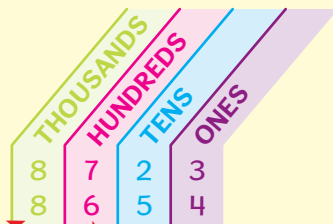# Putting whole numbers in order

To **put whole numbers in order:**
Look at the digits in the same place or column.
Start at the left.

Example   Which is bigger 8723 or 8654?

	THOUSANDS	HUNDREDS	TENS	ONES
	8	7	2	3
	8	6	5	4

Look here first   **Look here next**

The thousands digits are both **8**.
The hundreds digits are **7** and **6**.
700 is bigger than 600.
8723 is bigger than 8654.

<   means 'is smaller than'
>   means 'is bigger than'

8723 > 8654

Discussion

In 1968 the first
human walked on the moon.
In 1978 the first test tube baby was born.

Which took place first?

Activity

1   Which is bigger?
   a   650 m or 560 m   **b**   5102 kg or 5012 kg
   c   16 961 m or 19 691 m   **d** $152 603 or $153 203
   e   654 000 L or 564 000 L   **f**   3 945 023 g or 3 945 032 g
   g   5 652 642 ml or 5 625 962 ml

2   Put these numbers in order from biggest to smallest.
   a   1297,   1279,   1379,   1973
   b   84 364,   84 921,   86 034,   84 306
   c   458 321,   4 580 321,   4 536 821,   4 563 821

3   Put these numbers in **descending** order.
   a   486,   397,   453,   468
   b   1279,   1297,   1379,   1973
   c   80 364,   57 921,   86 034,   84 306
   d   568 321,   5 686 321,   4 536 821,   4 563 821

Descending means from largest to smallest.

Converting decimals and percentages to fractions

$1\% = \dfrac{1}{10} = 0.01$

ones		tenths	hundredths
0	•	0	1

$10\% = \dfrac{1}{10} = 0.1$ and $20\% = \dfrac{2}{10} = 0.2$ and so on.

$25\% = \dfrac{25}{100} = \dfrac{1}{4}$ or 0.25

$50\% = \dfrac{50}{100} = \dfrac{1}{2}$ or 0.5

$75\% = \dfrac{75}{100} = \dfrac{3}{4}$ or 0.75

Example $0.59 = \dfrac{59}{100} = \dfrac{5}{10} + \dfrac{9}{100}$

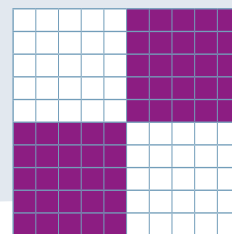These are called **bench marks**

Activity

1 What goes in the box? Look at the diagram to help you.

a $25\% = \dfrac{\square}{100} = \dfrac{1}{4}$ **b** $50\% = \dfrac{\square}{100} = \dfrac{1}{2}$

c $75\% = \dfrac{\square}{100} = \dfrac{\square}{4}$

2 What goes in the boxes?

a $10\% = \dfrac{\square}{100} = \dfrac{\square}{10}$ **b** $30\% = \dfrac{\square}{100} = \dfrac{\square}{10}$ **c** $70\% = \dfrac{\square}{100} = \dfrac{\square}{10}$

d $20\% = \dfrac{\square}{100} = \dfrac{1}{5}$ **e** $40\% = \dfrac{\square}{100} = \dfrac{\square}{10}$ **f** $150\% = \dfrac{\square}{100} = 1\dfrac{1}{\square}$

3 What number goes in the box?

a $25\% = \dfrac{\square}{100}$ **b** $31\% = \dfrac{31}{\square}$ **c** $24\% = \dfrac{\square}{100}$ **d** $53\% = \dfrac{\square}{100}$ **e** $87\% = \dfrac{\square}{\square}$

f $6\% = \dfrac{\square}{100}$ **g** $9\% = \dfrac{\square}{100}$ **h** $36\% = \dfrac{\square}{\square}$ **i** $125\% = \dfrac{\square}{100}$ **j** $220\% = \dfrac{\square}{\square}$

4 Match these percentages with a fraction from the ring.

a 45% **b** 54% **c** 25% **d** 2% **e** 75%

f 7% **g** 50% **h** 70% **i** 20% **j** 90%

$\dfrac{54}{100}$ $\dfrac{7}{100}$ $\dfrac{1}{4}$ $\dfrac{9}{10}$ $\dfrac{45}{100}$

$\dfrac{2}{10}$ $\dfrac{2}{100}$ $\dfrac{70}{100}$ $\dfrac{1}{2}$ $\dfrac{3}{4}$

5 Copy and fill in the gaps

a $0.36 = \dfrac{\quad}{100} = \underline{\quad}\%$ **b** $0.47 = \dfrac{\quad}{100} = \underline{\quad}\%$ **c** $0.78 = \dfrac{\quad}{100} = \underline{\quad}\%$

d $0.25 = \dfrac{\quad}{100} = \underline{\quad}\%$ **e** $0.25 = \dfrac{1}{\underline{\quad}} = \underline{\quad}\%$ **f** $0.5 = \dfrac{1}{\underline{\quad}} = \underline{\quad}\%$

Adding and subtracting decimals vertically

Examples

1   **14·6 + 37·53**

```
  1 4 · 6 0
+ 3 7 · 5 3
   ¹   ¹
  5 2 · 1 3
```

Line up the digits with the same place value. Put a **0** in the space.

0 hundredths + 3 hundredths = **3** hundredths
6 tenths + 5 tenths = 11 tenths
 = **1** one + **1** tenth
4 ones + 7 ones + **1** one = 12 ones
 = **1** ten + **2** ones
1 ten + 3 tens + **1** ten = **5** tens

> This is a similar process to adding and subtracting whole numbers

2   **8·72 − 5·45**

```
  8 · 7 2
− 5 · 4 5
```

5 hundredths is more than 2 hundredths

```
    6  ₁
  8 · ⁷2
− 5 · 4 5
  3 · 2 7
```

Partition 7 tenths as **6** tenths + **1**0 hundredths
12 hundredths − 5 hundredths = **7** hundredths
6 tenths − 4 tenths = **2** tenths
8 ones − 5 ones = **3** ones

Discussion

Explain why Ava set out 3·42 + 15·81 as she did?

Why did Ava cross out her first attempt at 12·06 − 3·71?

```
   3·42
+ 15·81
  19·23
```
```
  12·06        ¹¹ ¹⁰
 − 3·71      12·0̸6̸
           − 3·71
             8·35
```

Activity

Find the answers to questions 1 and 2.

1

a 3·1 + 2·4	**b** 6·3 + 2·4	**c** 7·2 + 1·7	**d** 5·3 + 4·3
e 9·6 + 2·7	**f** 6·8 + 2·5	**g** 19·3 + 0·5	**h** 2·34 + 8·92

i 24·54 + 18·84	**j** 16·09 + 6·36	**k** 9·89 + 0·68	**l** 0·04 + 23·69
m 364·72 + 146·5	**n** 851·34 + 182·58	**o** 262·31 + 47·29	**p** 805·03 + 64·27
q 250·11 + 135·29	**r** 800 + 362·41	**s** 460·7 + 827·32	**t** 504·07 + 200·8

Areas of rectangles and squares

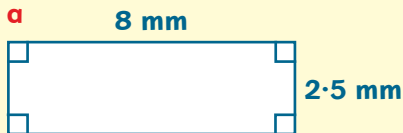**Area of a rectangle** = length × width

$$= \ell \times w$$

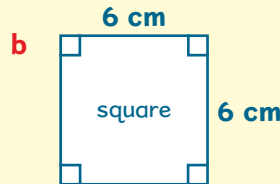A **square** is a special rectangle for which length = width.
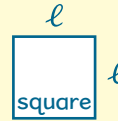
Always remember to put the units with your answer.

Example   Find the area of these.

a   8 mm   2·5 mm

b   6 cm   square   6 cm

area of rectangle = $\ell \times w$
= 8 × 2·5
= **20 mm²**

area of square = $\ell \times \ell$
= 6 × 6
= **36 cm²**

Discussion

Explain why units of area are written as (units)² for example cm², m², mm².

Activity

1   Find the area of these.

a   8 cm   7 cm

b   9 mm   square

c   10 km   3·5 km

d   2·5 cm   square

e   3 m   6·5 m

f   10·5 m   4 m
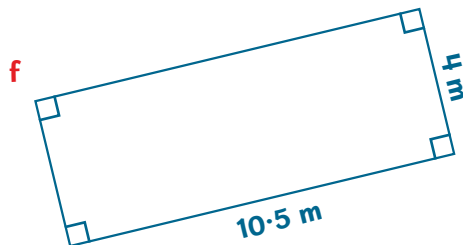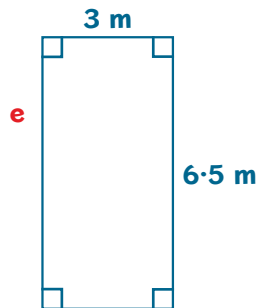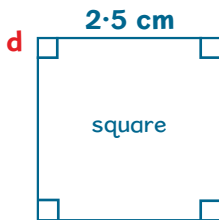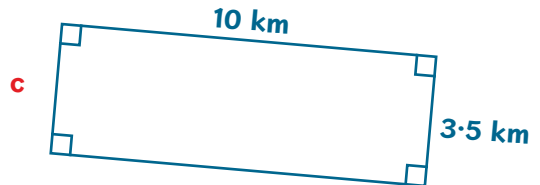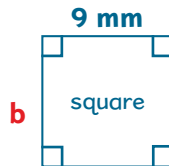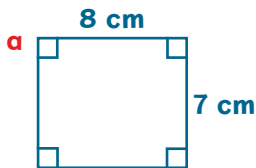
2   Hazel found a netball court in Christchurch. The rectangular court was 30 m long and 15 m wide. What is the area of the court?

3   What is the area of a map of New Zealand measuring 80 cm by 60 cm.

4   Find the area of the shape shown by measuring its length and width in mm.
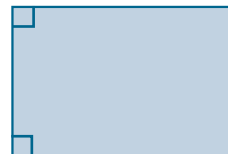
5   Challenge

The length of a rectangle is 1 cm longer than its width. Calculate the area of the rectangle if its width is 5 cm.

ANSWERS

NC6–1 *Place value to 1 000 000* ....
Activity
1 VERY VERY FAST

NC6–2 *Place value to 1 000 000 cont.* ....
2 a 2 thousands, 7 hundreds, 8 tens and 6 units;
27 hundreds, 8 tens and 6 units; 278 tens and 6 units.
   b 5 thousands, 6 hundreds and 8 tens;
56 hundreds and 8 tens; 568 tens.
   c 8 ten thousands, 6 thousands, 3 tens and 4 units;
860 hundreds, 3 tens and 4 units; 8603 tens and 4 units
   d 5 ten thousands, 2 thousands, 8 hundreds, 7 tens and 2 units.
   e 5 hundred thousands, 728 hundreds and 4 units.

3 a 6	**b** 2	**c** 0	**d** 4
e 7	**f** 3	**g** 6	**h** 9
4 a 8	**b** 7	**c** 4	**d** 6
e 0	**f** 4	**g** 8	**h** 3
5 a 5	**b** 4	**c** 8	**d** 0
e 8	**f** 0	**g** 0	**h** 9
6 c 3	**d** 5	**e** 0	**f** 0
g 7	**h** 0		

7 a 657 814   **b** 487 300
8 a 4 tens or 40   **b** 4 hundreds or 400
   c 4 hundreds or 400   **d** 4 thousands or 4000
   e 4 thousands or 4000
   f 4 tens of thousands or 40 000
   g 4 hundreds of thousands or 400 000
   h 4 thousands or 4000
   i 4 tens of thousands or 40 000

NC6–3 *Putting whole numbers in order* ....
Discussion
The first human walked on the moon in 1968 took place first.
Activity
1 a 650 m   **b** 5102 kg   **c** 16 961 m
   d $153 302   **e** 654 000 L   **f** 3 945 032 g
   g 5 652 642 ml
2 a 1973, 1379, 1297, 1279
   b 86 034, 84 921, 84 364, 84 306
   c 4 580 321, 4 563 821, 4 536 821, 458 321
3 a 486, 468, 453, 397
   b 1973, 1379, 1297, 1279
   c 86 034, 84 306, 80 364, 57 921
   d 5 686 321, 4 563 821, 4 536 821, 568 321

NC6–4 *Putting whole numbers in order cont.* ....
4 a 444, 450, 504, 540
   b 1097, 1397, 1937, 1973
   c 40 321, 41 032, 41 230, 42 130
   d 2 176 942, 2 179 462, 2 196 724, 2 197 642
   e 835 724 681, 835 726 481, 835 742 681
5 a No   **b** Josie, Hemi and Nick
   c Simon   **d** Nick
   e Simon, Ted, Annabel, Aroha, Josie, Hemi, Nick
   f Mahi, Jason, Lee, Janus, Katie, Fred
6 a 8735   **b** 9262
7 a 20 347   **b** 34   **c** 1357
8 a 20 374   **b** 35   **c** 1375

NC6–5 *Putting whole numbers in order cont.* ....
9 a 50   **b** 500   **c** 14   **d** 104
   e 50 000   **f** 40 001
Puzzles
1 The cards are 7, 2, 1. This is the only answer.
2 1543

NC6–6 *Factors* ....
Activity
1 a (1, 6), (2, 3)   **b** (1,15), (3, 5)
   c (1, 2,4), (2, 12), (3, 8), (4, 6)
   d (1, 16), (2, 8), (4, 4)   **e** (1, 20), (2, 10), (4,5)
   f (1, 32), (2,16), (4, 8)   **g** (1,64), (2, 32), (4, 16), (8, 8)
   h (1, 100), (2, 50), (4, 25), (5, 20), (10, 10)
2

0	1	9	16	2	17
21	23	3	4	19	24
5	6			7	8
55	10	12	13	14	35
11	25	15	28	45	48
112	39	30	56	60	36

3 a 6   **b** 16   **c** 12
4 a 1, 2, 3, 4, 6, 12   **b** 1, 2, 3, 4, 6 , 8, 12, 24
   c 1, 2, 4, 8, 16, 32
   d 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72
   e 1, 2, 4, 8, 16, 32, 64   **f** 1, 3, 9, 27, 81
   g 1, 3, 9, 27
5 a Common factors 1, 2, 3, 4, 6, 12
   b Common factors 1, 3, 9, 27
   c Common factors 1, 2, 4, 8, 16, 32

NC6–7 *Square numbers* ....
Activity
1 a Because the number can be shown as a square of smaller squares.
   b 36 can be shown as a 6 by 6 array. 49 can be shown as a 7 by 7 array.
   c 20 and 45 can not be shown as square arrays.
   d 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121.
2 a plus sign or a cross
3 a 2   **b** 8
4 a $16 = 4^2$ **b** $25 = 5^2$ **c** $144 = 12^2$
   d $100 = 10^2$ **e** $121 = 11^2$ **f** $1 = 1^2$
5 a $6 \times 6 = 36$ **b** $8 \times 8 = 64$
   c The area of a square is found by squaring the length of the side of the square.
   d 100 cm^2
6 *Challenge*
   9, 25 and 49 also have exactly three factors. Square numbers that have exactly three factors are the squares of prime numbers.

NC6–8 *Rounding to 1 decimal place* ....
Activity
1 a 5·3   **b** 16·4   **c** 25·1   **d** 36·4
   e 42·2   **f** 36·8   **g** 106·7   **h** 82·6
   i 64·4   **j** 72·0   **k** 63·5   **l** 41·6
   m 63·6   **n** 89·1   **o** 73·0
2 3·3 m
3 A ZEBRA IS WHITE WITH BLACK STRIPES.