UNIT 1

Numbers

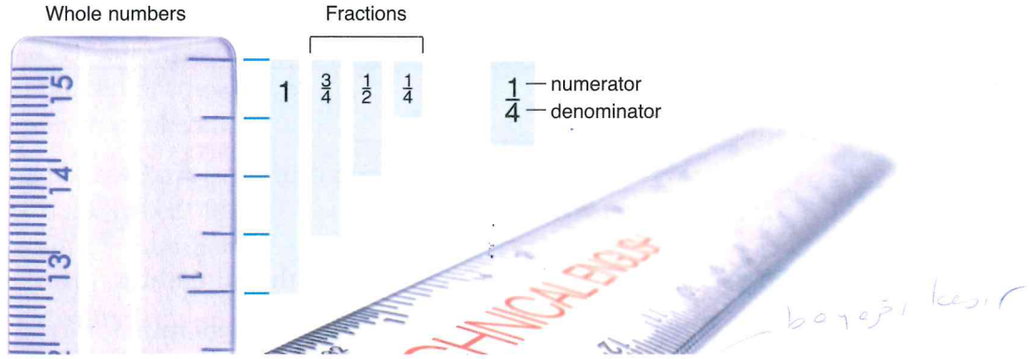
CD 1-02

Section 1 *Vocabulary*

A. Read the text and look at the diagram.

In most technical subjects, like engineering, mathematics is very important. Mathematics is the study of numbers and spaces. In this unit we look at numbers. We look at spaces in Unit 5.

There are two main kinds of numbers – **whole numbers** and **fractions**. Whole numbers are numbers like 1, 2, 3. We can also write whole numbers as **decimals**; for example, 1.0, 2.4, 3.5.



Fractions are numbers *between* whole numbers; for example, the numbers between 1 and 2. We can express them as **common fractions**. With common fractions, we have a number, then a line, then another number, like $\frac{1}{4}$ (a quarter), $\frac{1}{2}$ (a half), $\frac{3}{4}$ (three-quarters). The number below the line is called the **denominator**. It shows how many pieces we are dividing the whole number into. The number above the line is called the **numerator**. It shows how many pieces of the denominator we have taken.

We can also express fractions as **decimals**. Decimals are based on the idea that any whole number can be divided into 100 parts. So $\frac{1}{2}$ is 50 of these parts. We write it as 0.50 and say *zero point five* or *zero point five zero.* Note that we do not say, for example, *fifty* after a decimal point.

Fractions can also be **percentages**. Percentages are also based on 100 but in this case we say $\frac{1}{2}$ is the same as 50 out of 100, or 50%. If you look closely, the % symbol for percentage looks like 100, written in a strange way.

B. **Look at the table. Complete each sentence with a suitable word or number.**

Common fractions	Decimal fractions	Percentages	Words
$\frac{1}{4}$	0.25	25%	a quarter
$\frac{1}{2}$	0.50	50%	a half
$\frac{1}{3}$	0.333	33.3%	a third
$\frac{3}{4}$	0.75	75%	three-quarters
$\frac{2}{3}$	0.666	66.7%	two-thirds
$\frac{1}{5}$	0.20	20%	a fifth
$\frac{1}{10}$	0.10	10%	a tenth
$\frac{2}{5}$	0.40	40%	two-fifths
$\frac{1}{20}$	0.05	5%	a twentieth

1. The symbol $\frac{3}{4}$ is a common _____.
2. 0.25 is a _____ fraction.
3. The symbol % means _____.
4. In the fraction $\frac{1}{2}$, the number _____ is the numerator.
5. In the fraction $\frac{1}{4}$, the number _____ is the denominator.
6. The word for the fraction $\frac{1}{3}$ is a "_____".
7. The common fraction $\frac{1}{5}$ is the same as _____%.
8. The decimal fraction 0.10 is the same as the common fraction _____.

CD 1-03

Section 2 Reading

How do you say these numbers: 10, 11? What about when they are part of a date: 10/11/2003?

In American English we can say *ten eleven* in both cases, but we can also say the date as *October eleventh* because we are thinking of the days in order. When we put things in order, we use special number words in English called ordinals.

Most ordinals are almost the same words as the cardinal numbers. We just add *th* to the cardinal number to make the ordinal. For example, *four* becomes *fourth*, *six* becomes *sixth*.

However, there are a few spelling changes. Be careful with *five*, which becomes *fifth*. Don't forget that *eight* has only one *t* in the ordinal form (*eighth*). *Nine* loses an *e* (*ninth*). Remember also that numbers ending in *y* lose the *y* and add *ieth* (*twenty – twentieth*).

When we write the date in American English, we don't use any special symbol. So we write, for example, *October 11*. But in mathematics there is a special symbol for an ordinal number. We use the extra *th;* for example, 5th. In printing, *th* is often written as two very small letters above the line; for example, 5^{th}.

Be careful with the first three ordinal numbers. They are different words from the cardinals. *One, two, three* become *first, second, third*. Like other ordinal numbers, we use the last two letters of the ordinal words in the symbols, so we get *1st, 2nd* and *3rd* or, in printing, 1^{st}, 2^{nd} and 3^{rd}.

A. **Choose the best answer in each case.**

1. In American English we can say the date 10/11 as:
   a. tenth of eleventh
   b. October eleventh
   c. the ten of the eleven
   d. tenth of eleven
2. Numbers like fourth, fifth and sixth are called:
   a. simple numbers
   b. ordinals
   c. cardinals
   d. ordinary
3. To change thirty into an ordinal number:
   a. add *th*
   b. remove the *y* and add *th*
   c. remove the *y* and add *ith*
   d. remove the *y* and add *ieth*
4. The symbol for ordinals uses:
   a. the last letter of the ordinal word
   b. the last two letters of the ordinal word
   c. the first letter of the ordinal word
   d. the first and last letter of the ordinal word
5. The ordinal 2nd in dates is:
   a. the two
   b. the twoth
   c. seconds
   d. second

B. **Write the dates of these festivals as words. Say the dates.**

1. The Snow Festival, Sapporo, Feb 5–11 February fifth through eleventh
2. Hina Matsuri, Tokyo, Mar 3 _____
3. Gion Festival, Kyoto, Jul 17 _____
4. Nebuta, Aomori, Aug 3 to 5 _____
5. Nada Fighting Festival, Hyogo, Oct 14 _____
6. Chichibu Night Festival, Saitama, Dec 2 and 3 _____

CD 1-04

Section 3 *Listening*

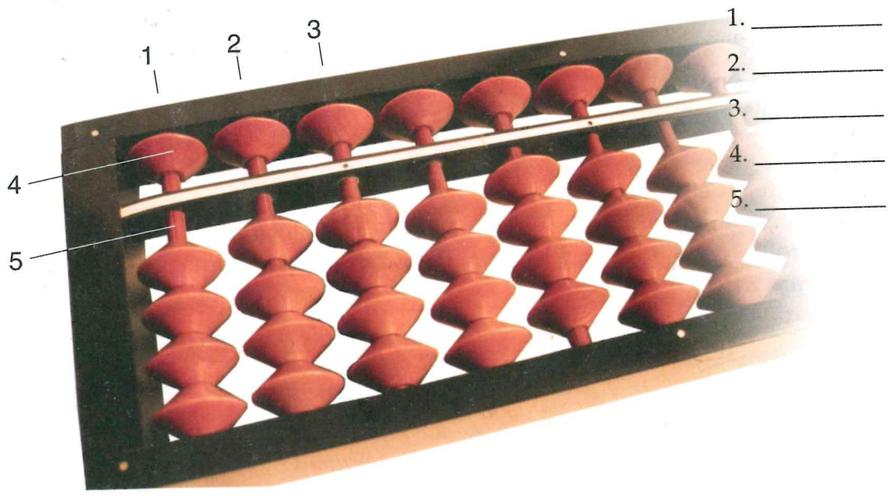
A. Listen and complete the summary of the reading text in Section 2. Write one word in each space.

There are two kinds of numbers: simple numbers, or cardinals, and _____. We use ordinal numbers when we talk about the _____ of things. We also use them in _____ like *October eleventh*. Ordinals are normally the _____ number plus *th*; for example, *six – sixth*. However, the cardinal numbers *one*, *two* and *three* have special ordinal words: *first*, *second* and _____.

CD 1-05, 06

B. Listen and label the abacus. Use the words and phrases in the box.

rod / bead / tens column / units column / hundreds column



1. _____
2. _____
3. _____
4. _____
5. _____

CD 1-07, 06

C. Listen again and complete the summary. Write one word in each space.

A soroban is called an _____ in the West. The Japanese abacus usually has more than _____ rods. On each rod there are five _____. The _____ rod on the right is the units column; each bead in the bottom part represents _____. The second rod from the right is the _____ column; each bead in the bottom part represents 10. The _____ rod from the right is the _____ column.

CD 1-08