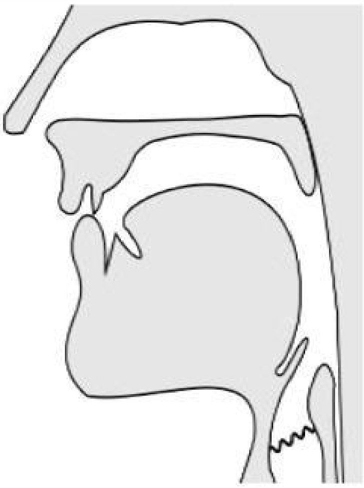
These three sounds look very much alike. Only one characteristic distinguishes them. You will have to examine the sagittal diagrams very carefully on the exam.

	**b**	**k**	**d**	**f**	
	g	**h**	**l**	**m**	
	n	**p**	**r**	**s**	
	t	**v**	**w**	**j**	
	z	**tʃ**	**ʃ**	**dʒ**	
	ʒ	**ŋ**	**ð**	**θ**	
	**b**	**k**	**d**	**f**	
	g	**h**	**l**	**m**	
	n	**p**	**r**	**s**	
	t	**v**	**w**	**j**	
	z	**tʃ**	**ʃ**	**dʒ**	
	ʒ	**ŋ**	**ð**	**θ**	
	**b**	**k**	**d**	**f**	
	g	**h**	**l**	**m**	
	n	**p**	**r**	**s**	
	t	**v**	**w**	**j**	
	z	**tʃ**	**ʃ**	**dʒ**	
	ʒ	**ŋ**	**ð**	**θ**	

These three sounds also look very much alike. Again only one characteristic distinguishes them.

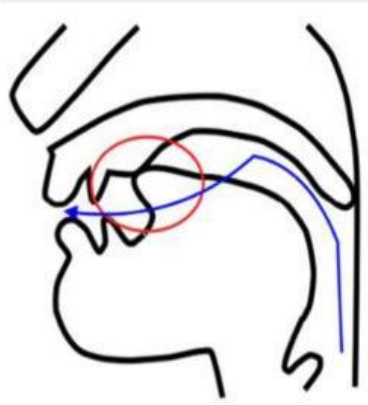
	b	k	d	f	
	g	h	l	m	
	n	p	r	s	
	t	v	w	j	
	z	tʃ	ʃ	dʒ	
	ʒ	ŋ	ð	θ	
	b	k	d	f	
	g	h	l	m	
	n	p	r	s	
	t	v	w	j	
	z	tʃ	ʃ	dʒ	
	ʒ	ŋ	ð	θ	
	b	k	d	f	
	g	h	l	m	
	n	p	r	s	
	t	v	w	j	
	z	tʃ	ʃ	dʒ	
	ʒ	ŋ	ð	θ	

Do you see a pattern here?

	b	k	d	f	
	g	h	l	m	
	n	p	r	s	
	t	v	w	j	
	z	tʃ	ʃ	dʒ	
	ʒ	ŋ	ð	θ	
	b	k	d	f	
	g	h	l	m	
	n	p	r	s	
	t	v	w	j	
	z	tʃ	ʃ	dʒ	
	ʒ	ŋ	ð	θ	
	b	k	d	f	
	g	h	l	m	
	n	p	r	s	
	t	v	w	j	
	z	tʃ	ʃ	dʒ	
	ʒ	ŋ	ð	θ	

b	k	d	f	
g	h	l	m	
n	p	r	s	
t	v	w	j	
z	tʃ	ʃ	dʒ	
ʒ	ŋ	ð	θ	

b	k	d	f	
g	h	l	m	
n	p	r	s	
t	v	w	j	
z	tʃ	ʃ	dʒ	
ʒ	ŋ	ð	θ	

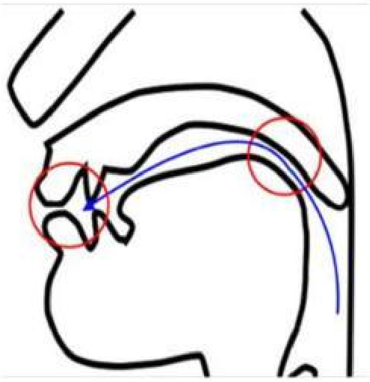
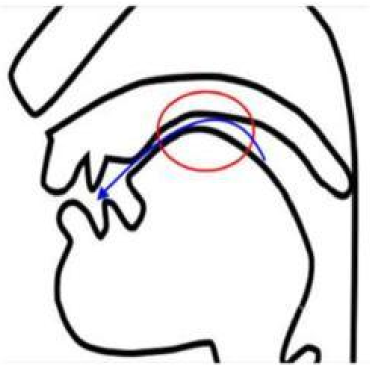
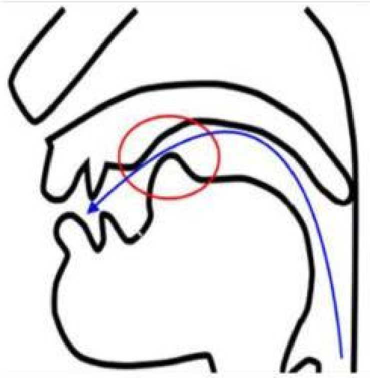


The blue line indicates the air flow (to the side of the tongue).

b	k	d	f	
g	h	l	m	
n	p	r	s	
t	v	w	j	
z	tʃ	ʃ	dʒ	
ʒ	ŋ	ð	θ	

	b	k	d	f	
	g	h	l	m	
	n	p	r	s	
	t	v	w	j	
	z	tʃ	ʃ	dʒ	
	ʒ	ŋ	ð	θ	
	b	k	d	f	
	g	h	l	m	
	n	p	r	s	
	t	v	w	j	
	z	tʃ	ʃ	dʒ	
	ʒ	ŋ	ð	θ	

Remember that many sounds differ only in voicing. It may help you to memorize the sagittal diagrams.

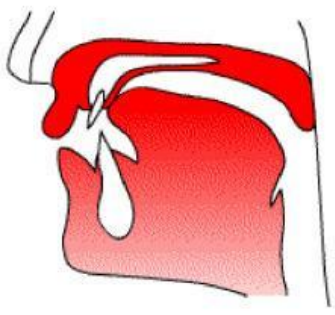
	**b**	**k**	**d**	**f**	
	g	**h**	**l**	**m**	
	n	**p**	**r**	**s**	
	t	**v**	**w**	**j**	
	z	**tʃ**	**ʃ**	**dʒ**	
	ʒ	**ŋ**	**ð**	**θ**	
	**b**	**k**	**d**	**f**	
	g	**h**	**l**	**m**	
	n	**p**	**r**	**s**	
	t	**v**	**w**	**j**	
	z	**tʃ**	**ʃ**	**dʒ**	
	ʒ	**ŋ**	**ð**	**θ**	
	**b**	**k**	**d**	**f**	
	g	**h**	**l**	**m**	
	n	**p**	**r**	**s**	
	t	**v**	**w**	**j**	
	z	**tʃ**	**ʃ**	**dʒ**	
	ʒ	**ŋ**	**ð**	**θ**	

Do you know why I grouped these sounds together? There is one more related to this type. Can you name it?

b	k	d	f	
g	h	l	m	
n	p	r	s	
t	v	w	j	
z	tʃ	ʃ	dʒ	
ʒ	ŋ	ð	θ	

b	k	d	f	
g	h	l	m	
n	p	r	s	
t	v	w	j	
z	tʃ	ʃ	dʒ	
ʒ	ŋ	ð	θ	

The affricates are difficult to display with a sagittal diagram because there are two aspects of these sounds—the stop portion and the fricative portion—so an active diagram would be needed to show the sound. The two affricates in English are / tʃ / and / dʒ /. The diagram below shows the state of the vocal tract during the first half (the stop half) of both affricates. Notice the similarity to the sounds / ʃ / and / ʒ / in the images above. The only difference between the images is that the fricatives (above) do not stop air flow completely, but the affricates begin with complete closure and end as the fricatives (as the symbols suggest).



dʒ	tʃ