

# Mathletics

Series



Student



## Reading and Understanding Whole Numbers

My name \_\_\_\_\_



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# Series E – Reading and Understanding Whole Numbers

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Series Author:

Nicola Herringer



# Looking at whole numbers – reading and writing numbers to 9 999

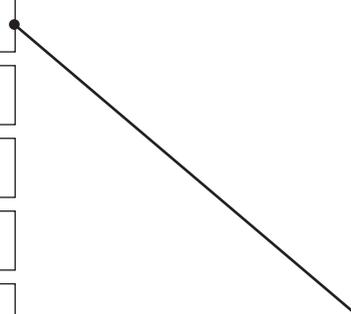
When we read numbers we go left to right:

Thousands	Hundreds	Tens	Units
1	3	1	2

In words, this number is one thousand, three hundred and twelve. We write it like this 1 312. We leave a space between the thousands and hundreds.

**1** Draw a line to match the number in words to the digits that match. The first one has been done for you.

a	Eight thousand, two hundred and twelve	7 420
b	One thousand and sixteen	1 016
c	Five thousand, one hundred and two	5 102
d	Four thousand, five hundred and eighty nine	4 589
e	Seven thousand, four hundred and twenty	8 212



**2** Underline the numbers in the sentences below and then answer the questions.

a In a game of darts, Matt scored four hundred and thirty five points and Ellie scored five hundred and sixty two points. Who scored more, Matt or Ellie?

b Emily saved five thousand, six hundred and fifty nine pounds while Libby saved five thousand, nine hundred and eighty five pounds. Who saved more?

c Kim lives one thousand, eight hundred and forty two km from Magic Land theme park. Mish lives one thousand, seven hundred and sixty two km from the same theme park. Who lives closer?

The last question is different to the first two. Can you see why?



**THINK**

# Looking at whole numbers – reading and writing numbers to 9 999

**3** This is an exercise for one player that helps you to practise writing numbers.

Write the 4 digit number in words. Next, count the letters in the number – seven thousand, four hundred and sixty five has 36 letters. Write 36 in the number column and so on until you get to four. This is a sample game:

Numeral	Numeral in words
7 465	seven thousand, four hundred and sixty five
36	thirty six
9	nine
4	four

Use the words in the box to help with spelling.



**CHECK**

Now it is your turn:

one, two, three, four, five, six, seven, eight, nine, ten, eleven, twelve, thirteen, fourteen, ninety, forty, thousand, hundred, sixty, seventy, eighty.

Numeral	Numeral in words
3 987	

**4** What number am I? Write the numbers described below in words:

**a** I am the number before 945:

\_\_\_\_\_

**b** I am 1 less than 530:

\_\_\_\_\_

**c** I am 7 less than 700:

\_\_\_\_\_

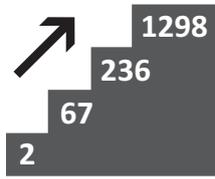
**d** I am 100 more than 6 878:

\_\_\_\_\_

# Looking at whole numbers – ordering numbers to 9 999

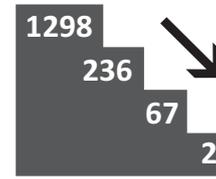
**Ascending** means going up. When we put numbers in ascending order it means we put them in order smallest to largest.

For example:



**Descending** means going down. When we put numbers in descending order it means we put them in order largest to smallest.

For example:



**1 Write the numbers which come before and after the given number:**

a  1 093

b  6 529

**2 Circle the smallest number and underline the largest number in each group:**

a 837 542 261

b 999 909 929

c 1 024 3 852 7 203

d 5 469 5 117 5 078

**3 Re-write the following sets of numbers in ascending order:**

a 3 203 2 033 2 303 \_\_\_\_\_

b 6 660 6 066 6 606 \_\_\_\_\_

**4 Re-write the following sets of numbers in descending order:**

a 4 156 4 651 4 561 \_\_\_\_\_

b 7 891 7 981 7 356 \_\_\_\_\_

**5 Below is a number grid with some numbers missing. Look closely at the grid and fill in the missing spaces with the correct numbers.**

a

515	516				
525		527			
			538	539	540
				549	550

b

863	864	
873		
883		

c

986		988
1 006		

# Looking at whole numbers – ordering numbers to 9 999

**6** Here is a number square that goes up to 1 000.

- a Look carefully at how the numbers go up. It is a skip counting pattern of \_\_\_\_\_.
- b Fill in the blanks:

10	20	30	40	50	60	70	80	90	100
110		130	140	150	160	170	180	190	200
210		230			260	270	280	290	300
310		330		350	360	370	380	390	400
410	420	430		450	460	470		490	500
510	520	530		550	560				600
610	620	630	640	650	660	670		690	700
710	720	730	740	750	760	770	780	790	800
810	820	830	840	850	860	870	880	890	900
910	920	930	940	950	960	970	980	990	1 000

**7** Look at each set of numbers and list some numbers that come between. Write them in order.

a

590

660

b

4 995

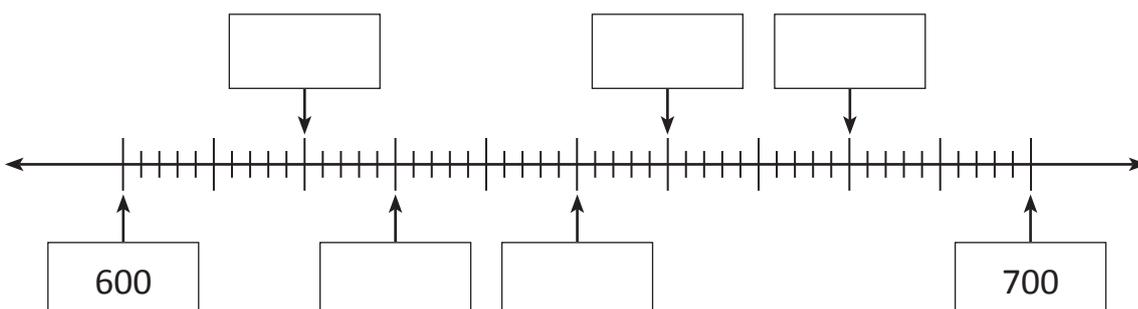
5 460

c

77 900

77 990

**8** Look carefully at this number line and write the missing numbers.



# Looking at whole numbers – create and compare numbers

When we compare numbers we use these symbols:



This symbol means is greater (more) than



This symbol means is less than

An easy way to remember this is to think of Crandall the crocodile who is always hungry and will always eat the BIGGER number! We always read the number sentence from left to right.



5 is less than 54

5 is  $<$  54



124 is greater than 92

124 is  $>$  92

## 1 Use the correct $>$ , $<$ or $=$ symbol:

a 203  172

b 3 033  3 033

c 572  615

d 5 690  5 688

e 909  901

f 9 009  9 090

## 2 Put a number in the box so the statement is true:

a   $>$  6 890

b   $>$  603

c   $>$  1 204

d   $>$  8 051

## 3 Put a number in the box so the statement is true:

a 45  $<$

b 564  $<$

c 7 895  $<$

d 9 984  $<$

## 4 Use the correct $>$ or $<$ symbol to make the number sentences true:

a 15  14  16

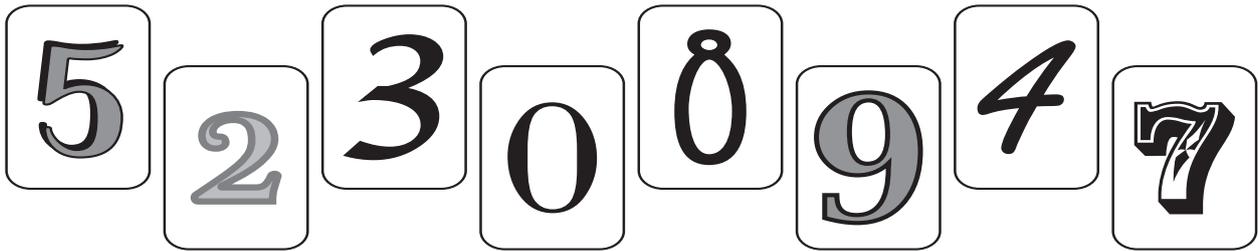
b 98  1 005  2 010

c 17  18  21

d 7 586  528  29

# Looking at whole numbers – create and compare numbers

5 Use only one of each of these digit cards to:



a Make four different 4 digit numbers.

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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b Make the second largest four digit number possible.  
You can only use each digit card once.

c Write a number between 4 000 and 7 000.  
You can only use each digit card once.

d Make a list of odd 3 digit numbers.

---

6 Tia's lucky number can be made from the digits above. Use these clues to work out what it could be:

- It has 2 digits.
- It is an even number.
- It is greater than 55 but less than 60.

Tia's lucky number is:

7 Pick out Roger's lucky number from the clues. It is one of the numbers in the box.

- It is not less than 5 000.
- It does not have 6 tens.
- The digit in the units column is smaller than 5.
- It is an even number.
- It is less than 9 000.

Roger's lucky number is:

6 578	8 975
8 765	9 234
4 567	7 234
7 923	9 346



This is a game for 2 players. Each player will need the game board and a copy of the digit cards below to cut out, as well as a calculator.



Combine both players' digit cards, shuffle and lay face down in the centre. Each player draws 6 cards, and without looking at the digit cards, makes two 3 digit numbers laying cards down from left to right.

If the numbers are in the correct position (the number on the left is actually greater than the number on the right), the player writes down the difference as their score.

The winner is the player with the highest score at the end of the game.

			>			
--	--	--	---	--	--	--

Player 1	Player 2

1	2	3	4	5
6	7	8	9	1
2	3	4	5	6



Getting ready

This is a game for 2 players. You need a copy of the digit cards from the previous page, a pencil, paper and a calculator.



What to do

Each player begins with 10 000 points.

Player 1 picks four cards from the deck and makes a 4 digit number and **adds** this number to 10 000.

Player 2 does the same.

Player 1 picks four cards from the deck and makes a 4 digit number and **subtracts** this number from their score.

Player 2 does the same.

Continue adding and subtracting 4 digit numbers made from the digit cards until one player has a score that is greater than 50 000.

Player 1	Player 2

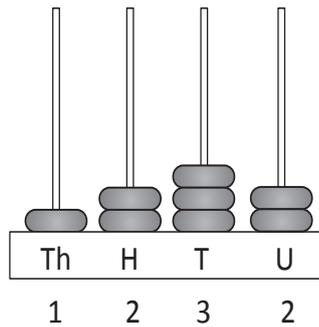
Discover when it is a good idea to make the largest possible 4 digit number you can and when it is better to make the smallest 4 digit number ...



DISCOVER

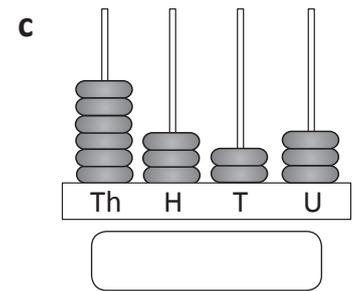
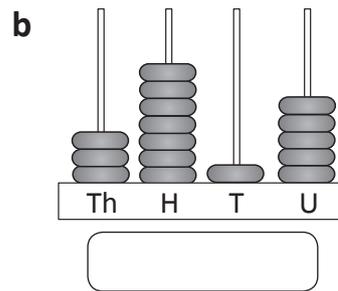
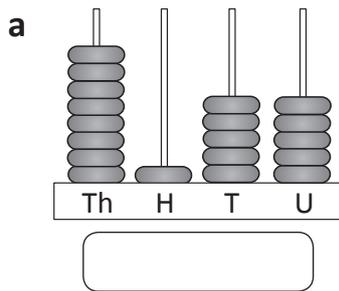
# Place value of whole numbers – place value to 4 digits

We can show the value of a 4 digit number on an abacus and also with base ten blocks.

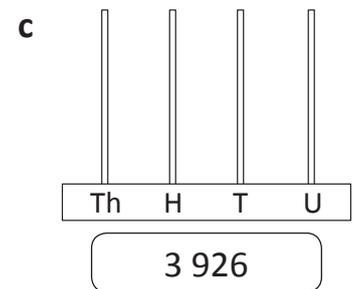
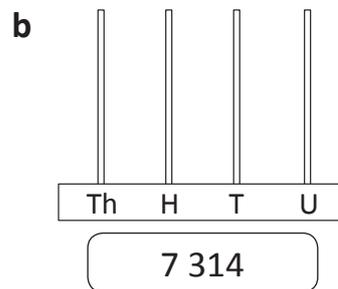
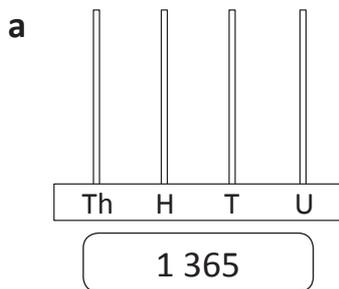


1 is worth 1 000 or one thousand.  
 2 is worth 200 or two hundreds.  
 3 is worth 30 or three tens.  
 2 is worth 2 or two units.

## 1 Write the number shown on each abacus:



## 2 Draw the beads to show the numbers:



## 3 Circle the digit that matches the place value:

a tens: 2 330

b units: 4 322

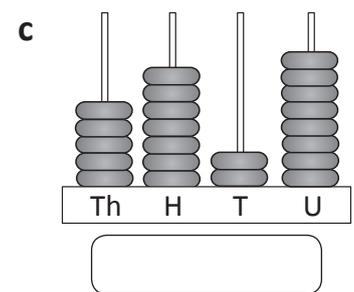
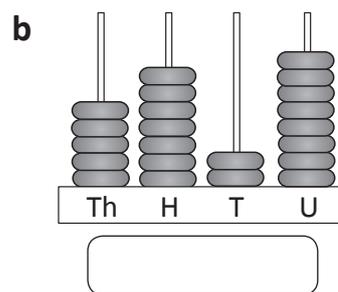
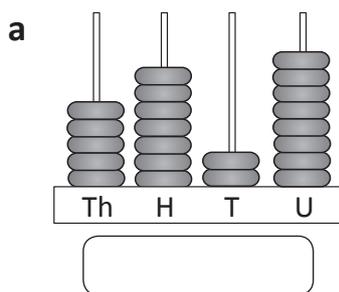
c hundreds: 9 218

d units: 5 661

e tens: 8 754

f thousands: 6 845

## 4 Add a bead to each abacus anywhere you like and write the new number:



# Place value of whole numbers – place value to 4 digits

- 5 In the table below, write as many 4 digit numbers as you can where the digit in the hundreds column is greater than the digit in the thousands column and the digit in the units column is smaller than the digit in the tens column:

Thousands	Hundreds	Tens	Units

- 6 Record the steps you follow to wipe out each digit and turn it into a zero:

**8 439**

- a Wipe out the 3 \_\_\_\_\_
- b Wipe out the 9 \_\_\_\_\_
- c Wipe out the 8 \_\_\_\_\_
- d Wipe out the 4 \_\_\_\_\_

- 7 Now play this game with a partner:

First choose a 4 digit number and write it here:

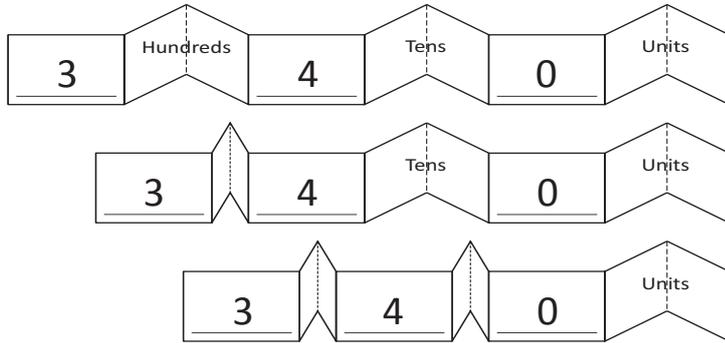
Enter this number in your calculator and then take turns subtracting any digit 1 to 9 from this number. This time you must avoid wiping out any digits (changing any to zero). If you do wipe out a digit on your turn, you are out.

To win this game you need to keep your focus on the units column!



# Place value of whole numbers – expanded notation

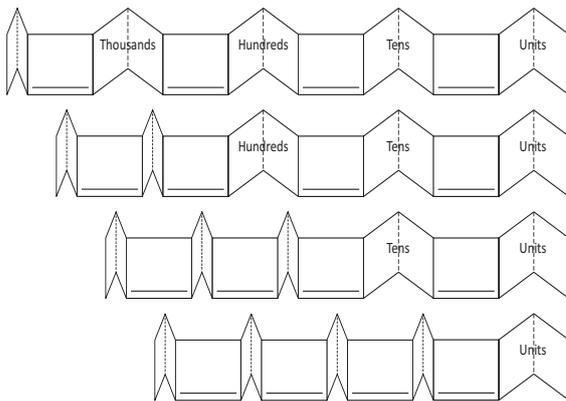
Numeral expanders show how a number can be expressed in different ways. Look at this example:



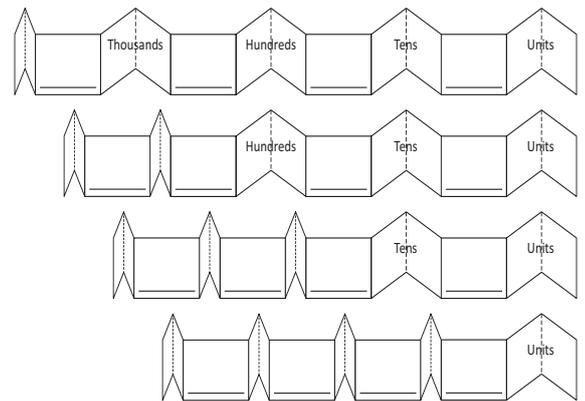
By folding the numeral expander it shows that 340 is made up of 34 tens or 340 units. This makes sense because:  
 $34 \times 10 = 340$  and  
 $340 \times 1 = 340$

## 1 Write the number shown on each numeral expander:

a 1 576



b 5 485



## 2 Complete each row of the table like the first row:

Numeral	Expanded notation in numbers	Expanded notation in words
4 672	$4\ 000 + 600 + 70 + 2$	46 hundreds, 7 tens and 2 units
	$5\ 000 + 200 + 30 + 9$	
		61 hundreds, 4 tens and 2 units
3 180		31 hundreds and _____ tens
		35 hundreds and 6 units
	$8\ 000 + 200 + 50 + 8$	

83 could also be described as 83 units and 540 could be called 54 tens.



**THINK**

# Place value of whole numbers – expanded notation

3 Rename the following numbers in hundreds:

a 4 100 \_\_\_\_\_

b 9 800 \_\_\_\_\_

c 6 700 \_\_\_\_\_

d 4 500 \_\_\_\_\_

4 Rename the following numbers in tens:

a 5 560 \_\_\_\_\_

b 8 880 \_\_\_\_\_

c 4 570 \_\_\_\_\_

d 8 970 \_\_\_\_\_

5 Write the following amounts as numerals from the box:

a 32 hundreds, 9 tens and 2 units

b 4 thousands, 6 hundreds, 1 ten and 2 units

c 8 thousands, 67 tens and 2 units

d 41 hundreds and 7 units

4 107

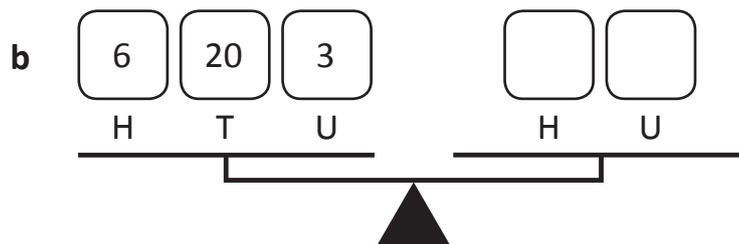
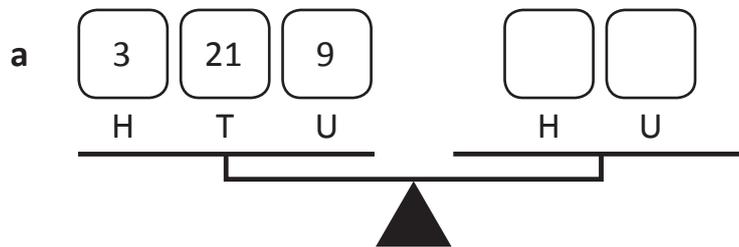
8 672

4 612

3 292

6 Balance the scales by writing the digits that make both sides the same:

Renaming numbers is sometimes called regrouping. The number has the same value though.



# Place value of whole numbers – working with place value

Zero plays an important role in numbers. It tells us that the value of the column is nothing and holds the place of other numbers.

I have £6 055.  
Without the zero,  
I have only £655!



## 1 Write these numbers:

- a Four thousands, six hundreds, zero tens and 1 unit.
- b Two thousands, zero hundreds, zero tens and zero units.
- c Six thousands, three hundreds, 1 ten and zero units.
- d Two thousands, zero hundreds, 6 tens and zero units.
- e Ten thousands, nine hundreds, zero tens and zero units.


## 2 A zero has been added to each number in different places. Match them to a number in the box and write this number in figure. The first one has been done for you.

a	82	Eight thousand and ninety two	8 092
b	570	Two hundred and seventy	
c	892	Eight hundred and two	
d	27	Six thousand, seven hundred and seven	
e	677	Five thousand and seventy	

## 3 Record the steps you followed to use a calculator to change:

- a 567 to 507 by taking away one number.
- b 2 093 to 2 100 by adding one number.
- c 760 to 60 by taking away one number.
- d 997 into a 4 digit number.


# Place value of whole numbers – working with place value

4 Use these digits to make the following 4 digit numbers:

8

7

1

0

a A number with 7 in the hundreds place.

b Two numbers with 0 in the units place.

c One number that has 71 tens.

d A number that has 87 tens.

e A number that has zero as a place holder.

5 Help these kids remember their special numbers:

a Charlie needs a password to access his computer. The password includes the digits 5 6 7 1. It is the smallest odd number.

What is the password?

b Bec needs to withdraw money from the bank but she can't remember her PIN. The password includes the digits 3 3 9 8. It is the largest even number.

What is her PIN?

c The alarm is ringing in Frankie's house and she needs to remember the code to switch it off. She knows the numbers include 5 9 2 7 and that it begins with 9. It is the second largest number.

What is the alarm code?

d Max recently changed the combination to the lock on his games cupboard. The combination includes the digits 6 1 1 9. It is the second smallest number.

What is the combination to the lock?



Getting ready

This is a game for 2 players. You will need a copy of this page and a set of 4 dice.



copy



What to do

Each player takes turns rolling the dice and writing one digit in each box where they will fit. You might roll 2 dice, 3 dice or 4 dice, depending on the squares.

**Start**

For example, if you roll a 6 and a 7, you can write the number 67 or 76 next to where it says start. Then, when you roll all 4 dice to create a 4 digit number, you need to get one of the digits that you rolled previously so that the numbers connect like a crossword. The winner is the player who fills all the places on their page first.



This is a game for 3 players. You will need a copy of this page and the cards (below) cut out.



1 person is the caller and the other 2 are the players.

The caller turns over a digit card and announces the number. Each player finds the same digit card and places it in one rectangle in the place value table. Repeat this until each player (including the caller) has a 4 digit number. The caller then reads out their number.

The player who gets a higher number than the caller scores 5 points. If a player has the same number as the caller, they score 3 points. If a player has a lower number than the caller, they score 1 point. If the caller's number is higher than both the players, they score 10 points.



Swap roles. Keep playing until each person has had a turn of being the caller. Add up points at the end to find the overall winner.

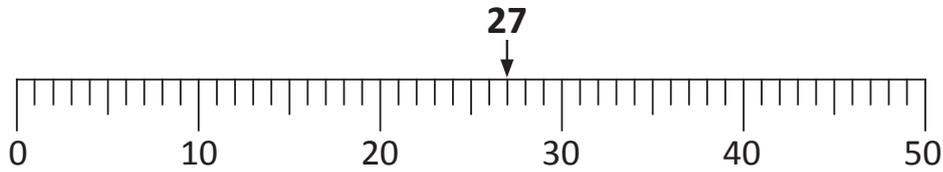
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1	2	3	4	5
6	7	8	9	

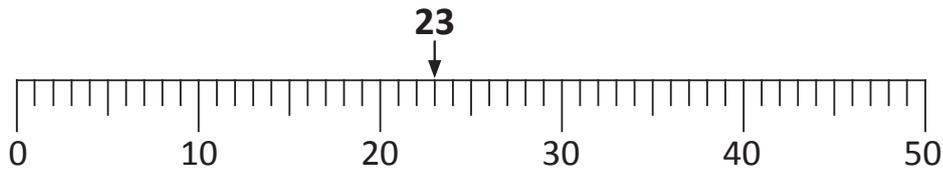
# Round and estimate – rounding to 10, 100 and 1 000

Rounding makes big numbers easier to work with. Look at these examples of rounding to the nearest 10.

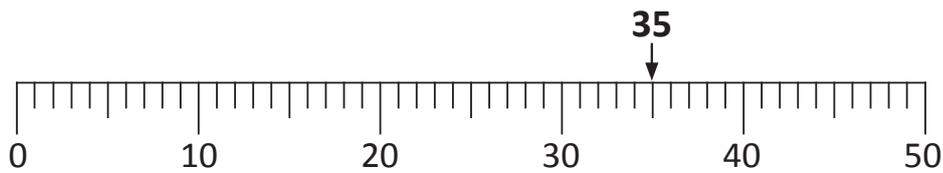
We round up if the number is over the halfway mark: 27 rounds up to 30.



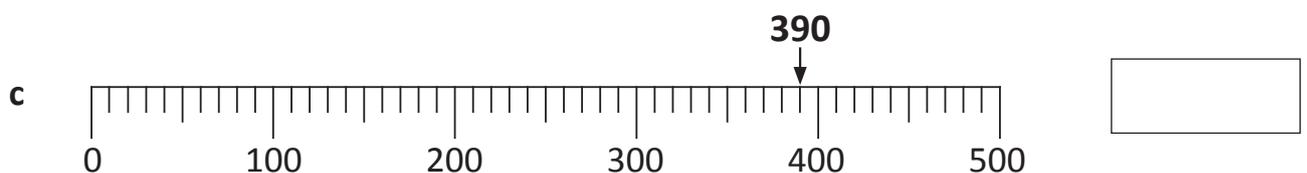
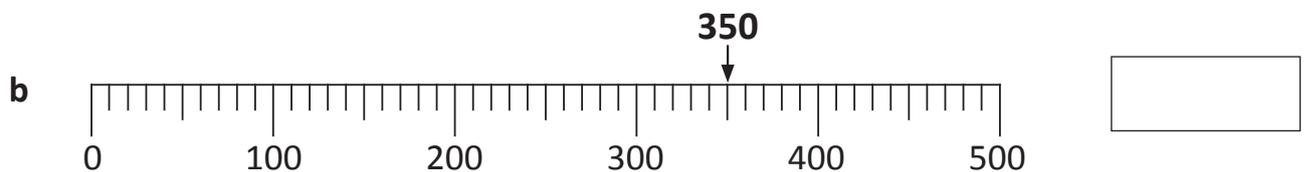
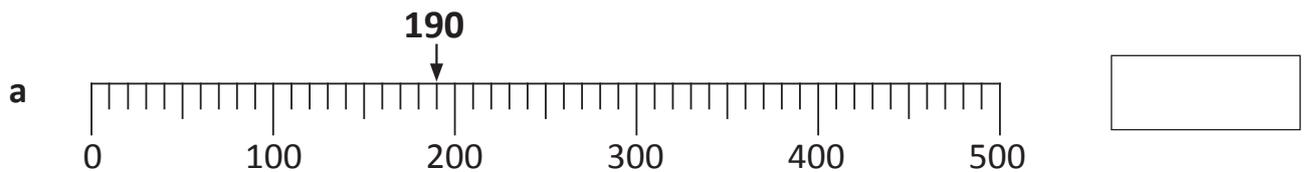
We round down if the number is under the halfway mark: 23 rounds down to 20.



We round up if the number is exactly halfway:

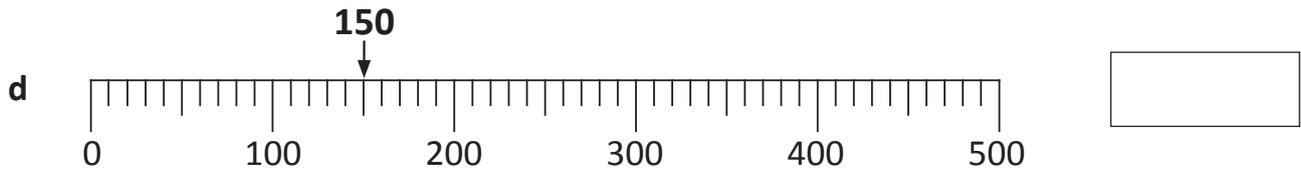


## 1 Round these numbers to the nearest 100:



# Round and estimate – rounding to 10, 100 and 1 000

1 Round these numbers to the nearest 100 (continued):



2 Round these according to the table directions. The first one has been done for you.

Number	Nearest 10	Nearest 100	Nearest 1 000
567	570	600	1 000
673			
287			
527			
970			

3 Find the number by rounding the numbers:

The number of teeth that a shark has in its lifetime

70      80      100      7 000      300

7 000    20    80    1 000    400    500    200    40

**U** 999 rounded to the nearest 1 000

**S** 356 rounded to the nearest 100

**A** 455 rounded to the nearest 100

**N** 176 rounded to the nearest 100

**D** 37 rounded to the nearest 10

**R** 99 rounded to the nearest 100

**T** 6 892 rounded to the nearest 1 000

**Y** 265 rounded to the nearest 100

**H** 19 rounded to the nearest 10

**O** 84 rounded to the nearest 10

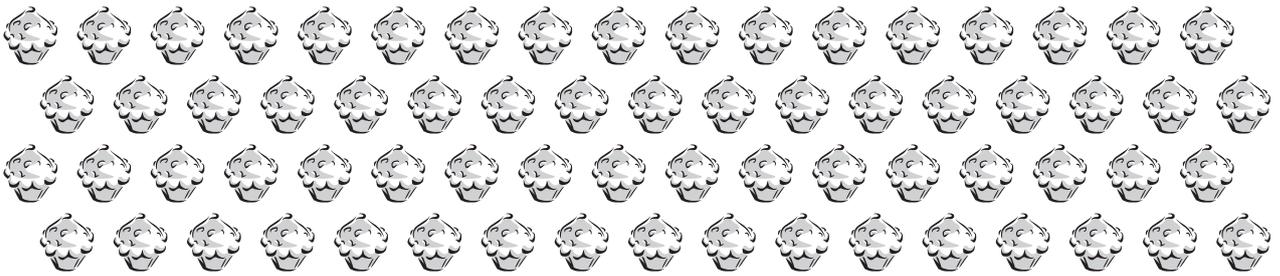
**F** 68 rounded to the nearest 10

# Round and estimate – estimating

Estimation is a very useful skill. It is used every day by all sorts of people.

Estimation is not just guessing, it is a way of doing a sum in your head. A good estimate is a reasonable answer, not just a wild guess.

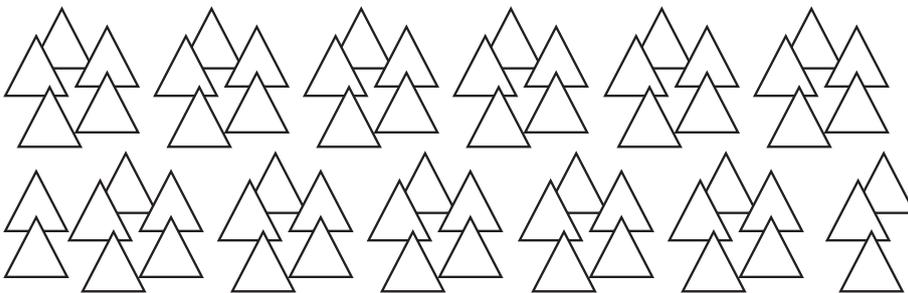
- 1 Estimate the number of cakes below. Start by looking at a sample – the number in one group, then estimate. Try not to count.



My estimate is close to

These objects are not arranged neatly in rows and columns so I need to find a sample a different way. I could divide this picture in quarters.

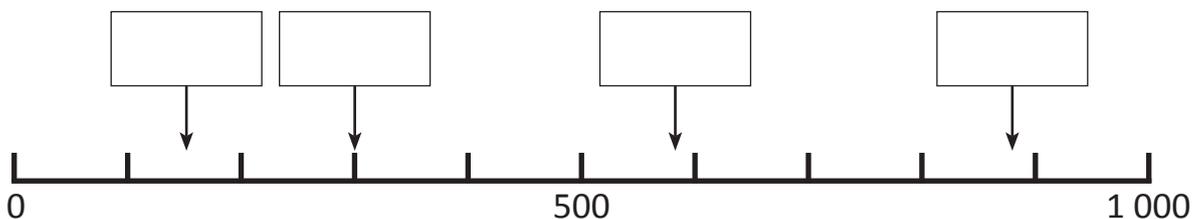
- 2 Estimate how many triangles are in this picture:



My estimate is close to



- 3 Estimate the numbers that could be located at the marked points.



# Round and estimate – estimating

- 4 Estimate how many holes you can make using a hole punch. Fold a piece of A4 paper in half and in half again. Punch some holes a few times. Unfold the paper. Estimate the number of holes.

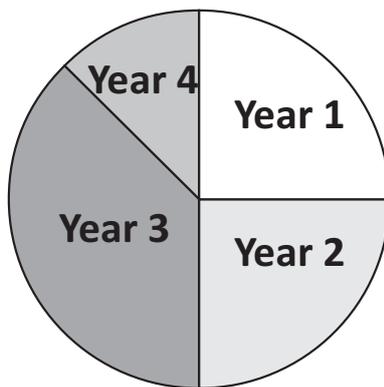
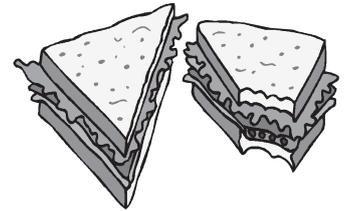
a Write this number here.

b How did you make this estimate?

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- 5 Try these estimation problems:

- a This pie chart shows the approximate number of children who get lunch orders every day. If there are 20 children in Year 1, estimate the following:



Number of children in Year 4:

Number of children in Year 3:

- b Jake wanted to find out how many sultanas there were in a box of cereal. Counting every sultana would take too long. Instead, he scooped a cupful of cereal out into a bowl and counted how many sultanas were in the cup. What did he do next?



# Round and estimate – rounding to estimate

Rounding is a very useful skill for doing mental calculations.

Look at this example:

Lily went to the shops to buy her friend a birthday present. She had saved up £10 of her pocket money. She picked out wrapping paper for £1.85 and a card for £1.10. Lily saw 2 things that her friend would like. One was a book for £7.90. The other thing was a pencil set for £6.15. She could not decide which one to buy – she did not have enough for both presents. Which present do you think Lily bought, as well as the wrapping paper and card?

Luckily, Lily used her rounding skills as the shop assistant was getting very impatient. This is what she did:

To find the total of the wrapping paper and card:

£1.85 rounds up to £2.

£1.10 rounds down to £1. Total is £3.

Option 1: Book for £7.90 rounds up to £8. £8 plus £3 is £11.

Option 2: Pencil set for £6.15 rounds down to £6. £6 plus £3 is £9.

Lily chose to buy her friend the \_\_\_\_\_.

## 1 Round these amounts to the nearest pound:

a £2.10 =

b £5.90 =

c £8.95 =

## 2 Do you have enough money to buy? Circle the correct answer:



choc cream

£1.95 per scoop



jelly beans

£3.05 per scoop



choc mints

£2.10 per scoop



jelly tots

£4.85 per scoop

£5.00

2 scoops of jelly beans and 1 scoop of choc creams?

Yes / No

£7.00

1 scoop of jelly tots and 1 scoop of choc mints?

Yes / No

£10.00

3 scoops of jelly beans and 1 scoop of choc mints?

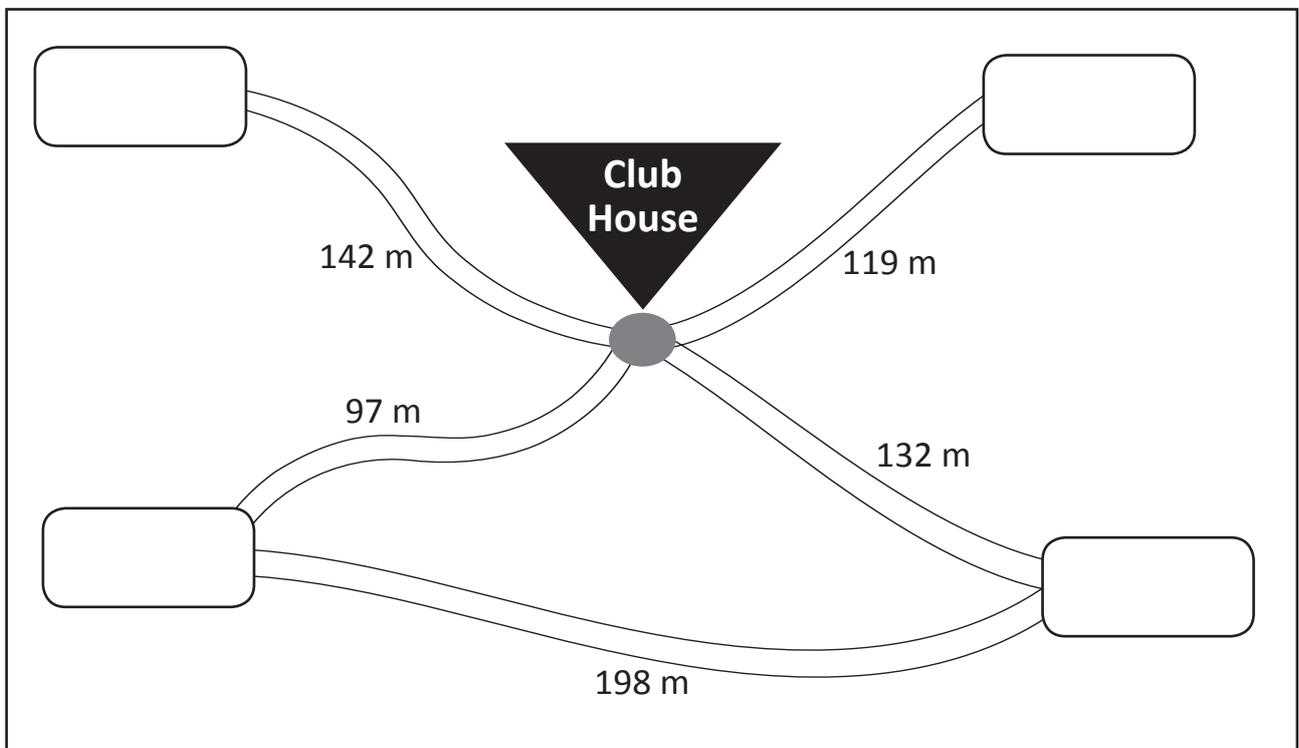
Yes / No

# Round and estimate – rounding to estimate

3 Round each number and add. Shade the most reasonable answer for each sum:

a	$112 + 31 =$	150	113	99	140	120
b	$267 + 72 =$	320	340	330	310	300
c	$123 + 49 =$	170	180	190	270	280
d	$262 + 519 =$	700	160	690	790	780

4 Here is a map of a club house. See if you can label the places correctly. Use the clues below. The places are: cafe, gazebo, tennis courts and pool.



Use these clues in order:



- Rounded to the nearest 10, the cafe is 120 metres away from the club house.



- Rounded to the nearest 10, the pool is 140 metres away from the club house.



- Rounded to the nearest hundred, the distance from the club house to the gazebo is 100 metres. This distance is an odd number.



Getting ready

This is a game for 2 players. You and your partner will need a copy of this page and 3 dice. Also you will each need a calculator to keep score and a marker.

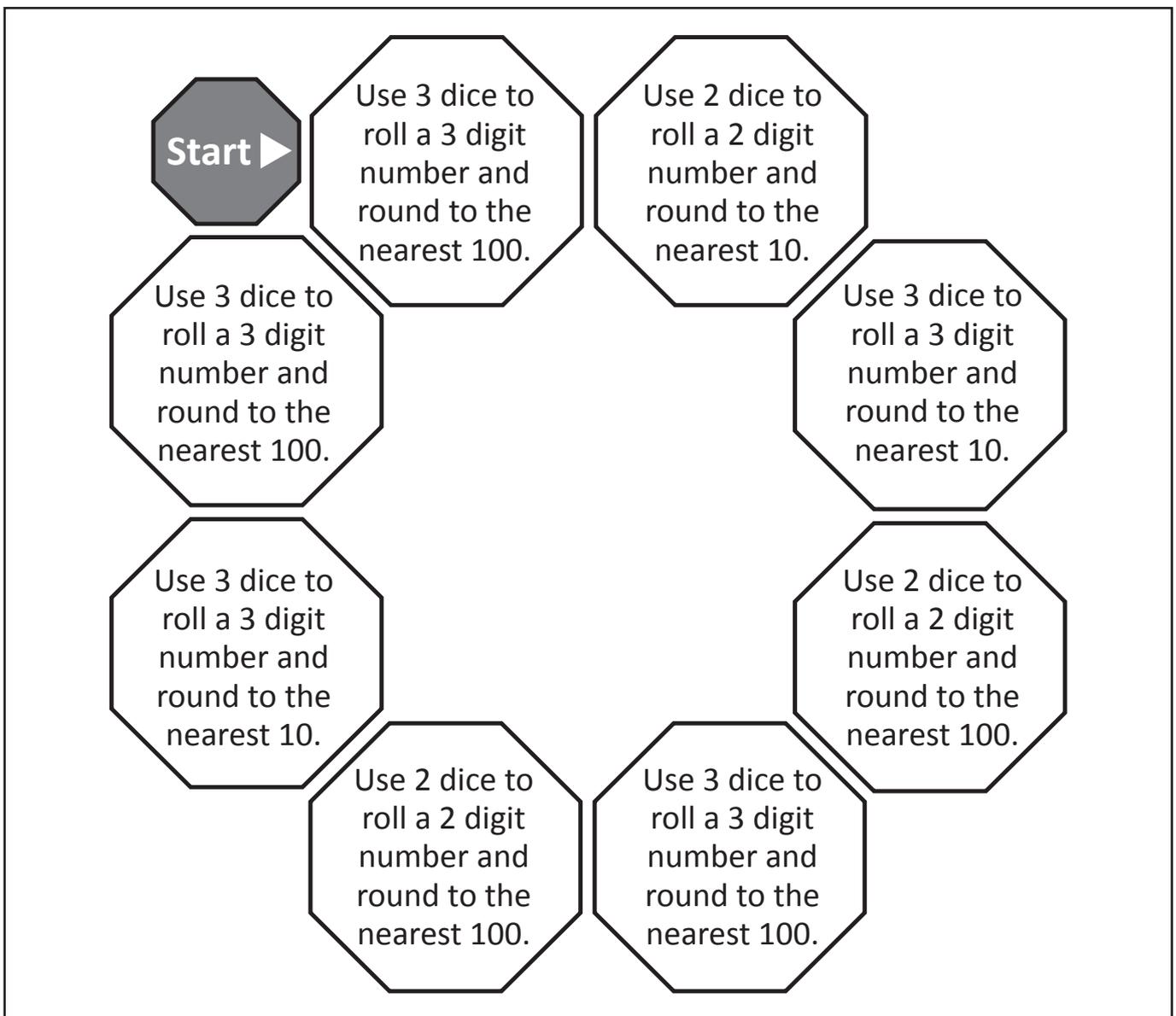


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What to do

Decide who will go first. Roll a die and move that number to the next octagon. Follow the directions and record your number. Take turns and keep track of your score on your calculator by adding the number you make on each turn. The winner is the first one to reach 1 000.



What to do next

Play again. This time, make it the best out of three.



Getting ready

This is a game for 2 players. You will need: a coin, 3 dice, counters in 2 different colours, scrap paper and this page.



What to do

- 1 Roll 3 dice and write down the largest number you can.
- 2 Toss a coin. If it lands on heads, round to the nearest 10. If it lands on tails, round to the nearest 100.
- 3 Place your counter on the number, if you see it on the grid.

The winner is the person with the most counters on the grid after 10 turns each.

200	700	620	410	700	630	650	220
100	670	440	500	600	200	640	610
560	520	300	640	250	510	540	160
630	320	240	700	530	200	110	650
250	550	660	650	310	640	430	640
660	210	670	640	540	210	600	220
500	400	640	420	630	670	550	600
300	540	530	300	400	360	520	500
620	520	700	650	620	660	550	330