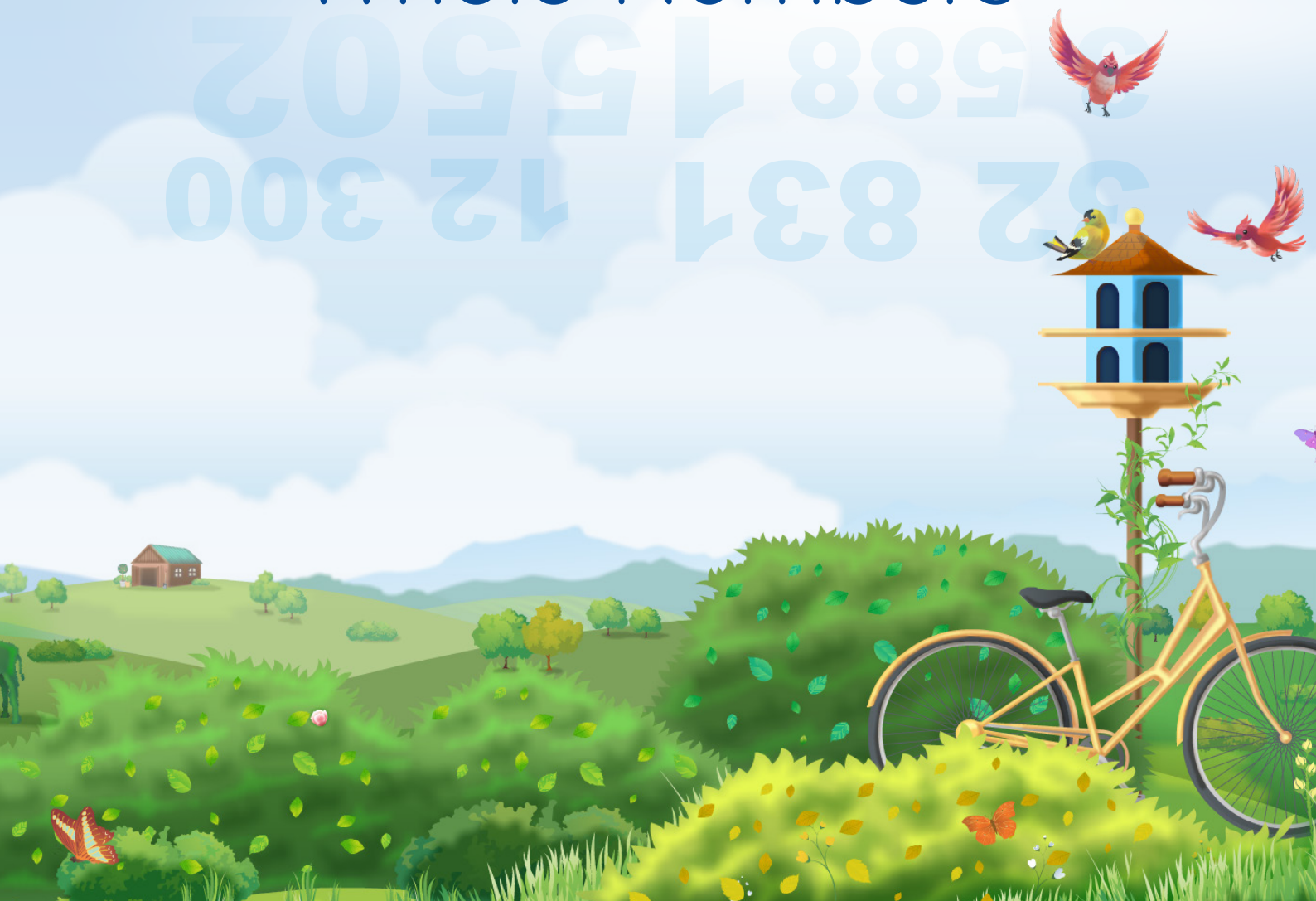
Mathletics

Series F Teacher

Reading and Understanding Whole Numbers



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Series F – Reading and Understanding Whole Numbers

Contents

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Looking at whole numbers – read and write numbers to 999 999

We read and write numbers in the order that we say them.

Thousands	Hundreds	Tens	Units
6	7	1	5

six thousand seven hundred and fifteen

1 **Express the following in numerals:**

a four thousand three hundred and sixty two *4 362*

b three hundred and twenty four *324*

c eight thousand nine hundred and three *8 903*

d four thousand eight hundred and forty one *4 841*

e seven hundred and three *703*

f five thousand four hundred and two *5 402*

2 **Write the following in words:**

a 5 816 *five thousand eight hundred and sixteen*

b 915 *nine hundred and fifteen*

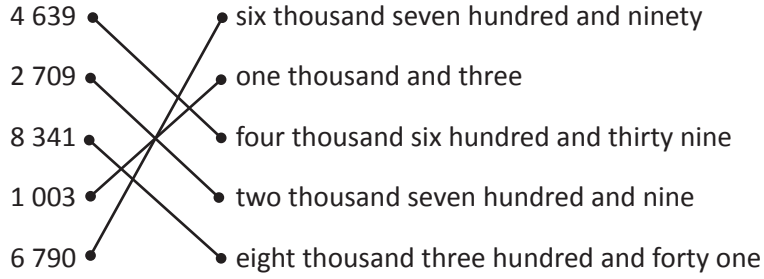
c 8 466 *eight thousand four hundred and sixty six*

d 254 *two hundred and fifty four*

e 7 615 *seven thousand six hundred and fifteen*

f 2 598 *two thousand five hundred and ninety eight*

3 **Match the numerals with the words:**



Looking at whole numbers – read and write numbers to 999 999

We read and write large numbers in groups of three.

321 4 321 54 321 654 321

We work from right to left and we put a gap between each group of numbers.

4 **These numbers have been grouped incorrectly. Re-group the numbers and read the new numbers out loud to a friend. Ask them to check your grouping. Are you correct?**

a 56 78	*5 678*	**b** 65 89	*6 589*
c 856 21	*85 621*	**d** 33333	*33 333*
e 54 0912	*540 912*	**f** 4514 2	*45 142*

Did you know?

The abbreviation K comes from the Greek word *khilioi*, and it means thousand. It is used in many job advertisements and in measurement. A salary of 100 K is R100 000, and 1 000 grams is 1 kilogram.

When else do we use the term kilo or K?

5 **Convert the following abbreviations into numerals:**

a R90 K	R *90 000*
b 4 kilograms	*4 000* grams
c R66 K	R *66 000*
d 8 kilometres	*8 000* metres

6 **Are the following statements true or false?**

a R36 K = R3 600	True / (False)
b Seventy four thousand three hundred and two = 74 320	True / (False)
c Six hundred and seventy four thousand and thirty nine = 674 039	(True) / False
d R51 K = R51 000	(True) / False
e Two hundred thousand eight hundred and two = 200 802	(True) / False
f Fifty one thousand and sixty = 5 560	True / (False)

Looking at whole numbers – order numbers to 999 999

When ordering numbers, we need to pay close attention to the position and value of each digit.
Which is the largest? 6 093 3 069 3 960 6 039

1 **Circle the larger number:**

a (8 434) / 8 340

b 5 492 / (5 692)

c 17 015 / (17 150)

d (9 840) / 8 999

e (4 815) / 4 518

f 25 194 / (25 941)

g 768 / (7 068)

h (87 158) / 87 155

2 **Insert > (greater than) or < (less than) to make each statement true.**

a 6 482 [<] 6 681

b 9 452 [>] 9 360

c 84 945 [<] 85 105

d 1 999 [<] 2 009

e 1 469 [<] 1 649

f 75 136 [>] 73 156

g 94 054 [>] 91 504

h 7 819 [>] 7 815

3 **Arrange the following numbers in *ascending* order:**

46 827; 468 457; 115 468; 250 015; 98 652; 12 698

12 698 ; *46 827* ; *98 652* ; *115 468* ; *250 015* ; *468 457*

4 **Arrange the following numbers in *descending* order:**

36 817; 408 453; 115 468; 252 013; 89 632; 12 898

408 453 ; *252 013* ; *115 468* ; *89 632* ; *36 817* ; *12 898*

Looking at whole numbers – order numbers to 999 999

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

a **23 560**

37 682

b **123 691**

223 691

Answers will vary.

c **110 420**

80 682

6 **Write a number that is:**

Answers will vary.

a More than 5 678 ☐

b Close to 56 018 ☐

c A little less than 78 931 ☐

d Almost double 4 000 ☐

e Between 34 612 and 38 901 ☐

f Less than half of 88 000 ☐

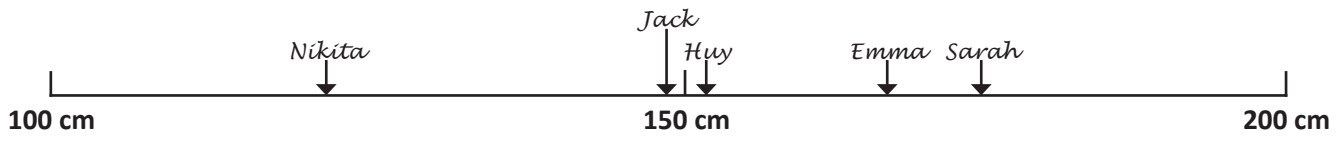
g Now write 2 more problems for a friend to answer:

Answers will vary.

7 **Here are the heights of 5 students. Place them on the number line. Find your height and that of two friends and add these to the number line.**

Sarah	174 cm
Huy	152 cm
Jack	148 cm
Emma	167 cm
Nikita	121 cm

Answers may vary.



Looking at whole numbers – create and compare numbers

1 **Use the following digits to make:**

a The highest number — *76 431*

b The lowest odd number — *13 467*

c The lowest number — *13 467*

d The amount of money you would like to win — *R76 431*

e The highest even number — *76 314*

2 **Use the digits** 5 2 6 3 8 **to make different 3 digit numbers.**

Answers will vary.

3 **Use the numbers you have made in Question 2 to make the statements true:**

a ☐☐☐ is greater than ☐☐☐

b ☐☐☐ is less than ☐☐☐

c ☐☐☐ is close to ☐☐☐

d ☐☐☐ is about double ☐☐☐

Answers will vary.

4 **This table shows the population of 10 regional centres.**
Use the information to answer the following questions:

Name	Population 1996	Population 2001
Rainsalot	92 273	98 981
Funkytown	59 936	68 715
Point Lonely	24 945	45 299
Dullsville	15 906	24 640
Nirvana	67 701	68 443
Dodgy Meadows	270 324	279 975
Braggersville	125 382	130 194
Letsgo	15 906	11 368
Notsoniceton	42 848	44 451
Mt Hero	21 751	20 525

a The population of the mystery place in 2001 is less than it was in 1996. It has decreased by approximately 1 000 people. The place is _____Mt Hero_____.

b You have gone back in time to 1997. You live in a city that has a population of more than 55 000 but less than 60 000. You live in _____Funkytown_____.

c It is now 2001. You have decided to move to a larger centre. This centre has a 4 in the units place and a zero in the thousands place. You move to _____Braggersville_____.

d In 2001 you decided to go on a holiday. You only visited centres that had a population of between 40 000 and 99 000. Which towns did you visit?

Rainsalot, Funkytown, Point Lonely, Nirvana and Notsoniceton.

e Many regional centres showed growth between 1996 and 2001. List the ones that grew by more than 5 000 residents.

Rainsalot, Funkytown, Point Lonely, Dullsville and Dodgy Meadows.

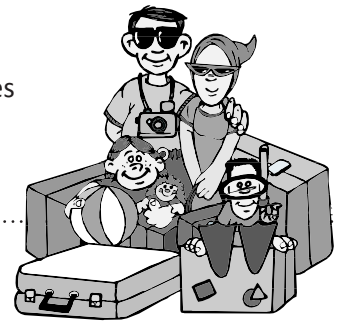
f Your family moved here in 1996 and since then, the population has nearly doubled. Where did you move to?

Point Lonely or Dullsville

It's holiday time! apply

Getting ready

Your family has just won the dream trip of a lifetime! You have won an all expenses paid trip to 5 towns or cities of your choice. That's right, anywhere in the world with everything paid for.



What to do

Your job is to plan the trip, following these guidelines:

1 Your dad hates big cities so one place must have a population of 10 000 or less.

2 Your mum wants to shop. Big time.

3 Your gran has always wanted to see New York.

4 You get to choose the other two places.

Record your selections in the left column of the table below:

Answers will vary.

Place	Population

What to do next

Use an atlas or the internet to help you research the population of your 5 towns or cities, then use the information to answer the following:

a Order your towns from smallest population to largest:

_____

_____

b Choose two of your destinations and write their populations in words:

Answers will vary.

_____

_____

c Find a way to divide your places into two numerical categories such as odd/even, smaller than 100 000/greater than 100 000. Get a friend to see if they can work out the rule that you have applied.

The new place is right! apply

Getting ready

The aim of this game is to order as many numbers on a game board as possible. You'll play the game in a group of 3 or 4. You'll need a pencil and the game show boards below.

What to do

THINK

1. Decide who will be the game show host and who will be the contestants.
2. The host calls a number between the values specified at the top of the board. Start with Game 1.
3. Without showing the host, the contestants choose where they will put the number on their own board. The numbers must be placed in order going up from the lowest number. Once a number is placed, it cannot be moved.
4. The host calls another number. If the contestants can place it on their board, they do so.
5. After the host has called 8 numbers, the person with the most numbers on the board wins. They score a point and a free set of steak knives.
6. Play 3 games. The person with the highest score after 3 games wins.
7. You can play again and choose your own number ranges. You will need to draw your own boards.

Answers will vary.

Game 1 1 - 50	Game 2 50 - 100	Game 3 500 - 1 000

Place value of whole numbers – expanded notation

When we write numbers using expanded notation, we identify and name the value of each digit.

4 231 = 4 000 + 200 + 30 + 1

1 **Express the numbers in expanded notation:**

a 8 246 — *8 000 + 200 + 40 + 6*

b 468 — *400 + 60 + 8*

c 761 — *700 + 60 + 1*

d 1 645 — *1 000 + 600 + 40 + 5*

e 971 — *900 + 70 + 1*

f 7 385 — *7 000 + 300 + 80 + 5*

g 1 978 — *1 000 + 900 + 70 + 8*

2 **Express the expanded notation in numerals:**

a 600 + 80 + 7 = *687*

b 3 000 + 700 + 40 + 5 = *3 745*

c 800 + 30 + 4 = *834*

d 200 + 60 + 9 = *269*

e 2 000 + 800 + 40 + 6 = *2 846*

f 7 000 + 900 + 20 + 5 = *7 925*

g 200 + 40 + 5 = *245*

h 9 000 + 800 + 30 + 2 = *9 832*

3 **Answer the following questions.**

a Tim says 4 329 in expanded notation is written as 4 000 + 3 000 + 29. Is he correct? *No*

b Now he says that 5 847 is written as 5 000 + 800 + 40 + 7. Is he correct this time? *Yes*

c Look carefully at the number 8 953. Why don't we expand it as 8 + 9 + 5 + 3 ?

Because that doesn't show the place values.

d What is the point of a zero in the middle of 7 049? It has no value so why not just leave it out?

It 'holds' the place value.

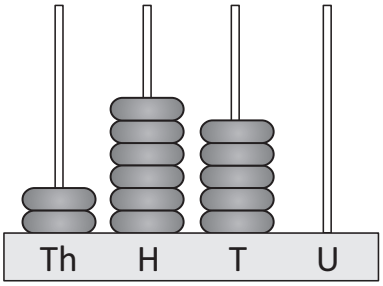
Place value of whole numbers – expanded notation

4 Play expanded notation memory with a friend. Make a copy of this page, cut out the cards, mix them up and place them face down. Take turns turning over two cards at a time. Each time you make a match, you keep the set. The person with the most cards wins.

32 831	**12 300**	**3 588**
9 219	**5 912**	**88 307**
12 890	**15 502**	**2 389**
30 000 + 2 000 + 800 + 30 + 1	**10 000 + 2 000 + 300**	**3 000 + 500 + 80 + 8**
9 000 + 200 + 10 + 9	**5 thousands, 9 hundreds, 1 ten and 2 units**	**80 000 + 8 000 + 300 + 7**
10 000 + 2 000 + 800 + 90	**10 000 + 5 000 + 500 + 2**	**2 thousands, 3 hundreds, 8 tens and 9 units**

Place value of whole numbers – place value to 4 digits

The place or position of a digit in a number helps us understand its value.



2 650

2 is worth 2 000 or two thousands

6 is worth 600 or six hundreds

5 is worth 50 or five tens

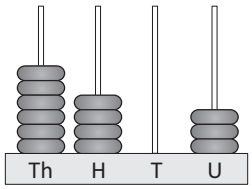
0 is worth zero or no units

1 **Fill in the place value chart for each number. The first one has been done for you.**

		Thousands	Hundreds	Tens	Units
a	465		*4*	*6*	*5*
b	8 972	*8*	*9*	*7*	*2*
c	45			*4*	*5*
d	798		*7*	*9*	*8*
e	4 507	*4*	*5*	*0*	*7*
f	3 041	*3*	*0*	*4*	*1*

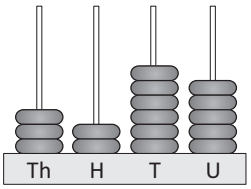
2 **Write the number shown on each abacus.**

a



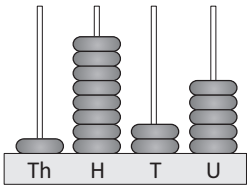
6	*4*	*0*	*3*

b



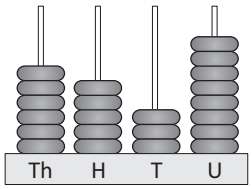
3	*2*	*6*	*5*

c



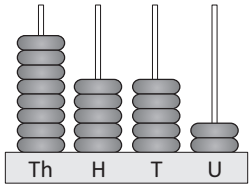
1	*8*	*2*	*5*

d



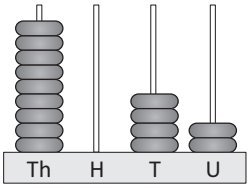
6	*5*	*3*	*8*

e



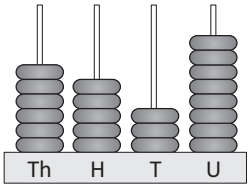
8	*5*	*5*	*2*

f



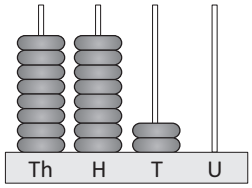
9	*0*	*4*	*2*

g



6	*5*	*3*	*8*

h



8	*8*	*2*	*0*

Place value of whole numbers – place value to 4 digits

3 **What is the value of the 5 in these numbers?**

a 6 1**5**7	*50*	**b** 9 **5**44	*500*	**c** **5** 749	*5 000*
d 4 **5**46	*500*	**e** 78**5**	*5*	**f** 2 3**5**9	*50*

4 **Write the next 3 numbers in each sequence. The first sequence has been done for you.**

a + 100	4 600	*4 700*	*4 800*	*4 900*
b + 1	768	*769*	*770*	*771*
c + 1 000	3 590	*4 590*	*5 590*	*6 590*
d – 100	9 128	*9 028*	*8 928*	*8 828*

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

5 **Complete the cross number puzzle. Make sure you include the zeros in the right places.**

1 *4*	*2*	*0*	2 *7*		3 *2*
0			*0*		*0*
8		4 *7*	*0*	5 *9*	*4*
6		*0*		*2*	
	6 *2*	*5*	7 *6*	*0*	
	8 *1*	*0*	*4*	*7*	
	3		*0*		9 *6*
10 *9*	*0*	*4*	*3*		*0*

Across

1. four thousand two hundred and seven
4. seven thousand and ninety four
6. two thousand five hundred and sixty
8. one thousand and forty seven
10. nine thousand and forty three

Down

1. four thousand and eighty six
2. seven hundred
3. two hundred and four
4. seven thousand and fifty
5. nine thousand two hundred and seven
6. two thousand one hundred and thirty
7. six thousand four hundred and three
9. sixty

Place value of whole numbers – place value to 6 digits

Look at the number **123 456**.

1 is worth 100 000 or one hundred thousand
2 is worth 20 000 or two ten thousands
3 is worth 3 000 or three thousands
4 is worth 400 or four hundreds
5 is worth 50 or five tens
6 is worth 6 or six units

When we write large numbers we put a space after every three numbers. This is because our brains prefer small chunks of information. We chunk from right to left: 2 568 023.

1 **Write the number shown in each row of this place value chart. The first one has been done for you.**

	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Units
45 168		4	5	1	6	8
5 494			5	4	9	4
718 954	7	1	8	9	5	4
46 512		4	6	5	1	2
25 774		2	5	7	7	4
8 191			8	1	9	1
3 041			3	0	4	1

2 **Identify the value of the digit in bold. The first one has been done for you.**

a 54**9** 157 — *9 000*

b 9 54**4** — *4*

c 8**5** 749 — *5 000*

d **4**67 849 — *400 000*

e 12 **4**68 — *400*

f 4 6**8**8 — *80*

g 1**3**4 — *30*

h 9**4** 115 — *4 000*

i 9**9**4 913 — *90 000*

3 **True or False?**

a In the number 567 923, the 7 has the value of 7 000. *True*

b In the number 899 471, the 8 has the value of 80 000. *False*

c In the number 705 532, the zero holds the value of the ten thousands place. *True*

4 **Use the clues to find the mystery numbers:**

I have 5 digits.
Every digit is an odd number and every digit in the number is different.
The greatest digit is in the units place and the smallest digit is in the ten thousands place.
Both the thousands digit and the tens digit are greater than the hundreds digit.
So far, I could be 2 numbers. I am the greater of these.

I am *17 359*

I have 6 digits.
If you add one unit to me I have 7 digits.
What number am I?

I am *999 999*

I am one half of a million plus one.
What number am I?

I am *500 001*

I have 5 digits.
I have a 6 in the ten thousands place and my digit in the unit place is the smallest even number.
My middle digit is one more than the units digit.
My thousands digit is double my units digit and my tens digit is double my thousands digit.
What number am I ?

I am *64 382*

Write a problem for a friend to solve:

Answers will vary.

Place value mastermind

apply

Getting ready

In this game, the objective is to guess a secret 4 digit number. You play with a partner.

You'll need to rule up a page with headings like this:

Number Guess	Number of Correct Digits	Digits in the Correct Place
5 738	2	1

What to do

1. Player 1 writes a secret 4 digit number on a scrap of paper.
2. Player 2 writes their guess in the Number Guess column.
3. Player 1 writes down how many correct digits there are, and how many are in the right column.
4. Player 2 uses that information for guess number 2.
5. The game continues until the secret number is revealed.
6. Swap roles.

What to do next

What strategies can you use to reduce the number of guesses you need to make?

If you reduced the number of digits in the number to 2 or 3, does it make easier to guess?

Can you work out how many 2 digit number possibilities there are?

What about 3 digit number possibilities?

Talk to other pairs. What strategies did they use?

Try them out if you think they will help you!

Who am I? solve

Getting ready

In this guessing game there are many clues. Your job is to not only guess the secret number, but to identify which clues are needed and which are true but don't help solve the problem.

What to do

Use the clues and the hundreds chart to help you identify the secret number:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

The number is greater than 8.
The number is less than 500.
The number is not a multiple of 5.
The number is a multiple of 6.
The number is even.
Its tens digit is even and is double its units digit.
The number is in the top half of the hundreds chart.

What is the number? 42

What to do next

Which clues were not needed? Explain:

"The number is less than 500" — this is not helpful because every number in the chart is less than 500.

"The number is even" — this is not helpful because we have already been told that the number is a multiple of six (so it must be even).

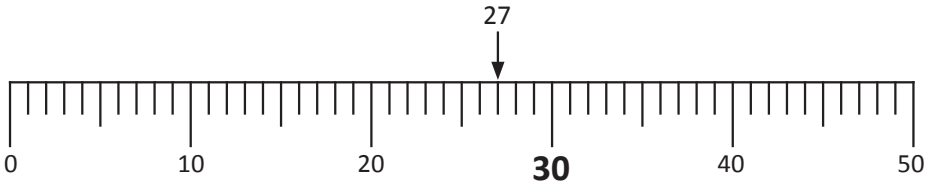
"The number is greater than 8" — this is not helpful because we are told that it has an even tens digit.

Round and estimate – round to a power of 10

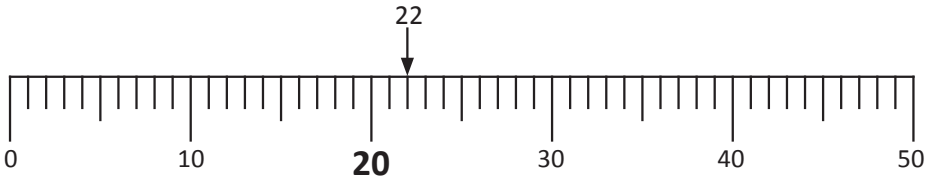
Rounding makes big numbers easier to work with. We round up if the number is exactly halfway between the 10s or over the halfway mark. We round down if the number is under the halfway mark.

Rounding to the nearest 10

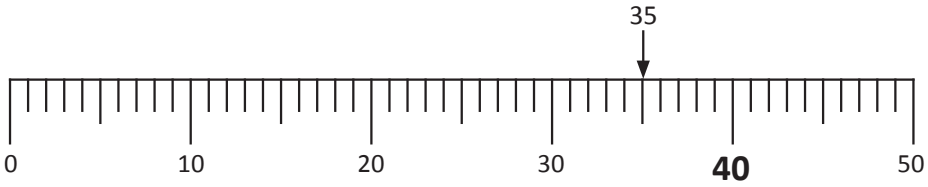
27 is over halfway between the 10s, so it rounds up to 30.



22 is under halfway between the 10s, so it rounds down to 20.

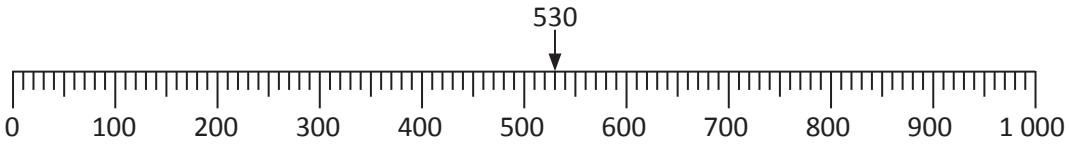


35 is exactly halfway between the 10s, so it rounds up to 40.



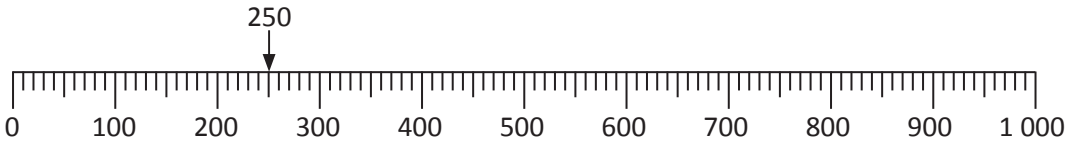
1 **Round the following numbers to the closest hundred. Find the halfway mark first.**

a



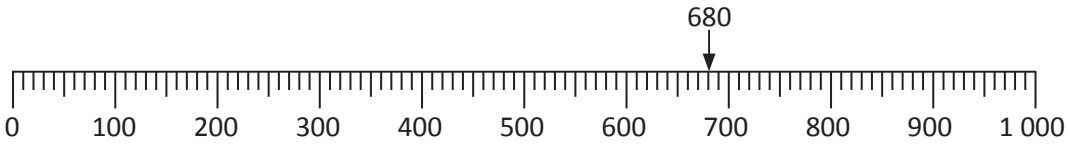
500

b



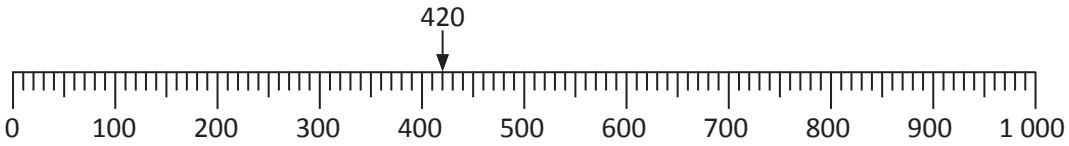
300

c



700

d

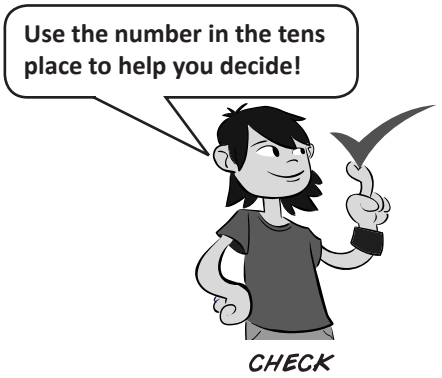


400

Round and estimate – round to a power of 10

2 **Round the following numbers to the closest hundred:**

a 235	*200*	**b** 680	*700*
c 513	*500*	**d** 450	*500*
e 5 164	*5 200*	**f** 3 748	*3 700*



3 **Round the following numbers to the closest thousand:**

a 942	*1 000*	**b** 4 964	*5 000*
c 2 435	*2 000*	**d** 9 350	*9 000*
e 5 678	*6 000*	**f** 2 845	*3 000*

4 **To find the hidden fact, round the numbers in the clues below and insert the matching letters above the answers. The first clue has been done for you.**

M	O	S	Q	U	I	T	O	E	S
30	10	400	40 000	20	40	1 000	10	100	400

P	R	E	F	E	R
70	80	100	7 000	100	80

C	H	I	L	D	R	E	N	T	O
500	200	40	50	900	80	100	1 100	1 000	10

A	D	U	L	T	S
30 000	900	20	50	1 000	400

S	368	rounded to the nearest hundred
T	1 234	rounded to the nearest thousand
M	27	rounded to the nearest ten
C	483	rounded to the nearest hundred
I	43	rounded to the nearest ten
D	932	rounded to the nearest hundred
O	7	rounded to the nearest ten
E	59	rounded to the nearest hundred
U	17	rounded to the nearest ten
Q	43 230	rounded to the nearest ten thousand
P	69	rounded to the nearest ten
N	1 146	rounded to the nearest hundred
R	83	rounded to the nearest ten
F	6 726	rounded to the nearest thousand
H	199	rounded to the nearest hundred
L	46	rounded to the nearest ten
A	27 468	rounded to the nearest ten thousand

Round and estimate – estimate

We use estimating when we want an approximate answer to a calculation.
Rounding helps us do this. We round numbers so we can work with them more easily in our heads.

Look at 333 + 521.
Rounded to the nearest 10, they are 330 and 520.
330 + 520 = 850
Therefore 333 + 521 is approximately 850.

1 **Complete these steps to see why estimating is handy.**

a Use the problem 57 – 38 = 19. Time how long it takes you or a friend to solve it mentally.

_____

b Now round the numbers to the nearest ten and time how long it takes to solve this problem.

Answers will vary.
_____

c Which problem is faster to solve? *Answers will vary.*

d Can you think of an occasion you would use estimation? *Answers will vary.*

2 **Practise estimating with these problems. You can use the middle column to jot down your rounded number sentences or just do them in your head. If you want to add some tension to the activity, race against a partner.**

Sentence	Rounded Sentence	Answer
384 + 53	*380 + 50*	*430*
22 + 69	*20 + 70*	*90*
406 – 89	*410 – 90*	*320*
379 + 203	*380 + 200*	*580*
93 – 61	*90 – 60*	*30*
609 – 498	*610 – 500*	*110*
826 + 599	*830 + 600*	*1 430*
221 + 11	*220 + 10*	*230*
704 + 341	*700 + 340*	*1 040*
47 + 996	*50 + 1 000*	*1 050*

Round and estimate – estimate

3 **Round then estimate to find the best answer to these calculations. Circle the best answer:**

a 72 – 48 =	30	(20)	27
b 57 + 31 =	(90)	15	30
c 126 – 37 =	(90)	100	30
d 567 – 23 =	500	(550)	600
e 899 + 47 =	850	(950)	900
f 1 215 + 134 =	1 400	(1 300)	1 000
g 6 454 + 207 =	6 000	8 000	(6 700)

4 **Use estimation to assess whether these statements might be true. Tick the ones you think are true and cross the ones you think are false.**

a 568 + 311 > 1 000 ✗

b 27 + 58 > 70 ✓

c 899 – 378 < 600 ✓

d 571 – 22 > 500 ✓

e 245 + 245 > 500 ✗

f 1 005 + 790 > 2 000 ✗

5 **Use estimation to answer these word problems:**

a Sarah is saving money to go to the fair. In week 1 she saves R130, in week 2 she saves R190 and in week 3 she saves R290. Estimate how much money she has at the end of week 3.

R600

b The show bags that Sarah wants cost roughly R150 each. If she wants to spend half her money on show bags, how many show bags can she buy?

2

c For lunch, Sarah wants a hot dog, hot chips and 3 jam donuts (mmm … healthy). She has budgeted R30 for lunch. Look at the price list below and estimate whether she can buy what she wants and stay within her budget.

Yes, with R3 left over.

Menu	Price
Pie/pastie	R5
Sausage roll	R5
Hot dog	R7
Jam donuts	3 for R12
Hot chips	R8
Hamburger	R10

Round and estimate – calculations

When estimating, we always need to check that our answers are **reasonable**.

R230 + R590 = R10 000. Is this estimation reasonable?

1 **Are these estimations reasonable? Explain your thinking.**

a Nicola wants a digital camera that costs R4 860 and a memory stick that costs R460. She estimates she will spend approximately R10 000 on both. Is this estimation reasonable? *No*

b Shakeb says 91 + 33 is close to 120. Is this estimation sensible? *Yes*

c Kylie is crazy about dolphins. She has 4 889 pictures of them, 389 stuffed toys, and 481 figurines. She thinks she has about 6 000 items altogether. Is this estimation reasonable? *Yes*

d Sean made a list of the money he had spent on lunch over the week. He then estimated that he had spent R60 over the week. Is this a reasonable estimate? *Yes*

Mon R8	**Tues** R11	**Wed** R8,50	**Thurs** R12	**Fri** R17

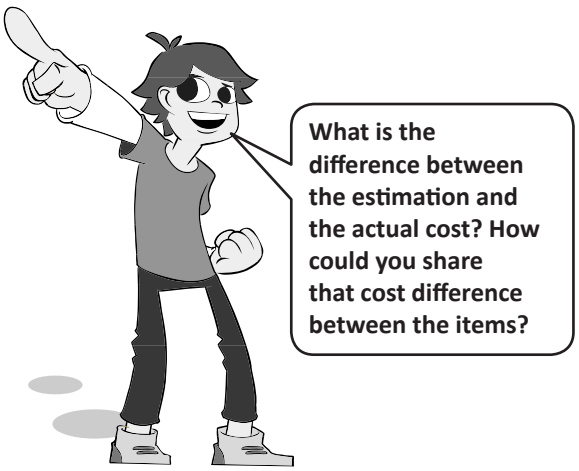
2 **In these problems, work backwards from an estimated answer to find the possible starting points.**

a Daniel bought 3 chocolate bars. He estimated the bars to cost R5; R6 and R5,50. This would make the total estimated cost R16,50. The **actual** cost was R16,75. What could each of the chocolate bars have cost?

Sample answers: R5,10; R6,20; R5,45

b Hung bought 3 books. He estimated their costs to be R50; R90 and R150. This would make the total estimated cost R290. The **actual** cost was R330. What could each of the books have cost? Find two possibilities.

Sample answers: R65; R105; R160



Round and estimate – calculations

When we use a calculator, it is tempting to rely on it and to stop thinking.
Estimating helps us develop an idea of what the possible answer should be.
If we make an error with the calculator, we then know to try again.

3 **Estimate the answer to these problems. Get a friend to sign off on your estimations, then use a calculator to solve the problems.**

	Estimate	Calculation
a 23 × 5		*115*
b 47 × 6		*282*
c 33 × 8		*264*
d 11 × 19		*209*
e 97 × 3		*291*
f 201 × 4		*804*
g 498 × 3		*1 494*

_____
Signed

Breathe in … breathe out … breathe in … breathe out …

4 **How many breaths do you take in a day? Not exactly, an estimation will do. You'll need a clock with a second hand. You may also want to use a calculator. Ask a partner to help you keep track of how many breaths you take in a minute, then multiply as necessary.**

a Use this table to help you organise your calculations.

Time Frame	Number of Breaths
per minute	
per hour	
per day	

b Can you take it further? How many breaths could you take in a week?

c What about in a year?

Answers will vary.

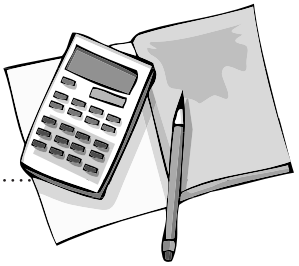
THINK

Round and estimate challenges

solve

Getting ready

Solve these problems using your head, a calculator, a pen and paper. You may work with a friend.



What to do

a You have won R54 870 in a competition. The organisers have no coins and have to round off the amount so they can give you your winnings in notes. Would you rather they rounded to the nearest R100; R1 000 or R10 000? Why? How much money would you get in each case?

Closest R100 = R54 900

Closest R1 000 = R55 000

Closest R10 000 = R50 000

You would rather it was rounded to the closest R1 000.

b I am now 156 000. I have been rounded to the nearest thousand. List at least 5 numbers I could have been.

Numbers in the range 155 500 to 156 499.

c I am now 145 200 after being rounded to the nearest hundred. List at least 5 numbers I could have been.

Numbers in the range 145 150 to 145 249.

d I am 16 000. What two whole numbers can be multiplied together to make me? How many pairs of numbers can you come up with?

Answers will vary.

Shop till you drop

apply

Getting ready

You and a friend will take turns going on 60 second shopping sprees. You'll need a copy of this page, a timer or a clock with a second hand, the items below and your best estimation skills. You may also want to use a calculator for checking.

C copy

What to do

1 Cut out the items below.

2 Decide who will be the first shopper and who will be the timer.

3 The timer states a spending limit between the values of R100 and R350.

4 The shopper then has 60 seconds to estimate what they can buy while staying under the limit. The shopper takes the items they want. It is okay to put things back. (If 60 seconds is too hard, make the time limit 2 minutes.)

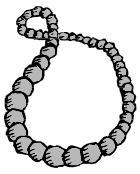
5 After the time is up, all transactions stop. Add up the purchases, using a calculator if desired.

6 If the shopper has stayed under the limit, they get a point. If they go over the limit, they get nothing.

7 Swap roles. At the end of that round, the person who was closest to their shopping limit gets a bonus point.

What to do next

Make up some more items for the shopping spree. Or challenge another team to a race.

 R59,98	 R128,98	 R99,99	 R15,95	 R5,95
 R82	 R10,22	 R14,99	 R120,95	 R37,95

Looking at whole numbers

Name _____

1 **Write in words:**

a 45 572 _____

b 907 463 _____

2 **Write in numerals:**

a forty seven thousand three hundred and nineteen _____

b five hundred and eighty six thousand four hundred and ninety two _____

3 **Match the numerals with the words:**

14 538	thirty two thousand six hundred and forty four
32 644	seven thousand four hundred and twenty one
7 421	fourteen thousand five hundred and thirty eight

4 **Write these numbers in ascending order:** **56 821; 7 905; 57 011; 127 823**

_____

5 **Circle the *smaller* number:**

a 6 780 / 7 680 **b** 14 690 / 14 609 **c** 25 923 / 25 239

6 **What is the smallest number you can make using the digits 5; 2; 8; 9; 1?**

_____

7 **What is the largest number you can make using the digits 8; 0; 4; 3; 7; 5?**

_____

8 **Would you rather inherit R144 567 or one hundred and four thousand, nine hundred and ninety nine rand? Why?**

_____

Skills	Not yet	Kind of	Got it
• Writes numbers to 999 999			
• Matches numerals to words to 999 999			
• Compares and orders numbers to 999 999			

Looking at whole numbers

Name _____

1 **Write in words:**

a 45 572 *Forty five thousand, five hundred and seventy two*

b 907 463 *Nine hundred and seven thousand, four hundred and sixty three*

2 **Write in numerals:**

a forty seven thousand three hundred and nineteen *47 319*

b five hundred and eighty six thousand four hundred and ninety two *586 492*

3 **Match the numerals with the words:**

14 538	thirty two thousand six hundred and forty four
32 644	seven thousand four hundred and twenty one
7 421	fourteen thousand five hundred and thirty eight

4 **Write these numbers in ascending order:** **56 821; 7 905; 57 011; 127 823**

7 905; 56 821; 57 011; 127 823

5 **Circle the *smaller* number:**

a (6 780) / 7 680 **b** 14 690 / (14 609) **c** 25 923 / (25 239)

6 **What is the smallest number you can make using the digits 5; 2; 8; 9 1?**

12 589

7 **What is the largest number you can make using the digits 8; 0; 4; 3; 7; 5?**

875 430

8 **Would you rather inherit R144 567 or one hundred and four thousand, nine hundred and ninety nine rand? Why?**

R144 567, because it is more money.

Skills	Not yet	Kind of	Got it
• Writes numbers to 999 999			
• Matches numerals to words to 999 999			
• Compares and orders numbers to 999 999			

Place value of whole numbers

Name _____

1 **Write the following numbers in expanded notation:**

a 821 _____

b 13 583 _____

c 125 092 _____

2 **Express the expanded notation in numerals:**

a 800 + 40 + 3 ☐

b 5 000 + 300 + 20 + 2 ☐

c 40 000 + 6 000 + 500 + 2 ☐

d 900 000 + 3 000 + 400 + 20 + 7 ☐

3 **In the number 783 012, which digit:**

a is in the ten thousands place? ☐

b is in the tens place? ☐

c will change if one thousand is subtracted? ☐

4 **In which place is the zero in the following numbers?**

a 12 078 _____

b 45 730 _____

c 709 231 _____

5 **True or false?**

a In the number 490 821, the 9 has the value of nine hundred. _____

b In the number 65 359, the 6 is worth six hundred thousand. _____

c In the number 34 890, the 8 has a higher value than the 9. _____

Skills	Not yet	Kind of	Got it
• Expresses numbers in expanded notation to 999 999			
• States the place value of any digit in numbers to 999 999			
• Identifies the value of digits in large numbers			

Place value of whole numbers

Name _____

1 **Write the following numbers in expanded notation:**

a 821 *800 + 20 + 1*

b 13 583 *10 000 + 3 000 + 500 + 80 + 3*

c 125 092 *100 000 + 20 000 + 5 000 + 90 + 2*

2 **Express the expanded notation in numerals:**

a 800 + 40 + 3 *843*

b 5 000 + 300 + 20 + 2 *5 322*

c 40 000 + 6 000 + 500 + 2 *46 502*

d 900 000 + 3 000 + 400 + 20 + 7 *903 427*

3 **In the number 783 012, which digit:**

a is in the ten thousands place? *8*

b is in the tens place? *1*

c will change if one thousand is subtracted? *3*

4 **In which place is the zero in the following numbers?**

a 12 078 *hundreds*

b 45 730 *units*

c 709 231 *ten thousands*

5 **True or false?**

a In the number 490 821, the 9 has the value of nine hundred. *False*

b In the number 65 359, the 6 is worth six hundred thousand. *False*

c In the number 34 890, the 8 has a higher value than the 9. *True*

Skills	Not yet	Kind of	Got it
• Expresses numbers in expanded notation to 999 999			
• States the place value of any digit in numbers to 999 999			
• Identifies the value of digits in large numbers			

Round and estimate

Name _____

1 **Round these numbers to the nearest 10:**

a 672 ☐ **b** 923 ☐

2 **Round these numbers to the nearest 100:**

a 46 562 ☐ **b** 77 835 ☐

3 **Round these numbers to the nearest 1 000:**

a 432 499 ☐ **b** 967 682 ☐

4 **Join the numbers in the left column with an estimate in the right:**

593 021	roughly 5 000
5 096	roughly twenty five thousand
24 899	roughly six hundred thousand
28 923	roughly thirty thousand

5 **Are these reasonable estimates? Circle your choice.**

a Shayla estimates 478 + 111 is roughly 600.	Yes / No
b Buying a drink for R3 and a sandwich for R6 will cost you roughly R20.	Yes / No
c Rounded to the nearest 1 000, there are 3 000 people in a stadium. The actual number could be 3 679.	Yes / No

6 **Circle the best estimate:**

a 76 – 58 =	50	20	39
b 102 + 41 =	43	140	183
c 1 126 + 185 =	1 300	1 500	1 000

Skills	Not yet	Kind of	Got it
• Rounds to the nearest 10; 100; 1 000			
• Makes reasonable estimates to answer real life problems			
• Uses rounding to make reasonable estimates			

Round and estimate

Name _____

1 **Round these numbers to the nearest 10:**

a 672 — 670

b 923 — 920

2 **Round these numbers to the nearest 100:**

a 46 562 — 46 600

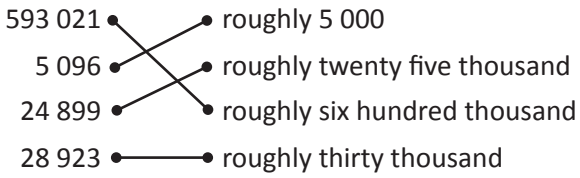
b 77 835 — 77 800

3 **Round these numbers to the nearest 1 000:**

a 432 499 — 432 000

b 967 682 — 968 000

4 **Join the numbers in the left column with an estimate in the right:**



5 **Are these reasonable estimates? Circle your choice.**

a Shayla estimates 478 + 111 is roughly 600.	(Yes) / No
b Buying a drink for R3 and a sandwich for R6 will cost you roughly R20.	Yes / (No)
c Rounded to the nearest 1 000, there are 3 000 people in a stadium. The actual number could be 3 679.	Yes / (No)

6 **Circle the best estimate:**

a 76 – 58 =	50	(20)	39
b 102 + 41 =	43	(140)	183
c 1 126 + 185 =	(1 300)	1 500	1 000

Skills	Not yet	Kind of	Got it
• Rounds to the nearest 10; 100; 1 000			
• Makes reasonable estimates to answer real life problems			
• Uses rounding to make reasonable estimates			

Series F – Reading and Understanding Whole Numbers

Curriculum	Outcomes
1.1	Recognise the place value of digits in whole numbers to at least 6-digit numbers
1.1	Order, compare and represent numbers to at least 6-digit numbers
1.1	Round off to the nearest 5, 10, 100, 1 000