

CSL

MANDARIN CONVERSATION CLUB

MANDARIN FOR WORK & EVERYDAY LIFE

Numbers at Work

Mandarin for everyday life, science & engineering



数字与计量

shù zì yǔ jì liàng

shoo dzuh yoo* jee lyahng

Numbers & measurement

WELCOME

Four ways into a phrase

Each speaking example has four layers: Chinese, teal pinyin, a smaller gray CSL Phonetic Clue, and English. Read the English to understand it, follow the pinyin tones, and use the phonetic clue to get started.

零点五升

líng diǎn wǔ shēng

ling dyehn woo shung

0.5 liters

两瓶水

liǎng píng shuǐ

lyahng ping shway

Two bottles of water

KEEP IN MIND

Pinyin is the pronunciation reference. CSL clues are approximate English memory aids, not exact phonetics. An asterisk (*) marks a rounded-lip vowel; it is not a stress mark. All quantities and scenarios are fictional language practice examples.

USE THE BOOKLET

Read → say → point → check. Practice answers are on pages 63-66. Source keys such as [S1] lead to the linked references on pages 73-74.

Your CSL Phonetic Clues

These spellings follow the existing CSL house key. Say one clue per pinyin syllable. English accents differ, so always copy your teacher's mouth shape and voice. CSL Phonetic Clues show approximate sounds. Follow the pinyin marks and your teacher's voice for tones.

一、五

yī wǔ

ee woo

ee / woo: keep the vowel steady.

十、四

shí sì

shrr suh

shrr / suh: these are different sounds.

七、九

qī jiǔ

chee jyoh

chee / jyoh: q has a puff of air.

升、零

shēng líng

shung ling

shung / ling: finish with -ng.

绿、月

lǜ yuè

lyoo* yweh*

lyoo* / yweh*: round the lips.

KEEP IN MIND

For ü (also written u after j, q, x and y), begin with an “ee” tongue position and round your lips. The clue’s “yoo*” must not become ordinary English “you.” Chinese r and the vowels in shi, si and ri also need a spoken model.

WELCOME

Let the tones do their job

A tone belongs to each syllable. It can distinguish words. Practice the four contours slowly; do not add English-style stress to every syllable.

妈

mā
mah

1: high and level

麻

má
mah

2: rising

马

mǎ
mah

3: low; a full dip in isolation

骂

mà
mah

4: falling

吗

ma
mah

Neutral: short and light



1



2



3



4

KEEP IN MIND

This book writes dictionary tones and separates pinyin syllables for beginners. In speech, — yī becomes yí before a fourth tone and yì before a first, second or third tone; 不 bù becomes bú before a fourth tone. In digit strings and ordinals, — stays yī. Third tones often stay low; before another third tone, the first rises. The spelling stays unchanged here.

Find your route

Read from the beginning, or jump to the number task you need. Every printed number matches its reading-PDF page, including the cover.

CHOOSE YOUR PATH

START HERE: pages 6-11, 16, 23, 26, 31, 43 and 60.

EXPLORE NEXT: large numbers, conversions, formulas and scientific notation.

KEEP HANDY: quick references, glossary and sources at the back.

6-15 Build and count

16-22 Decimals, fractions & change

23-30 Money, objects & quantities

31-40 Measurements & units

41-46 Dates, times & durations

47-59 Mathematics, computing & data

60-62 Communicate and check

63-66 Practice answers

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75 Your own numbers at work

Start with zero to ten

These eleven words are the building blocks. Say them forward, backward and in a mixed order. Recognizing a number matters more than reciting a memorized sequence.

零

líng
ling

0 • zero

一

yī
ee

1 • one

二

èr
er

2 • two

三

sān
sahn

3 • three

四

sì
suh

4 • four

五

wǔ
woo

5 • five

六

liù
lyoh

6 • six

七

qī
chee

7 • seven

八

bā
bah

8 • eight

九

jiǔ
jyoh

9 • nine

十

shí
shrr

10 • ten

KEEP IN MIND

Point to a digit while your partner says it. Switch roles. Watch the contrast between 四 (4) and 十 (10).

Teens and tens

For 11-19, say ten + the last digit. For 20-99, say how many tens, then the last digit if it is not zero.

十一

shí yī
shrr ee $11 = 10 + 1$

十九

shí jiǔ
shrr jyoh $19 = 10 + 9$

二十

èr shí
er shrr $20 = 2 \times 10$

二十五

èr shí wǔ
er shrr woo $25 = 2 \times 10 + 5$

九十八

jiǔ shí bā
jyoh shrr bah $98 = 9 \times 10 + 8$

KEEP IN MIND

At the start of 10-19, omit 一 before 十. Do not say 两十 for twenty. A whole-number 20 ends at 十; no final 零 is needed.

TRY & CHECK

Try aloud: 14, 30, 47. Answers: page 63, A1.

Hundreds and a missing place

Say the hundreds, then the tens and ones. An internal zero signals a missing place between nonzero parts; it is not repeated for every empty place.

一百

yī bǎi
ee bye
100

一百零五

yī bǎi líng wǔ
ee bye ling woo
105

一百一十

yī bǎi yī shí
ee bye ee shrr
110

一百一十五

yī bǎi yī shí wǔ
ee bye ee shrr woo
115

四百五十六

sì bǎi wǔ shí liù
suh bye woo shrr lyoh
456

100

1

10

0

1

5

KEEP IN MIND

For clear professional speech, keep all place words. Casual shortened forms can be ambiguous. Say the full value and show the numeral when checking a specification.

Thousands, step by step

Read from the largest place toward the smallest. Do not read a whole-number quantity like a phone number.

一千

yī qiān
ee chyehn
1,000

一千零五

yī qiān líng wǔ
ee chyehn líng woo
1,005

一千零五十

yī qiān líng wǔ shí
ee chyehn líng woo shrr
1,050

一千三百二十

yī qiān sān bǎi èr shí
ee chyehn sahn bye er shrr
1,320

KEEP IN MIND

The two zeros in 1,005 become one 零 in the whole-number reading. In a digit-by-digit code “1005,” read both zeros: 一零零五.

TRY & CHECK

Build 3,406 as $3,000 + 400 + 6$. Then read 1,010. Answers: page 63, A2.

Two choices for “two”

Use 二 for the digit two, tens, decimal digits and ordinals. Use 两 before most classifiers and units when you mean a quantity of two.

二十二

èr shí èr
er shrr er
22

两个样品

liǎng ge yàng pǐn
lyahng guh yahng peen
Two samples

两升

liǎng shēng
lyahng shung
Two liters

第二

dì èr
dee er
Second

二点二

èr diǎn èr
er dyehn er
2.2

KEEP IN MIND

Both 二百 and 两百 occur for 200. 两千 is common for 2,000. Formal number readings may use 二. Learn the whole expression: 两点 = two o'clock; 二月 = February. Do not replace every 二 mechanically.

Order, labels and identifiers

An ordinal gives a position. An identifier gives a label. Preserve leading zeros when they are part of the label, and establish how letters and separators will be read.

第一

dì yī

dee ee

First

第三次

dì sān cì

dee sahn tsuh

The third time

零二

líng èr

ling er

Code 02, read as digits

一零零五

yī líng líng wǔ

ee ling ling woo

Code 1005, read as digits

幺

yāo

yow

An alternative “one” in some spoken codes

KEEP IN MIND

幺 can make “one” easier to distinguish in telephone or radio-style readings. It is not a replacement for 一 in ordinary counting. For a mixed label such as A-02, agree on the letter name and say the digits separately.

TRY & CHECK

Which preserves a sample ID: “02” or “2”? Why? Answer: page 63, A3.

A new step at ten thousand

Chinese large-number names introduce a major step every four decimal places. Keep the written numeral visible while learning the spoken groups.

一万

yī wàn

ee wahn

10,000 • ten thousand

十万

shí wàn

shrr wahn

100,000 • one hundred thousand

一百万

yī bǎi wàn

ee bye wahn

1,000,000 • one million

一千万

yī qiān wàn

ee chyehn wahn

10,000,000 • ten million

一亿

yī yì

ee ee

100,000,000 • one hundred million

KEEP IN MIND

A million is one hundred groups of ten thousand. It is not 一万. Written technical numbers can still use international digit grouping; this diagram teaches the spoken structure.

See the groups before you speak

Work from the right in groups of four for the spoken structure: 亿 | 万 | the final group. Vertical bars below are learning guides, not standard numeric punctuation.

一万六千八百

yī wàn liù qiān bā bǎi

ee wahn lyoh chyehn bah bye

16,800 → 1

十二万三千四百五十六

shí èr wàn sān qiān sì bǎi wǔ

shí liù

shrr er wahn sahn chyehn suh

bye woo shrr lyoh

123,456 → 12

一亿二千万

yī yì èr qiān wàn

ee ee er chyehn wahn

120,000,000 → 1

YI / 100,000,000

1

WAN / 10,000

2000

FINAL GROUP

0000

KEEP IN MIND

Read each nonempty group, attach its group name, then continue. Zeros at group boundaries need care; do not simply read each group as an unrelated number.

TRY & CHECK

Convert 250,000 into a number of 万. Answer: page 63, A4.

Billions, trillions and zeros

Use explicit group names and confirm the numeral. English “billion” here means 10^9 ; “trillion” means 10^{12} .

十亿

shí yì

shrr ee

1,000,000,000 • one billion

一万亿

yī wàn yì

ee wahn ee

1,000,000,000,000 • one trillion

一万零五

yī wàn líng wǔ

ee wahn ling woo

10,005

一亿零一万

yī yì líng yī wàn

ee ee ling ee wahn

100,010,000

兆

zhào

jaow

A context-sensitive

large-number / prefix term

KEEP IN MIND

兆 is used for mega (10^6) in Mainland SI terminology, but can mean a trillion in other number traditions. Do not leave it unexplained in cross-region financial or technical communication. Show the power of ten or use 万亿 for 10^{12} .

Practice A • build and count

Use the earlier pages as a reference. First write the numeral or Mandarin form. Then say it and ask a partner to point to the matching value.

KEEP IN MIND

Answers and model readings: page 63. Keep identifiers and quantities separate: the digits may look the same while the reading is different.

A5. Read 18, 42, 105 and 2,020.

A6. Read 10,005 and 1,000,000.

A7. Fill the gap: ___ 个样品 (two samples).

A8. Read sample code 020 as digits.

A9. What number is 三万五千?

A10. Your partner hears 100,000 when you mean 10,000. Point to both values and read the correct one again.

Decimals: every digit counts

Read the whole-number part, say 点, then read every following digit individually. Keep zeros that appear in the displayed decimal.

零点五

líng diǎn wǔ
líng dyehn woo
0.5

零点零五

líng diǎn líng wǔ
líng dyehn líng woo
0.05

二点零五

èr diǎn líng wǔ
er dyehn líng woo
2.05

十二点五零

shí èr diǎn wǔ líng
shrr er dyehn woo líng
12.50

KEEP IN MIND

After the decimal point, 25 is 二五, not 二十五. For technical read-back, repeat the displayed trailing zero in 12.50. Decimal punctuation can vary internationally; agree on the data format.

TRY & CHECK

Say 0.25, then 0.025. Which is ten times larger? Answer: page 64, B1.

Signs and displayed precision

A negative sign belongs to the value. A subtraction sign connects an operation. Read the sign, decimal and unit together when checking data.

负二点五

fù èr diǎn wǔ

foo er dyehn woo

-2.5

正二

zhèng èr

jung er

Positive two / +2

零点五零

líng diǎn wǔ líng

ling dyehn woo ling

0.50

有效数字

yǒu xiào shù zì

yo shyow shoo dzuh

Significant figures

KEEP IN MIND

0.5 and 0.50 are mathematically equal. As reported measurements, their formatting may communicate different precision. It does not by itself establish uncertainty or instrument accuracy. 0.0050 has two significant figures.

TRY & CHECK

Read -0.05. How many significant figures are shown in 2.50?
Answer: page 64, B2.

Fractions: start underneath

Read the denominator first, then 分之, then the numerator. A mixed number uses 又 between its whole and fractional parts.

二分之一

èr fēn zhī yī

er fun jrr ee

1/2 • one half

四分之三

sì fēn zhī sān

suh fun jrr sahn

3/4 • three quarters

三分之二

sān fēn zhī èr

sahn fun jrr er

2/3 • two thirds

二又二分之一

èr yòu èr fēn zhī yī

er yo er fun jrr ee

2 1/2 • two and one half

一半

yī bàn

ee bahn

Half of something

KEEP IN MIND

The order differs from English “three quarters.” Say “four parts, three.” Use the full fraction reading when the numerator and denominator need to be unambiguous.

TRY & CHECK

Read 3/8 and 1 1/4. Answers: page 64, B3.

Percentages and percentage points

Percent means “per hundred.” Start with 百分之, then say the numerical percentage. Do not add 一 before 百 in this pattern.

百分之二十五

bǎi fēn zhī èr shí wǔ
bye fun jrr er shrr woo
25%

百分之零点五

bǎi fēn zhī líng diǎn wǔ
bye fun jrr ling dyehn woo
0.5%

五个百分点

wǔ ge bǎi fēn diǎn
woo guh bye fun dyehn
Five percentage points

20%



25%



KEEP IN MIND

A change from 20% to 25% is +5 percentage points. Relative to the original 20%, it is a 25% increase: $(25 - 20) \div 20 \times 100\%$. State which comparison you mean.

TRY & CHECK

From 40% to 50%: find the percentage-point change and relative percentage increase. Answer: page 64, B4.

Ratios, multiples and change

A ratio compares quantities in a stated order. “Increase to” gives the final amount; “increase by” gives the added amount. Explicit start and end values prevent confusion.

二比三

èr bǐ sān

er bee sahn

2:3 • two to three

两倍

liǎng bèi

lyahng bay

Two times as much

增加到二十升

zēng jiā dào èr shí shēng

dzung jyah dow er shrr shung

Increase to 20 liters

增加了十升

zēng jiā le shí shēng

dzung jyah luh shrr shung

Increased by 10 liters

KEEP IN MIND

Starting at 10 L, increasing to 20 L doubles the amount: final = 2 × original; increase = 100%. Avoid an isolated “increase two times” when people could interpret it differently. A 2:3 mixture has 5 total parts if both parts use the same basis.

Approximate, round, report

Choose the precision needed for the task. Keep extra digits during a calculation, then round the reported result according to the agreed rule.

大约十升

dà yuē shí shēng
dah yweh* shrr shung
About 10 liters

保留两位小数

bǎo liú liǎng wèi xiǎo shù
baow lyoh lyahng way shyow
shoo
Keep two decimal places

四舍五入

sì shě wǔ rù
suh shuh woo roo
Round off: the familiar
4-down, 5-up rule

约等于

yuē děng yú
yweh* dung yoo*
Approximately equals

KEEP IN MIND

For positive values under the familiar half-up rule, $2.345 \rightarrow 2.35$ to two decimal places. Some software uses ties-to-even, and binary storage can affect apparent ties. Specify the rounding rule when the last digit matters.

TRY & CHECK

Round 12.346 to two decimal places. Report 0.004567 to three significant figures. Answers: page 64, B5.

Practice B • parts and change

Use a calculator for arithmetic if helpful. The language task is to communicate what the result means.

KEEP IN MIND

Answers: page 64. Say or point to the starting value, final value and unit whenever the word “increase” could be misunderstood.

B6. Read 2.05, -0.25 and 12.50.

B7. Read $\frac{3}{4}$ and 2.5%.

B8. A volume rises from 8 L to 10 L. Find the added volume and percentage increase.

B9. A ratio is $A:B = 2:3$. If the total is 10 L, how many liters are A and B? Assume volumes are additive for this exercise.

B10. Does 0.50 equal 0.5 mathematically? Does the extra zero prove measurement accuracy?

Money: establish the currency

Use a currency name or code when the context is not already clear. The dollar sign alone can refer to more than one currency.

美元

měi yuán

may ywen*

US dollars • USD

人民币

rén mín bì

run min bee

Renminbi • CNY; yuan is the unit

十二元五角

shí èr yuán wǔ jiǎo

shrr er ywen* woo jyow

12.50 yuan • explicit units

十二块五

shí èr kuài wǔ

shrr er kweye woo

12.50 • colloquial, currency established

十二点五零美元

shí èr diǎn wǔ líng měi yuán

shrr er dyehn woo ling may ywen*

USD 12.50 • explicit decimal reading

KEEP IN MIND

For CNY, 1 元 = 10 角 = 100 分. 块 is colloquial for 元; 毛 is colloquial for 角. Do not assume 块 identifies the currency. Do not use 角/毛 as the English name "US cent."

A small purchase

Use the familiar shop exchange to practise quantities. These are fictional CNY prices. A clear number and a polite question are enough to start.

这个多少钱？

zhè ge duō shao qián

juh guh dwaw shaow chyeahn

How much is this?

一瓶三块。

yī píng sān kuài

ee ping sahn kweye

Three yuan per bottle.

我要两瓶。

wǒ yào liǎng píng

waw yow lyahng ping

I would like two bottles.

一共六块。

yī gòng liù kuài

ee gohng lyoh kweye

Six yuan altogether.

找您四块。

zhǎo nín sì kuài

jaow neen suh kweye

Here is four yuan in change.

KEEP IN MIND

The customer pays 10 yuan for two bottles at 3 yuan each: $10 - (2 \times 3) = 4$ yuan change. Repeat the total before paying.

Discounts and quotations

Chinese discount wording states the fraction of the original price you pay. For workplace quotations, specify currency, quantity, unit price and what is included.

八折

bā zhé

bah juh

Pay 80% of the original price:
20% off.

单价

dān jià

dahn jyah

Unit price

总价

zǒng jià

dzohng jyah

Total price

含税吗？

hán shuì ma

hahn shway mah

Does it include tax?

包括运费吗？

bāo kuò yùn fèi ma

baow kwaw yoon* fay mah

Does it include shipping?

KEEP IN MIND

Example quote: 4 items × USD 12.50 = USD 50.00 before any stated tax or shipping. Example discount: CNY 100 at 八折 costs CNY 80. These are language examples, not current market prices.

TRY & CHECK

What do you pay on CNY 200 at 九折? Answer: page 65, C1.

Three ways to count

A classifier organizes countable objects. A container tells you how something is packaged. A unit tells you how much is measured. These are related patterns, but they are not interchangeable.

两个样品

liǎng ge yàng pǐn

lyahng guh yahng peen

Two samples • objects

两瓶水

liǎng píng shuǐ

lyahng ping shway

Two bottles of water • containers

两升水

liǎng shēng shuǐ

lyahng shung shway

Two liters of water • measured volume



2 bottles

500 mL total

KEEP IN MIND

Two bottles could contain different total volumes. Ask the size of each bottle. Put the unit directly after the number: 两升, without 个. Classifier choice can change with the meaning and context.

Everyday classifiers

Learn the classifier together with a useful noun. This is easier than memorizing an abstract list. The sound clue belongs to the whole example.

三个人

sān ge rén

sahn guh run

Three people • 个

两张票

liǎng zhāng piào

lyahng jahng pyow

Two tickets • 张

一本书

yī běn shū

ee bun shoo

One book • 本

两杯茶

liǎng bēi chá

lyahng bay chah

Two cups of tea • 杯

三支笔

sān zhī bǐ

sahn jrr bee

Three pens • 支

两件衣服

liǎng jiàn yī fu

lyahng jyehn ee foo

Two items of clothing • 件

KEEP IN MIND

个 is a useful general classifier, but it does not fit every noun naturally. Ask for the usual noun-classifier combination and practise it as one phrase.

Classifiers at work

A different classifier may be appropriate if you mean a portion, a set, or a batch rather than one object.

两台泵

liǎng tái bèng

lyahng teye bung

Two pumps • 台

一套设备

yī tào shè bèi

ee taow shuh bay

One set of equipment • 套

三组数据

sān zǔ shù jù

sahn dzoo shoo jyoo*

Three sets of data • 组

两份报告

liǎng fèn bào gào

lyahng fun baow gow

Two reports / copies • 份

一张图纸

yī zhāng tú zhǐ

ee jahng too jrr

One drawing sheet • 张

两根电线

liǎng gēn diàn xiàn

lyahng gun dyehn shyehn

Two wires • 根

KEEP IN MIND

A sample can be counted as an object, a portion, or a batch. The classifier helps communicate which meaning you intend.

Batches, portions and repetitions

A quantity may count packages or occurrences instead of physical objects. State the unit of counting before comparing totals.

三批样品

sān pī yàng pǐn

sahn pee yahng peen

Three batches of samples

两份样品

liǎng fèn yàng pǐn

lyahng fun yahng peen

Two sample portions

五瓶水

wǔ píng shuǐ

woo ping shway

Five bottles of water

做三次测试

zuò sān cì cè shì

dzwaw sahn tsuh tsuh shrr

Perform three tests / test three times

KEEP IN MIND

三批样品 does not specify how many individual samples are in each batch. 三次 counts occurrences; it does not mean three instruments. For a count of full cycles, define what one cycle includes.

TRY & CHECK

You have 3 batches with 4 samples in each. How many samples? What else is needed to find total liquid volume? Answer: page 65, C2.

Practice C • buy and count

Work with a partner. One person gives a quantity; the other points to the right object, container or unit.

KEEP IN MIND

Answers: page 65. Keep the quantity and its meaning in your read-back: objects, containers, batches, occurrences or measured amount.

- C3. Fill the classifier: 两__泵; 三__数据; 一__图纸.
- C4. Two bottles hold 250 mL each. Find the total volume in mL and L.
- C5. An order has 6 items at USD 12.50 each. Find the total before tax and shipping.
- C6. CNY 100 at 八折: what is the amount paid and the percentage off?
- C7. Why do “two bottles” and “two liters” not mean the same thing?

A number needs its unit

“Twenty-five” alone leaves a question: twenty-five what? Read the value with its unit. International symbols can stay visible while you learn their Mandarin names.

二十五毫升

èr shí wǔ háo shēng

er shrr woo how shung

25 mL

五克

wǔ kè

woo kuh

5 g

两米

liǎng mǐ

lyahng mee

2 m

单位是什么？

dān wèi shì shén me

dahn way shrr shun muh

What is the unit?

KEEP IN MIND

Write a space between value and unit: 25 mL, 5 g, 25 °C. Keep prefix and unit together: mL. Symbols do not take plural endings. Case matters: mW is milliwatt; MW is megawatt. The liter is accepted for use with SI; the SI volume unit is m³.

Length, area and volume

Length is one-dimensional, area is squared, and volume is cubed. Conversion factors must be squared or cubed too.

毫米

háo mǐ

how mee

Millimeter • mm

厘米

lí mǐ

lee mee

Centimeter • cm

平方米

píng fāng mǐ

píng fahng mee

Square meter • m²

立方米

lì fāng mǐ

lee fahng mee

Cubic meter • m³

毫升

háo shēng

how shung

Milliliter • mL

升

shēng

shung

Liter • L

KEEP IN MIND

1 cm = 10 mm; 1 cm² = 100 mm²; 1 cm³ = 1,000 mm³. Also 1 mL = 1 cm³ and 1 L = 1,000 mL = 0.001 m³. A 2 m × 3 m rectangle has area 6 m².

Mass and temperature

Use the name of the measured quantity, not only a familiar everyday word. Mass and force are different physical quantities.

千克

qiān kè

chyehn kuh

Kilogram • kg

克

kè

kuh

Gram • g

毫克

háo kè

how kuh

Milligram • mg

摄氏度

shè shì dù

shuh shrr doo

Degree Celsius • °C

开尔文

kāi ěr wén

keye er wun

Kelvin • K

牛顿

niú dùn

nyoh dwun

Newton • N; force

KEEP IN MIND

1 kg = 1,000 g; 1 g = 1,000 mg. A mass in kg is not a force in N. Temperature 25 °C corresponds to 298.15 K. Write K without a degree sign. Celsius and kelvin intervals have the same size.

Metric and US customary

US customary is not identical to British Imperial. Gallons and tons especially need a qualifier. Distinguish a mass ounce (oz) from a fluid ounce (fl oz).

英寸

yīng cùn
ying tswun
Inch • in

英尺

yīng chǐ
ying chrr
Foot • ft

磅

bàng
bahng
Pound • lb; specify mass or force

美制加仑

měi zhì jiā lún
may jrr jyah lwun
US gallon; specify liquid or dry

KEEP IN MIND

EXACT: 1 in = 25.4 mm; 1 ft = 0.3048 m; 1 lb (avoirdupois mass) = 0.45359237 kg.

VOLUME: 1 US liquid gal $\approx$ 3.78541 L; 1 Imperial gal = 4.54609 L exactly.

MASS: metric tonne = 1,000 kg; US short ton = 2,000 lb; Imperial long ton = 2,240 lb.

TRY & CHECK

Worked: 2 in $\times$ 25.4 mm/in = 50.8 mm. A measured “2 in” may need fewer significant figures in the final report.

Temperature: values and changes

Converting a temperature value requires an offset. Converting a temperature difference does not. Keep these calculations separate.

华氏度

huá shì dù

hwah shrr doo

Degree Fahrenheit • °F

摄氏二十五度

shè shì èr shí wǔ dù

shuh shrr er shrr woo doo

25 °C

温差

wēn chā

wun chah

Temperature difference

77 °F

25 °C

298.15 K

KEEP IN MIND

VALUES: $^{\circ}\text{C} = (^{\circ}\text{F} - 32) \times 5/9$; $^{\circ}\text{F} = ^{\circ}\text{C} \times 9/5 + 32$; $\text{K} = ^{\circ}\text{C} + 273.15$.

EXAMPLE: $77^{\circ}\text{F} \rightarrow (77 - 32) \times 5/9 = 25^{\circ}\text{C}$.

CHANGES: an increase of 10°C is an increase of 10 K or 18 °F. Do not add 32 to a temperature difference.

TRY & CHECK

Convert 68 °F to °C. Convert a 5 °C increase to a °F increase.

Answers: page 65, D1.

Prefixes change the scale

A prefix multiplies a unit by a power of ten. Learn the symbols and say the full unit name when confusion is possible.

微

wēi

way

micro • μ • 10^{-6}

毫

háo

how

milli • m • 10^{-3}

厘

lí

lee

centi • c • 10^{-2}

千

qiān

chyehn

kilo • k • 10^3

兆

zhào

jaow

mega • M • 10^6 in Mainland SI
usage

吉

jí

jee

giga • G • 10^9 in Mainland SI
usage

KEEP IN MIND

Prefix names vary by region. Show the symbol and exponent. 1 mA = 0.001 A; 1 kW = 1,000 W; 1 MW = 1,000,000 W. The symbols m and M differ by 10^9 .

Electrical quantities

The full names below are useful for a first introduction. Short forms such as 伏 and 安 also occur in technical speech.

电压

diàn yā
dyehn yah
Voltage

伏特

fú tè
foo tuh
Volt • V

电流

diàn liú
dyehn lyoh
Electric current

安培

ān péi
ahn pay
Ampere • A

电阻

diàn zǔ
dyehn dzoo
Resistance

欧姆

ōu mǔ
oh moo
Ohm • Ω

KEEP IN MIND

Example values: 1.5 V; 2 A; 10 Ω . In a simple resistive example, $V = I \times R$. State the quantity, value and unit when passing a result to another person.

TRY & CHECK

If $I = 2 \text{ A}$ and $R = 3 \Omega$, what is V for this resistive example? Answer: page 65, D2.

Power is not energy

Power is a rate of energy transfer. Energy accumulates over time. Keep the final 时 in 千瓦时 audible when distinguishing kWh from kW.

功率

gōng lǜ

gohng lyoo*

Power

瓦特

wǎ tè

wah tuh

Watt • W

千瓦

qiān wǎ

chyehn wah

Kilowatt • kW

能量

néng liàng

nung lyahng

Energy

千瓦时

qiān wǎ shí

chyehn wah shrr

Kilowatt-hour • kWh

5 kW

× 4 h

= 20 kWh

KEEP IN MIND

At constant power: $5 \text{ kW} \times 4 \text{ h} = 20 \text{ kWh}$. If power varies, energy is the time integral of power. This simple arithmetic ignores system losses unless explicitly included. $1 \text{ kWh} = 3.6 \text{ MJ}$.

Flow and concentration

“Per” belongs to the unit relationship. Concentration requires a stated basis: amount per volume, mass per volume, mass fraction, or another defined quantity.

流量

liú liàng

lyoh lyahng

Flow rate

每分钟两升

měi fēn zhōng liǎng shēng

may fun johng lyahng shung

2 L/min • two liters per minute

浓度

nóng dù

nohng doo

Concentration

摩尔每升

mó ěr měi shēng

maw er may shung

Moles per liter • mol/L

克每升

kè měi shēng

kuh may shung

Grams per liter • g/L

KEEP IN MIND

At constant flow, $2 \text{ L/min} \times 3 \text{ min} = 6 \text{ L}$. Here, 5 g of solute in 1 L of final solution gives 5 g/L. “1%” alone does not tell you whether the basis is mass/mass, volume/volume, or something else. Prefer explicit units and definitions.

TRY & CHECK

How long does 6 L take at a constant 0.5 L/min? Answer: page 65, D3.

Practice D • measurements

Keep the unit visible throughout each calculation. Then read the result, using the reference pages for Mandarin unit names.

KEEP IN MIND

Answers: page 65. These examples practise units and language. They are not instructions for operating equipment or preparing solutions.

D4. Convert 250 mL to L and 2.5 kg to g.

D5. A constant 3 kW runs for 2 h. How much energy is transferred?

D6. Convert 2 in to mm.

D7. Are 5 mW and 5 MW the same? Give their values in W.

D8. Does “1 gallon” fully specify a volume?

D9. Read 0.25 L in Mandarin.

D10. Convert 2 cm² to mm².

Dates: largest unit first

The usual written order is year, month, day. Read the year as individual digits. Read the month and day as ordinary numbers.

年、月、日

nián yuè rì

nyehŋ yweh* rrr

Year, month, day

二零二六年

èr líng èr liù nián

er ling er lyoh nyehŋ

The year 2026

十月十五日

shí yuè shí wǔ rì

shrr yweh* shrr woo rrr

October 15 • written/formal date

十月十五号

shí yuè shí wǔ hào

shrr yweh* shrr woo how

October 15 • common spoken form

KEEP IN MIND

Full example: 2026年10月15日. In shared data, 2026-10-15 makes the order explicit. Avoid an unexplained 10/11/26. 二月 is February; 两个月 is a duration of two months.

Weekdays and relative dates

Monday through Saturday use 星期 plus one through six. Sunday uses 天 or 日. Today and tomorrow depend on the speaker's local date.

星期一

xīng qī yī
shing chee ee
Monday

星期二

xīng qī èr
shing chee er
Tuesday

星期三

xīng qī sān
shing chee sahn
Wednesday

星期四

xīng qī sì
shing chee suh
Thursday

星期五

xīng qī wǔ
shing chee woo
Friday

星期六

xīng qī liù
shing chee lyoh
Saturday

星期天

xīng qī tiān
shing chee tyehn
Sunday

今天、明天

jīn tiān míng tiān
jeen tyehn ming tyehn
Today, tomorrow

KEEP IN MIND

For an international deadline, replace "tomorrow" with the date and time zone. 星期日 is another standard form for Sunday.

Read a clock

Say the hour, 点, and the minutes. Use 上午 or 下午 with a twelve-hour time. Twenty-four-hour times are useful in schedules.

两点

liǎng diǎn

lyahng dyehn

2:00

两点半

liǎng diǎn bàn

lyahng dyehn bahn

2:30

九点零五分

jiǔ diǎn líng wǔ fēn

lyoh dyehn ling woo fun

9:05

下午两点三十分

xià wǔ liǎng diǎn sān shí fēn

shyah woo lyahng dyehn sahn

shrr fun

2:30 p.m.

十四点三十分

shí sì diǎn sān shí fēn

shrr suh dyehn sahn shrr fun

14:30

KEEP IN MIND

上午 = morning / a.m.; 下午 = afternoon / p.m. Do not assume the time zone. 点 also marks a decimal point, but 2:30 is not the decimal 2.30.

TRY & CHECK

Read 08:05 using a morning phrase. Answer: page 66, E1.

How long does it take?

A clock time tells you when. A duration tells you how long.
Different time units use different grammatical patterns.

两个小时

liǎng ge xiǎo shí

lyahng guh shyow shrr

Two hours

三十分钟

sān shí fēn zhōng

sahn shrr fun johng

Thirty minutes

十五秒

shí wǔ miǎo

shrr woo myow

Fifteen seconds

两个月

liǎng ge yuè

lyahng guh yweh*

Two months

两年

liǎng nián

lyahng nyehn

Two years

KEEP IN MIND

Two o'clock = 两点. Two hours = 两个小时. Do not put 个 before every time unit: 三十分钟, 两年. Decimal duration 1.5 h = 1 h 30 min; 1.30 h = 1 h 18 min. Clock notation 1:30 is a different representation.

TRY & CHECK

Convert 2.25 h into hours and minutes. Answer: page 66, E2.

Make a clear appointment

Agree on date, clock time, time zone and duration. Time-zone abbreviations can be ambiguous; an explicit location and UTC offset for the date help.

几点开始?

jǐ diǎn kāi shǐ

jee dyehn keye shrr

What time does it start?

下午两点半开始。

xià wǔ liǎng diǎn bàn kāi shǐ

shyah woo lyahng dyehn bahn

keye shrr

It starts at 2:30 p.m.

需要多长时间?

xū yào duō cháng shí jiān

shyoo* yow dwaw chahng shrr

jyehn

How long will it take?

需要三十分钟。

xū yào sān shí fēn zhōng

shyoo* yow sahn shrr fun johng

It will take thirty minutes.

KEEP IN MIND

Example record: 2026-10-15, 14:30, UTC-07:00; duration 30 min.

This fixed-offset example ends at 15:00 on that date. Check actual daylight-saving rules when arranging a real meeting.

Practice E • dates and time

Use full dates and units. Do not silently turn a decimal into a clock reading.

KEEP IN MIND

Answers: page 66. Confirm the full appointment in writing after discussing it.

E3. Read the year 2027 and the date March 2.

E4. Explain 二月 versus 两个月.

E5. A meeting begins at 14:30 and lasts 45 min. When does it finish?

E6. How many minutes are in 1.30 h?

E7. Read “two o’clock” and “two hours.”

E8. What is missing from “Let’s meet tomorrow at two”?

Say a calculation

Use the operation word between the values, then 等于 before the result. Start with arithmetic you can check at a glance.

二加三等于五。

èr jiā sān děng yú wǔ

er jyah sahn dung yoo* woo

$2 + 3 = 5$

五减二等于三。

wǔ jiǎn èr děng yú sān

woo jyehn er dung yoo* sahn

$5 - 2 = 3$

二乘以三等于六。

èr chéng yǐ sān děng yú liù

er chung ee sahn dung yoo* lyoh

$2 \times 3 = 6$

六除以二等于三。

liù chú yǐ èr děng yú sān

lyoh choo ee er dung yoo* sahn

$6 \div 2 = 3$

KEEP IN MIND

加 = add; 减 = subtract; 乘以 = multiplied by; 除以 = divided by;
等于 = equals. Keep signs and order visible when reading a longer expression.

Order and parentheses

Use 除以 consistently: six divided by two. Bare 除 can appear in a reversed construction; beginners should keep 除以.

括号

kuò hào

kwaw how

Parentheses / brackets

先加，再乘。

xiān jiā zài chéng

shyehn jyah dzeye chung

Add first, then multiply.

二加三的和乘以四。

èr jiā sān de hé chéng yǐ sì

er jyah sahn duh huh chung ee suh

Multiply the sum of two and three by four.

KEEP IN MIND

$(2 + 3) \times 4 = 20$, while $2 + 3 \times 4 = 14$. For a complex expression, point to the grouping or agree on a convention for reading opening and closing brackets. Do not rely on a pause to specify grouping.

TRY & CHECK

Read $12 \div 3 = 4$. Evaluate $(8 - 2) \div 3$. Answers: page 66, F1.

Compare and specify a range

Make the boundary explicit: is it included? Distinguish a specification tolerance from a measurement uncertainty.

大于

dà yú

dah yoo*

Greater than • >

小于

xiǎo yú

shyow yoo*

Less than • <

大于或等于

dà yú huò děng yú

dah yoo* hwaw dung yoo*

Greater than or equal to • $\geq$

小于或等于

xiǎo yú huò děng yú

shyow yoo* hwaw dung yoo*

Less than or equal to • $\leq$

正负零点一

zhèng fù líng diǎn yī

jung foo ling dyehn ee

Plus or minus 0.1 • ± 0.1

KEEP IN MIND

For a specified allowable value 5.0 ± 0.1 mm, limits are 4.9 and 5.1 mm if the tolerance is inclusive. This does not state the uncertainty of the measurement used to test it. Ask what $\pm$ means in each document.

Powers and roots

A negative exponent means a reciprocal, not a negative value.
Keep parentheses and signs visible.

三的平方

sān de píng fāng
sahn duh ping fahng
 3^2 • three squared

二的立方

èr de lì fāng
er duh lee fahng
 2^3 • two cubed

十的负三次方

shí de fù sān cì fāng
shrr duh foo sahn tsuh fahng
 $10^{-3} = 0.001$

根号九

gēn hào jiǔ
gun how jyoh
 $\sqrt{9} = 3$ • principal square root

KEEP IN MIND

Use “base 的 exponent 次方.” 10^{-3} is positive; -10^3 is negative. In $x^2 = 9$, x can be $+3$ or -3 , while the symbol $\sqrt{9}$ denotes $+3$.

TRY & CHECK

Evaluate 2^3 and 10^{-2} . Answer: page 66, F2.

Scientific notation

In normalized scientific notation, the coefficient's absolute value is at least 1 and less than 10, except for zero.

二点五乘以十的三次方

èr diǎn wǔ chéng yǐ shí de sān cì fāng

er dyehn woo chung ee shrr duh sahn tsuh fahng

$$2.5 \times 10^3 = 2,500$$

二点五乘以十的负三次方

èr diǎn wǔ chéng yǐ shí de fù sān cì fāng

er dyehn woo chung ee shrr duh foo sahn tsuh fahng

$$2.5 \times 10^{-3} = 0.0025$$

科学记数法

kē xué jì shù fǎ

kuh shweh* jee shoo fah

Scientific notation

KEEP IN MIND

Keep the sign of the coefficient separate from the sign of the exponent. -2.5×10^{-3} is negative 0.0025. Read the exponent in full and have the listener write it down.

TRY & CHECK

Write 0.00072 in normalized scientific notation. Answer: page 66, F3.

Engineering notation and E

Engineering notation uses powers of ten whose exponents are multiples of three. It connects naturally to many SI prefixes.

指数

zhǐ shù

jrr shoo

Exponent

系数

xì shù

shee shoo

Coefficient

数量级

shù liàng jí

shoo lyahng jee

Order of magnitude

0.00047 A

470×10^{-6} A

470 μ A

KEEP IN MIND

SAME VALUE: $0.00047 \text{ A} = 4.7 \times 10^{-4} \text{ A} = 470 \times 10^{-6} \text{ A} = 470 \mu\text{A}$.

E NOTATION: $2.5\text{e-}3$ means 2.5×10^{-3} in a numerical field that supports this syntax. E/e here is an exponent marker, not Euler's number. Type an ASCII minus (-) in code.

Read E notation as "times ten to the power..." rather than assuming everyone interprets a spoken "E" the same way.

Numbers in a data file

A displayed value, a stored value, and an identifier are different things. Confirm the field type before importing or changing data.

整数

zhěng shù

jung shoo

Integer

浮点数

fú diǎn shù

foo dyehn shoo

Floating-point number

小数点

xiǎo shù diǎn

shyow shoo dyehn

Decimal point

字符串

zì fú chuàn

dzuh foo chwahn

Text string

KEEP IN MIND

A sample ID “0025” should remain text when its leading zeros matter. A numeric field may turn it into 25. Practice naming the field type: integer, floating-point number or text string. Keep the original value visible while you confirm its meaning. Optional Chinese and English terminology references: [S8] and [S9].

Storage, rounding and bytes

Many decimal fractions cannot be stored exactly as finite binary floating-point values. This is a representation issue, not necessarily an error in the formula.

舍入误差

shě rù wù chā

shuh roo woo chah

Rounding error

比特

bǐ tè

bee tuh

Bit • b

字节

zì jié

dzuh jyeh

Byte • B

KEEP IN MIND

Use 舍入误差 to name rounding error when discussing a computed result. A rounded display does not tell you the full stored value. For optional terminology practice, compare the Chinese heading 舍入误差 with “Round-Off Error” in [S6] and [S7]. You do not need to study the code examples.

In current byte-based computing, 1 B = 8 bits. 1 kB = 1,000 B; 1 KiB = 1,024 B. 1 MB = 1,000,000 B; 1 MiB = 1,048,576 B. Do not silently equate MB and MiB.

Functions and logarithms

Use these as recognition words for familiar concepts. Keep variables visible and agree on how letter names will be spoken.

函数

hán shù

hahn shoo

Function

变量

biàn liàng

byehn lyahng

Variable

对数

duì shù

dway shoo

Logarithm

自然对数

zì rán duì shù

dzuh rahn dway shoo

Natural logarithm

以十为底的对数

yǐ shí wéi dǐ de duì shù

ee shrr way dee duh dway shoo

Logarithm to base ten

KEEP IN MIND

Example: $f(x) = 2x + 1$. If $x = 3$, $f(x) = 7$. For real logarithms, state the base and require a positive argument. $\log_{10}(1,000) = 3$. In uses the base e. A bare “log” may mean different bases in different software.

Rates and accumulated amounts

A derivative describes local rate of change. A definite integral can describe an accumulated quantity over an interval. These examples connect the language to units you already know.

导数

dǎo shù

dow shoo

Derivative

变化率

biàn huà lǜ

byehn hwah lyoo*

Rate of change

积分

jī fēn

jee fun

Integral

对时间求导

duì shí jiān qiú dǎo

dway shrr jyehn chyoh dow

Differentiate with respect to time



KEEP IN MIND

If $V(t)$ is volume in L and t is time in min, dV/dt has units L/min. The integral of a flow rate over time gives a volume change. For $q(t) = 2$ L/min over 3 min, the change is 6 L. State the starting quantity if you want the final total.

Vectors and matrices

Identify the row and column order. A matrix is not just an unlabeled block of numbers; orientation matters.

向量

xiàng liàng

shyahng lyahng

Vector

矩阵

jǔ zhèn

jyoo* jun

Matrix

行

háng

hahng

Row • pronounced háng here

列

liè

lyeh

Column

两行三列

liǎng háng sān liè

lyahng hahng sahn lyeh

Two rows and three columns

1

2

3

2 rows

4

5

6

3 columns

KEEP IN MIND

A 2×3 matrix has two rows and three columns. If A is 2×3 and B is 3×1 , AB is 2×1 . Matrix multiplication is not element-by-element multiplication; specify which operation the software performs.

Describe a dataset

Say which data are included and how the summary was computed. A mean alone does not describe spread.

平均值

píng jūn zhí

píng jyoon* jrr

Mean

标准差

biāo zhǔn chā

byow jwun chah

Standard deviation

最小值

zuì xiǎo zhí

dzway shyow jrr

Minimum

最大值

zuì dà zhí

dzway dah jrr

Maximum

范围

fàn wéi

fahn way

Range / interval of values

KEEP IN MIND

For data 2, 4, 6: mean = 4; minimum = 2; maximum = 6; span (max – min) = 4. Sample standard deviation = 2; population standard deviation = $\sqrt{8/3} \approx 1.633$. State which definition is used. “Range” can mean an interval or its width; give endpoints when needed.

Accuracy, precision, uncertainty

These terms answer different questions. A tolerance is an allowed limit; it is not automatically the uncertainty of a measured result.

准确度

zhǔn què dù

jwun chweh* doo

Accuracy

精密度

jīng mì dù

jing mee doo

Precision

误差

wù chā

woo chah

Error

测量不确定度

cè liáng bù què dìng dù

tsuh lyahng boo chweh* ding doo

Measurement uncertainty

公差

gōng chā

gohng chah

Tolerance

KEEP IN MIND

Accuracy concerns agreement with the true value; precision concerns agreement among repeated results under stated conditions. Error is a measured value minus a reference value. Uncertainty characterizes the dispersion of values attributed to the quantity. For “ 5.00 ± 0.02 ,” state the unit, what $\pm$ represents, and any coverage factor or probability used.

Pause, clarify, confirm

A successful exchange ends with the same number in both people's minds. These phrases are useful even when the rest of the discussion is in English.

请再说一遍。

qǐng zài shuō yī biàn

ching dzeye shwaw ee byehn

Please say it again.

请说慢一点。

qǐng shuō màn yī diǎn

ching shwaw mahn ee dyehn

Please speak a little slower.

单位是什么？

dān wèi shì shén me

dahn way shrr shun muh

What is the unit?

是两升，还是二十升？

shì liǎng shēng hái shì èr shí shēng

shrr lyahng shung high shrr er shrr shung

Is it two liters or twenty liters?

KEEP IN MIND

Read back the sign, decimal digits, exponent and unit. Point to the written value. A friendly clarification is better than an unnoticed factor-of-ten mismatch.

A clear handoff

Two coworkers check a fictional sample record. The goal is to confirm the quantity, not to speak a long sentence from memory.

有几瓶？

yǒu jǐ píng

yo jee ping

A: How many bottles are there?

两瓶。

liǎng píng

lyahng ping

B: Two bottles.

每瓶多少毫升？

měi píng duō shao háo

shēng

may ping dwaw shaow how shung

A: How many milliliters per bottle?

每瓶二百五十毫升。

měi píng èr bǎi wǔ shí háo

shēng

may ping er bye woo shrr how shung

B: 250 milliliters per bottle.

一共五百毫升，对吗？

yī gòng wǔ bǎi háo shēng

duì ma

ee gohng woo bye how shung dway mah

A: 500 milliliters altogether, correct?

对。

duì

dway

B: Correct.

KEEP IN MIND

Swap roles. Deliberately change one number in the read-back, then correct it. The record is a language exercise, not a real sample specification.

Practice F • one complete record

Work from this fictional record. Speaker A reads a field; speaker B writes it and checks it. Then switch roles.

KEEP IN MIND

SAMPLE ID: 02

BOTTLES: 2

VOLUME: 0.25 L per bottle

TEMPERATURE: 25 °C

MEETING: 2026-10-15 at 14:30, UTC-07:00

DURATION: 30 min

F4. Read the ID as digits and calculate total volume.

F5. Read 0.25 L and 25 °C.

F6. Your partner writes 2.5 L per bottle. Identify the mismatch.

F7. When does the meeting end?

F8. Write 0.25 L in scientific notation.

Answers: page 66.

ANSWERS

Answers A • building numbers

Other standard readings may also be acceptable. These models keep every needed place word audible.

十四、三十、四十七

shí sì sān shí sì shí qī

shrr suh sahn shrr suh shrr chee

A1: 14; 30; 47

三千四百零六; 一千零一十

sān qiān sì bǎi líng liù yī qiān
líng yī shí

sahn chyehn suh bye ling lyoh
ee chyehn ling ee shrr

A2: 3,406; 1,010

十八、四十二、一百零五

shí bā sì shí èr yī bǎi líng wǔ

shrr bah suh shrr er ee bye ling

woo

A5: 18; 42; 105

两千零二十

liǎng qiān líng èr shí

lyahng chyehn ling er shrr

A5: 2,020

CHECK YOUR ANSWERS

A3: Preserve 02; leading zeros can be part of an identifier.

A4: 250,000 = 25 万.

A6: 10,005 is the page 14 model; 1,000,000 is the page 12 model.

A7: 两 (liǎng), as on page 10.

A8: 零二零 (líng èr líng; clue: ling er ling).

A9: 三万五千 = 35,000.

A10: 一万 = 10,000; 十万 = 100,000. See page 12.

ANSWERS

Answers B • parts and change

Check the value first, then its meaning. Relative change uses the original value as the denominator.

三分之八

sān fēn zhī bā

sahn fun jrr bah

Contrast only: 8/3, not 3/8

八分之三

bā fēn zhī sān

bah fun jrr sahn

B3: 3/8

一又四分之一

yī yòu sì fēn zhī yī

ee yo suh fun jrr ee

B3: 1 1/4

百分之二点五

bǎi fēn zhī èr diǎn wǔ

bye fun jrr er dyehn woo

B7: 2.5%

CHECK YOUR ANSWERS

B1: 0.25 is ten times 0.025. Read every decimal digit (page 16).

B2: -0.05 = 负零点零五 (fù líng diǎn líng wǔ; foo ling dyehn ling woo).

2.50 has 3 significant figures.

B4: +10 percentage points; $(50 - 40)/40 = 25\%$ increase.

B5: 12.35; 0.00457.

B6: Use page 16; add 负 before 0.25.

B7: 3/4 uses the page 18 model.

B8: +2 L; 25% increase. B9: A = 4 L, B = 6 L.

B10: Equal mathematically; the zero does not prove accuracy.

ANSWERS

Answers C & D • quantities

Use exact conversion factors in the calculation, then report an appropriate number of significant figures for measured inputs.

台、组、张

tái zǔ zhāng

teye dzoo jahng

C3: pumps; datasets; drawing sheets

零点二五升

líng diǎn èr wǔ shēng

ling dyehn er woo shung

D9: 0.25 L

CHECK YOUR ANSWERS

C1: CNY 180 (pay 90%).

C2: 12 samples; you also need the volume of each sample.

C4: 500 mL = 0.5 L. C5: USD 75.00.

C6: Pay CNY 80; 20% off.

C7: A bottle is a container, not a fixed volume.

D1: 20 °C; a rise of 9 °F. D2: 6 V.

D3: $6 \text{ L} \div 0.5 \text{ L/min} = 12 \text{ min}$.

D4: 0.25 L; 2,500 g. D5: 6 kWh.

D6: 50.8 mm before rounding to input precision.

D7: 0.005 W versus 5,000,000 W; different by 10^9 .

D8: No. Specify US liquid, US dry or Imperial gallon.

D10: $2 \times 100 = 200 \text{ mm}^2$.

ANSWERS

Answers E & F • time and data

References point to the full speaking pattern when the answer is already modeled in the booklet.

上午八点零五分

shàng wǔ bā diǎn líng wǔ fēn

shahng woo bah dyehn ling woo fun

E1: 08:05 in the morning

二零二七年三月二日

èr líng èr qī nián sān yuè èr rì

er ling er chee nyehn sahn yweh* er rrr

E3: March 2, 2027

十二除以三等于四。

shí èr chú yǐ sān děng yú sì

shrr er choo ee sahn dung yoo* suh

F1: $12 \div 3 = 4$

CHECK YOUR ANSWERS

E2: 2 h 15 min. E4: February versus two months.

E5: 15:15. E6: 78 min. E7: See pages 43-44.

E8: Date, a.m./p.m., time zone and possibly duration.

F1: $(8 - 2) \div 3 = 2$. F2: 8; 0.01.

F3: 7.2×10^{-4} .

F4: 零二 (page 11); total 0.50 L.

F5: Use page 65's volume phrase and page 35's temperature phrase.

F6: 2.5 is ten times 0.25; the decimal place is wrong.

F7: 15:00, same date and offset. F8: 2.5×10^{-1} L.

REFERENCE

Quick reference • number patterns

Keep this page open while reading a new value. Units and context still matter.

十、百、千

shí bǎi qiān
shrr bye chyehn
10; 100; 1,000

万、亿

wàn yì
wahn ee
10,000; 100,000,000

点、负

diǎn fù
dyehn foo
Decimal point; negative

分之

fēn zhī
fun jrr
Denominator + 分之 +
numerator

百分之

bǎi fēn zhī
bye fun jrr
Start a percentage

第

dì
dee
Start an ordinal

KEEP IN MIND

WHOLE NUMBER: largest place first.

DECIMAL: digits individually after 点.

CODE / YEAR: digits individually.

QUANTITY: number + classifier/unit + noun as needed.

CHECK: sign + value + exponent + unit.

REFERENCE

Quick reference • unit names

Full names make a first read-back clearer. Keep the international symbol beside the value.

米、毫米

mǐ háo mǐ

mee how mee

m; mm

克、千克

kè qiān kè

kuh chyehn kuh

g; kg

升、毫升

shēng háo shēng

shung how shung

L; mL

秒、分钟

miǎo fēn zhōng

myow fun johng

s; min

伏特、安培

fú tè ān péi

foo tuh ahn pay

V; A

千瓦、千瓦时

qiān wǎ qiān wǎ shí

chyehn wah chyehn wah shrr

kW; kWh

帕斯卡

pà sī kǎ

pah suh kah

Pascal • Pa; pressure

摩尔

mó ěr

maw er

Mole • mol; amount of substance

KEEP IN MIND

Pressure: 1 kPa = 1,000 Pa. For psi, specify pounds-force per square inch; 1 psi $\approx$ 6.89476 kPa. Compound units: 每 (měi; may) means "per."

Glossary • A to F

English-to-Mandarin finder. The page number leads to a worked example or fuller explanation.

准确度

zhǔn què dù

jwun chweh* doo

Accuracy • 59

平均值

píng jūn zhí

ping jyoon* jrr

Average / mean • 58

字节

zì jié

dzuh jyeh

Byte • 54

系数

xì shù

shee shoo

Coefficient • 52

浓度

nóng dù

nohng doo

Concentration • 39

小数点

xiǎo shù diǎn

shyow shoo dyehn

Decimal point • 16, 53

导数

dǎo shù

dow shoo

Derivative • 56

除以

chú yǐ

choo ee

Divided by • 47-48

流量

liú liàng

lyoh lyahng

Flow rate • 39

Glossary • I to R

Use the international symbol as a shared anchor when a technical term is new to either speaker.

整数

zhěng shù

jung shoo

Integer • 53

积分

jī fēn

jee fun

Integral • 56

对数

duì shù

dway shoo

Logarithm • 55

矩阵

jǔ zhèn

jyoo* jun

Matrix • 57

负

fù

foo

Negative • 17

百分之

bǎi fēn zhī

bye fun jrr

Percent pattern • 19

功率

gōng lǜ

gohng lyoo*

Power • 38

精密度

jīng mì dù

jing mee doo

Precision • 59

舍入误差

shě rù wù chā

shuh roo woo chah

Rounding error • 54

Glossary • S to V

A small set of clear words can support a useful technical conversation. Read back the complete value, not only the unfamiliar term.

样品

yàng pǐn

yahng peen

Sample • 26-29

科学记数法

kē xué jì shù fǎ

kuh shweh* jee shoo fah

Scientific notation • 51

有效数字

yǒu xiào shù zì

yo shyow shoo dzuh

Significant figures • 17, 21

标准差

biāo zhǔn chā

byow jwun chah

Standard deviation • 58

公差

gōng chā

gohng chah

Tolerance • 49, 59

测量不确定度

cè liáng bù què dìng dù

tsuh lyahng boo chweh* ding
doo

Uncertainty (measurement) •
59

单位

dān wèi

dahn way

Unit • 31

向量

xiàng liàng

shyahng lyahng

Vector • 57

电压

diàn yā

dyehn yah

Voltage • 37

Find it by the task

KEEP IN MIND

Answers: 63-66. Quick references: 67-68. Glossary: 69-71. Online sources: 73-74. Personal practice: 75.

READ A NUMBER

Basic counting 6-9; two 10; IDs 11; large values 12-14; decimals 16; signs 17; fractions 18.

BUY OR COUNT

Currency 23; purchase 24; discounts 25; classifiers 26-29; purchasing practice 30.

REPORT A VALUE

Unit style 31; dimensions 32; mass 33; conversions 34-35; prefixes 36; electricity 37-38; flow 39.

ARRANGE A TIME

Dates 41; weekdays 42; clocks 43; durations 44; appointments 45.

EXPLAIN A RESULT

Arithmetic 47-48; limits 49; powers 50; notation 51-52; computing 53-54; higher math 55-57; data 58-59.

CHECK UNDERSTANDING

Clarification 60; dialogue 61; record practice 62.

SOURCES

Sources • language and terms

Verified links for further reading. Click a title or copy the printed URL. No audio is implied. Checked October 15, 2026.

S1 • Mandarin numbers

Mango Languages • Grace Zhang

<https://www.mangolanguages.com/resources/learn/grammar/mandarin-chinese/how-to-express-numbers-in-mandarin-chinese>

S2 • Measure words

Mango Languages

<https://www.mangolanguages.com/resources/learn/grammar/mandarin-chinese/how-do-measure-words-work-in-mandarin-chinese>

S3 • Dates and calendar

Mango Languages

<https://www.mangolanguages.com/resources/learn/grammar/mandarin-chinese/how-to-tell-time-in-mandarin-chinese-days-weeks-months-and-years>

S4 • Clock time

Mango Languages

<https://www.mangolanguages.com/resources/learn/grammar/mandarin-chinese/how-to-tell-time-using-the-clock-in-mandarin-chinese>

S5 • English–Chinese mathematics glossary

Hong Kong Education Bureau • 2020

<https://www.edb.gov.hk/attachment/tc/curriculum-development/kla/ma/res/Glossary20200708.pdf>

S5 is an English–Chinese glossary using traditional characters and regional variants. This booklet uses simplified characters. Use it to look up a term, not as required reading.

SOURCES

Sources • Chinese technical terms

Verified links for further reading. Click a title or copy the printed URL. No audio is implied. Checked October 15, 2026.

S6 • Floating-point terms / Chinese

MathWorks • Chinese companion to S7

https://ww2.mathworks.cn/help/matlab/matlab_prog/floating-point-numbers.html

S7 • Floating-point terms / English

MathWorks • English companion to S6

https://www.mathworks.com/help/matlab/matlab_prog/floating-point-numbers.html

S8 • Numeric types / Chinese

MathWorks • Chinese companion to S9

<https://ww2.mathworks.cn/help/matlab/numeric-types.html>

S9 • Numeric types / English

MathWorks • English companion to S8

<https://www.mathworks.com/help/matlab/numeric-types.html>

OPTIONAL WORD LOOKUP

Open the Chinese and English companion pages together. Match 浮点数 with floating-point number, 整数 with integer, and 舍入误差 with round-off error. Read the headings and definitions; no programming lesson is required.

Your own numbers at work

Choose values that are safe to share. Keep private company data out of a public learning exercise.

A number I use often:

Its meaning and unit:

My Mandarin phrase and pinyin:

My CSL sound clue:

A number it could be confused with:

How I will ask someone to check it:

CSL

Say it. Show it. Check it.

A number is most useful when its meaning is shared.

多少?

duō shao

dwaw shaow

How much / how many?

什么单位?

shén me dān wèi

shun muh dahn way

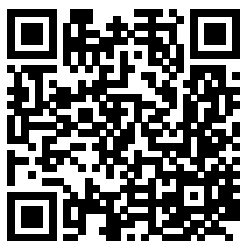
What unit?

对吗?

duì ma

dway mah

Is that correct?



Practice with the CSL Numbers Lab

Scan for the companion practice lab.

[secondlanguageproject.org
/csl/numbers/complete/](https://secondlanguageproject.org/csl/numbers/complete/)