Digits

0 (zero); 1 (one); 2 (two); 3 (three); 4 (four); 5 (five); 6 (six); 7 (seven); 8 (eight); 9 (nine)
are the ten **digits** /ˈdɪdʒɪt/

Integers

The ten digits are used to write **integers** /ˈɪn.tɪ.dʒəʳ/ or **whole** numbers. /həʊl/
The number 56 is a **two-digit** number.
247 (two hundred and forty-seven) is a three-digit number.

Except 0, 1 is the **first** (1st) integer, 2 is the **second** (2nd), 3 is the **third** (3rd), 4 is the **fourth** (4th), 5 is the **fifth** (5th), 6 is the **sixth** (6th), 7 is the **seventh** (7th), 8 is the **eighth** (8th), 9 is the **ninth** (9th) /naɪntθ/

After nine, the next integers are ten (10), eleven (11), twelve (12), thirteen (13), fourteen (14), fifteen (15), sixteen (16), seventeen (17), eighteen (18), nineteen (19) and twenty (20).
Twelve is the **twelfth** integer (12th), nineteen is the **nineteenth** integer (19th) and twenty is the **twentieth** (20th).

Counting ten by ten leads to the list: 30 (**thirty**) is the **thirtieth** (30th) integer, 40 (**forty**) is the fortieth (40th), 50 (**fifty**) is the fiftieth (50th), 60 (**sixty**) is the sixtieth (60th), 70 (**seventy**) is the seventieth (70th), 80 (**eighty**) is the eightieth (80th), 90 (**ninety**) is the ninetieth (90th) and 100 (**a hundred**) is the hundredth (100th).

The following are some examples of integers:
twenty-one (21) is the twenty-first (21st), thirty-two (32) is the thirty-second (32nd),
forty-three (43) is the forty-third (43rd), fifty-four (54) is the fifty-fourth (54th) ...
247 is the **two hundred and forty-seventh** integer.
More than one hundred is tricky : Three **hundred** sheeps are feeding in this field. – **Hundreds** of sheeps ...

Even and odd numbers

0; 2; 4; 6; 8; 10; 12; 14... are **even** numbers.
1; 3; 5; 7; 9; 11; 13; 15... are **odd** numbers.

Exercises

1) *Write in figures the following numbers (example: fifty-seven is 57) :*

a) forty-six	*b) two hundred and ten*	*c) seventy-one*
d) one hundred and thirty-four	*e) seven hundred and nine*	*f) eighteen*
g) five hundred	*h) four hundred and thirty-two*	*i) sixty-three*

2) Write in words (be very careful with the spelling):

a) 40
b) 113
c) 209
d) 846
e) 714
f) 999
g) 212

Vocabulary: (two-) digit – even – hundred(s) – integer – number – odd – whole

3) The three following sentences provide a description of the whole number 63:

63 (sixty-three) is a two-digit number
63 is an odd number
63 is the sixty-third (63^{rd}) integer

Write a similar description for the following numbers:

a) 78

b) 13

c) 29

d) 102

e) 215

f) 818

g) 30

<u>Thousand – Million(s) – Billion</u>

In English, « 1 000 » is written **1,000** and is read **one thousand**.
« 1 320 » is written **1,320** and is read : one thousand three hundred and twenty.
« 12 740 » is written **12,740** and is read : twelve thousand seven hundred and forty.
«123 456» is written **123,456** and is read: one hundred and twenty-three thousand four hundred and fifty-six.
« 1 000 000 » is written **1,000,000** and is read : **one million**.
« 2 300 500 » is written **2,300,500** and is read: two million three hundred thousand five hundred.
« 1 000 000 000 » is written **1,000,000,000** and is read : **one billion**.

In English, the symbol **,** is called a **comma**. /ˈkɒm.ə/

<u>Exercises</u>

4) *Write in figures the following numbers:*

a) one thousand nine hundred and eighty-four
b) two thousand and one
c) one million seven hundred
d) thirty-two thousand five hundred and twenty
e) two hundred and fifty thousand three hundred and seventy-two

5) The number written «6 500» in French, is written **6,500** *in English and is read six thousand five hundred.*
Write in a similar way the English for the following numbers:

a) «7 340» *b) «80 000»* *c) «1 300 »*
d) «430 000» *e) «6 570 321»*

<u>Vocabulary</u>: billion – comma – million – thousand

6) **1,354** *(one thousand three hundred and fifty-four) is the one thousand three hundred and fifty-fourth integer, and is a four-digit number.*

9,000 *(nine thousand) is the nine thousandth integer, and is a four-digit number.*

What about the following numbers?

a) **2,520**

b) **3,000**

c) **53,731**

d) **402,310**

e) **1,535,200**

7) **23,436** *is read twenty-three thousand four hundred and thirty-six .*

It is a 5-digit integer with : 6 ***units****, 3* ***tens****, 4* ***hundreds****, 3* ***thousands****, and 2* ***ten-thousands****.*

Write in a similar way:

a) **687**

b) **1,380**

c) **35,179**

e) **18**

8) In the number **8,300** *, the figure 8* ***stands for*** *8 thousands. What does the figure 8 stand for in:*

a) **3,800**

b) **38**

c) **380**

e) **82,531**

Decimal numbers

In Mathematics, **0** is read **zero** , or **nought** /nɔ:t/

The number written « 2,5 » in French, is written **2.5** in English and is read : two point five.

« 2,031 » is written **2.031** (two point zero three one).

« 3,14 » is written **3.14** (three point one four).

« 0,01 » is written **0.01** (zero point zero one), or **.01** (point zero one).

« 0,001 » is written **0.001** (zero point double zero one), or **.001** (point double zero one).

In English, the symbol **.** is called a **decimal point**.

9.15 (nine point one five) is a **2-decimal** number. The digit 1 set at the first **decimal place** to the right of the decimal point figures one tenth, the digit 5 set at the second decimal place to the right of the point figures 5 hundredth. The next decimal place would figure the thousandth, etc...

t = **0.0025** s reads « ***t*** equals zero point double zero two five seconds » (or « ***t*** is equal to ... »)

x' = **3.048** m reads « ***x*** **prime** equals three point zero four eight metres » (or «... is equal to ...»)

y'' = **1.6** km reads « ***y*** **double prime** is equal to one point six kilometres » (or «...equals...»)

Exercises

9) *Write in figures:*

a) three hundred and ninety-one point five seven

b) two hundred and eighteen point seven six one

c) fifty point three double one

d) zero point zero one four

e) point double zero seven

Vocabulary: decimal place (d. p.) – decimal point – nought – (double) prime – to stand for – tens – unit – zero

10) « **7.35** *(seven point three five) is a 2-decimal number.*
There are two decimal places after the decimal point. »

Write in a similar way a description of the following:

a) **4.3**

b) **8.05**

c) **31.701**

d) **0.33** *(2 answers)*

e) **0.667** *(2 options)*

Rounding numbers – Truncating numbers

If only the first few decimal places of a number are known, this number is approximately known.
The symbol $\approx$ is used in mathematics.
For example, $\frac{14}{13} \approx 1.076923\ldots$ reads « fourteen thirteenths are **approximately** equal to **1.076923** » .

From one approximate value, others can be deduced, to the less accurate : for instance, « x is approximately equal to **1.077** ($x \approx 1.077$) to three places of decimal (or to 3-decimal places, or to 3 d.p.) », and we deduce that $x \approx 1.07$ to 2 d.p., that is less accurate.
Similarly, the same number x approximately equals **1.0769** to 4 d.p.

Rounding is the process of replacing a number by the nearest number with a certain amount of decimal places, or **significant figures**.
A common rule for rounding : if the first digit dropped is 5 or more, the preceding figure is increased by 1, while if the first digit dropped is less than 5, the preceding digit remains unchanged.
The English may use another way of resolving ties : choose the number with an even last figure.
For instance 1.575 would be rounded to 1.58, whereas 1.565 would be rounded to 1.56

A **truncation** /trʌŋˈkeɪ.ʃᵊn/ is the process of dropping trailing digits from a number.
For example 1.578 is truncated to 1.57 to three digits.
π equals **3** **to the nearest** unit, and this is a truncation.

Exercises

11) How w*ould you read the following expressions :*

a) $x = 305.305$ m
b) $\pi \approx 3.1416$
c) $t' = 0.001$ s
d) $z'' = 2.07$ km

12) Round ...

a) **624** *to the nearest ten*
b) **8,248** *to the nearest hundred*
c) **1,731** *to the nearest thousand*
d) π *to two decimal places*
e) one nautical mile : **1** n.m = **1,851.85** m *to the nearest metre*
f) ten feet : **10** ft = **3.048** m *to the nearest metre*
g) **7.406** *to the* nearest whole number

Vocabulary: approximate (-ly) – figure – to the nearest ... – to round ... to ... – significant – to truncate to ... – truncation