A studying a new subject often involves learning a large number of technical terms. Phonetics is particularly difficult in this respect. Read over the definitions of the terms in Chapter 1 before completing the exercises below. Say each of the words, and listen to the sound. Be careful not to be confused by spellings. Using a mirror may be helpful.

1. Mark the words that begin with a bilabial consonant:
   - met
   - net
   - set
   - bet
   - let
   - pet

2. Mark the words that begin with a velar consonant:
   - knot
   - got
   - lot
   - cot
   - hot
   - pot

3. Mark the words that begin with a labiodental consonant:
   - fat
   - cat
   - that
   - mat
   - chat
   - vat

4. Mark the words that begin with an alveolar consonant:
   - zip
   - nip
   - lip
   - sip
   - tip
   - dip

5. Mark the words that begin with a dental consonant:
   - pie
   - guy
   - shy
   - thigh
   - thy
   - high

6. Mark the words that begin with a palato-alveolar consonant:
   - sigh
   - shy
   - tie
   - thigh
   - thy
   - lie

7. Mark the words that end with a fricative:
   - race
   - wreath
   - bush
   - bring
   - breathe
   - bang
   - rave
   - real
   - ray
   - rose
   - rough

8. Mark the words that end with a nasal:
   - rain
   - rang
   - dumb
   - deaf

9. Mark the words that end with a stop:
   - pill
   - lip
   - lit
   - graph
   - crab
   - dog
   - hide
   - laugh
   - back

10. Mark the words that begin with a lateral:
    - nut
    - lull
    - bar
    - rob
    - one

11. Mark the words that begin with an approximant:
    - we
    - you
    - one
    - run

12. Mark the words that end with an affricate:
    - much
    - back
    - edge
    - ooze

13. Mark the words in which the consonant in the middle is voiced:
    - tracking
    - mother
    - robber
    - leisure
    - massive
    - stomach
    - razor

14. Mark the words that contain a high vowel:
    - sat
    - suit
    - got
    - meet
    - mud

15. Mark the words that contain a low vowel:
    - weed
    - wad
    - load
    - lad
    - rude

16. Mark the words that contain a front vowel:
    - gate
    - caught
    - cat
    - kit
    - put

17. Mark the words that contain a back vowel:
    - maid
    - weep
    - coop
    - cop
    - good

18. Mark the words that contain a rounded vowel:
    - who
    - me
    - us
    - but
    - him

B Describe the consonants in the word *skinflint* using the chart below. Fill in all five columns, and put parentheses around the terms that may be left out, as shown for the first consonant.
C Fill in the names of the vocal organs numbered in Figure 1.14.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>voiced or voiceless</td>
<td>place of articulation</td>
<td>central or lateral</td>
<td>oral or nasal</td>
<td>articulatory action</td>
</tr>
<tr>
<td>s</td>
<td>voiceless</td>
<td>alveolar</td>
<td>(central)</td>
<td>(oral)</td>
</tr>
</tbody>
</table>

1. ____________________________ 8. ____________________________
2. ____________________________ 9. ____________________________
3. ____________________________ 10. ____________________________
4. ____________________________ 11. ____________________________
5. ____________________________ 12. ____________________________
6. ____________________________ 13. ____________________________
7. ____________________________ 14. ____________________________
D Figure 1.15 a-g (below) illustrates all the places of articulation we have discussed so far, except for retroflex sounds (which will be illustrated in Chapter 7). In the spaces provided below, state (1) the place of articulation and (2) the manner of articulation of each sound. In addition, give (3) an example of an English word beginning with the sound illustrated.

<table>
<thead>
<tr>
<th>(1) Place of articulation</th>
<th>(2) Manner of articulation</th>
<th>(3) Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(a) [Diagram of place of articulation a]
(b) [Diagram of place of articulation b]
(c) [Diagram of place of articulation c]
(d) [Diagram of place of articulation d]
(e) [Diagram of place of articulation e]
(f) [Diagram of place of articulation f]
(g) [Diagram of place of articulation g]
E Complete the diagrams in Figure 1.16 below so as to illustrate the target for the gesture of the vocal organs for the first consonants in each of the following words. If the sound is voiced, schematize the vibrating vocal folds by a wavy line at the glottis. If it is voiceless, use a straight line.

F Define the consonant sounds in the middle of each of the following words as indicated in the example:

Voiced or voiceless | Place of articulation | Manner of articulation
adder | voiced | alveolar | stop
father
singing
etching
robber
ether
pleasure
hopper
 selling
sunny
lodger
G In the following sets of words the sound of the vowel is the same in every case but one. Circle the word that has a different vowel sound.

1. pen  said  death  mess  mean
2. meat  steak  weak  theme  green
3. sane  paid  eight  lace  mast
4. ton  toast  both  note  toes
5. hoot  good  moon  grew  suit
6. dud  died  mine  eye  guy

H In the next chapter we will start using phonetic transcriptions. The following exercises prepare for this by pointing up the differences between sounds and spelling.

How many distinct sounds are there in each of the following words? Circle the correct number.

1. laugh  1  2  3  4  5  6  7
2. begged  1  2  3  4  5  6  7
3. graphic  1  2  3  4  5  6  7
4. fish  1  2  3  4  5  6  7
5. fishes  1  2  3  4  5  6  7
6. fished  1  2  3  4  5  6  7
7. batting  1  2  3  4  5  6  7
8. quick  1  2  3  4  5  6  7
9. these  1  2  3  4  5  6  7
10. physics  1  2  3  4  5  6  7
11. knock  1  2  3  4  5  6  7
12. axis  1  2  3  4  5  6  7

I Figure 1.17 shows the waveform of the phrase *Tom saw nine wasps*. Mark this figure in a way similar to that in figure 1.10. Using just ordinary spelling, show the center of each sound. Also indicate the manner of articulation.
J. Make your own waveform of a sentence that will illustrate different manners of articulation. You can use the WaveSurfer application that is available on the CD or download it at http://www.speech.kth.se.wavesurfer

K. Recall the pitch of the first formant (heard best in a creaky voice) and the second formant (heard best when whispering) in the vowels in the words heed, hid, head, had, hod, hawed, hood, who’d. Compare their formants to those in the first parts of the vowels in the following words:

<table>
<thead>
<tr>
<th>First formant similar to that in the vowel in:</th>
<th>Second formant similar to that in the vowel in:</th>
</tr>
</thead>
<tbody>
<tr>
<td>bite</td>
<td></td>
</tr>
<tr>
<td>bait</td>
<td></td>
</tr>
<tr>
<td>boat</td>
<td></td>
</tr>
</tbody>
</table>