GRADE 5

Mathematics

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Dear Parents,

Helping kids understand and apply mathematics knowledge and skills is a collective responsibility of parents, teachers, and principals.

Students need to learn mathematics in a way that will serve them throughout their lives. Understanding mathematics can provide our students with many job and career opportunities.

This is why students need to know why mathematics works the way it does, how to use it with confidence and competence when solving problems.

Understanding mathematics enables us to:

- Solve problems, make sound decisions and perform calculations with ease
- Explain how we solved a problem and why we made a particular decision
- Understand patterns and trends so that we can make predictions
- Understand Financial Literacy to manage time and money
- Handle everyday situations that involve numbers and feel confident

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From our clear concise instructions and straightforward guided examples to our additional practice material and tests, there's something to suit everyone. Combined with our video tutorials, students will be able to get a tutor-like experience from anywhere and at a fraction of the cost of standard tutoring or after-school help programs.

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Grade 5 Mathematics

CHAPTER 1
NUMBER CONCEPTS AND OPERATIONS

If you need additional help, there are more resources available at math-help.ca/more

1.1 Representing and Describing Whole Numbers

Word Numbers and Numerals

When we express an amount or quantity using words, we call it a **word number**. Examples include twenty-five and one hundred thirty-two. When we use symbols to represent a quantity, we call it a **numeral**; for example, 25 and 132.

Examples: **Two thousand one hundred fifty-three OR 2153**

WORD NUMBER **NUMERAL**

Writing Word Numbers

When we write a word number to represent a whole number numeral, we don't use the word "and." This word is reserved later for decimals.

Examples:

1. 138 is written as one hundred thirty-eight **NOT** one hundred and thirty-eight.
2. 4530 is written as four thousand five hundred thirty **NOT** four thousand five hundred and thirty.

Numerals and Digits

Numerals are made up of **digits**. For example, the numeral 356 is made up of the digits **3**, **5**, and **6**. Each one of these digits represents a certain value.

Example: 5368 is made up of the digits **5, 3, 6,** and **8**, each with different values.

The **value** of each digit depends on its location or **place** in the numeral. For example, in the numeral 235, the digit 2 has a value of 200 because it is in the hundreds place, the digit 3 has a value of 30 because it is in the tens place, and the digit 5 has a value of 5 because it is in the ones place.

Using Proper Spacing Instead of Commas in Numerals

In Canada, we do not use commas with whole numbers. When a numeral has more than 4 digits, we leave a space instead of a comma between every three digits, working from right to left. We do **not** use a comma or leave a space if there are only four digits.

Examples:

1. Use 35 172 instead of 35,172.	Leave a space with three digits to the right.
2. Use 534 873 instead of 534,873.	Leave a space with three digits to the right.
3. Use 4215 instead of 4,215.	Since there are only 4 digits, do not leave a space.

Examples with Solutions

1. Write a numeral for each of the following word numbers.

a. two hundred fifty-three	253
b. one hundred twenty	120
c. three thousand four hundred seventy	3470
d. six thousand fifty-seven	6057
e. five thousand six hundred two	5602
f. fifty thousand three hundred six	50 306

2. Write a word number for each of the following numerals.

a. 509	five hundred nine
b. 3238	three thousand two hundred thirty-eight
c. 4044	four thousand forty-four
d. 6305	six thousand three hundred five
e. 8230	eight thousand two hundred thirty
f. 41 206	forty-one thousand two hundred six

3. Write as many different numerals as possible from the following digits.

7, 3	Possible numerals with one digit are 3 and 7. Possible numerals with two digits are 37 and 73. All possible numerals are: 3, 7, 37, 73.

4. Use proper spacing and delete commas to rewrite each numeral shown incorrectly on the left.

Incorrectly Written Numeral	Correct Version
a. 4,678	4678 (remove comma, no space)
b. 7 349	7349 (remove space)
c. 10,348	10 348 (remove comma, insert space)
d. 72,431	72 431(remove comma, insert space)
e. 145,689	145 689 (remove comma, insert space)

Place Value

When we write numerals from 0 to 9, they involve only the **"ones" digits**.

Examples:

1. 9 is equal to nine ones.
2. 2 is equal to two ones.

When we write numerals from 10 to 99, they involve both **"tens"** and **"ones" digits**.

Examples:

1. 16 is equal to 1 ten and 6 ones.
2. 68 is equal to 6 tens and 8 ones.

When we write numerals between 100 and 999, they involve **hundreds, tens,** and **ones digits**.

Example: 962 is equal to 9 hundreds, 6 tens, and 2 ones.

Numerals between 1000 and 99 999 can include the **"ten thousands, thousands, hundreds, tens,** and **ones" digits**. The number 23 417 is shown below with the place value for each digit.

2	**3**	**4**	**1**	**7**
↑	↑	↑	↑	↑
ten thousands	**thousands**	**hundreds**	**tens**	**ones**

So 23 417 has 2 ten thousands, 3 thousands, 4 hundreds, 1 ten, and 7 ones
(twenty-three thousand four hundred seventeen)

↑ **Combine the thousands.** ↑ **Combine the tens and ones.**

Examples with Solutions

1. What is the value of the underlined digit in each of the following numerals?
   a. 4<u>5</u>3 The digit 5 is in the tens place, so it is equal to $5 \times 10 = 50$.
   b. 68<u>2</u> The digit 2 is in the ones place, so it is equal to $2 \times 1 = 2$.
   c. <u>5</u>09 The digit 5 is in the hundreds place, so it is equal to $5 \times 100 = 500$.
   d. 2<u>3</u>45 The digit 3 is in the hundreds place, so it is equal to $3 \times 100 = 300$.
   e. <u>5</u>230 The digit 5 is in the thousands place, so it is equal to $5 \times 1000 = 5000$.
   f. 5<u>4</u> 895 The digit 4 is in the thousands place, so it is equal to $4 \times 1000 = 4000$.
   g. <u>2</u>4 305 The digit 2 is in the ten thousands place, so it is equal to $2 \times 10\,000 = 20\,000$.

2. Write each numeral described below.
   a. I have 5 tens, 4 hundreds, and 3 ones. 453
   b. I have 2 thousands, 3 hundreds and 7 ones. 2307
   c. I have 9 hundreds, 7 thousands, and 8 ones. 7908
   d. I have 6 ten thousands and 2 hundreds. 60 200
   e. I have 3 ten thousands, 1 thousand, and 5 tens. 31 050
   f. I have 6 thousands and 3 ones. 6003
   g. I have 3 hundreds and 7 thousands. 7300

3. Write each numeral as a word number.
   a. 25 040 Twenty-five thousand forty
   b. 620 305 six hundred twenty thousand three hundred five
   c. 702 027 seven hundred two thousand twenty-seven
   d. 800 808 eight hundred thousand eight hundred eight

4. Write each word number as a numeral.
   a. three hundred twenty-five thousand two hundred nine 325 209
   b. one hundred twenty-five thousand six hundred forty-eight 125 648
   c. two hundred thousand three hundred ten 200 310
   d. six hundred thousand thirty-five 600 035

Expressing a Numeral using Expanded Form

We can show a numeral as a sum of the values of its digits. This is called writing the numeral in **expanded form**. For example, 526 is equal to 500 + 20 + 6. Keep in mind the place values of the digits.

Examples:

1. $34 = 3 \times 10 + 4 \times 1 = 30 + 4$
2. $793 = 7 \times 100 + 9 \times 10 + 3 \times 1 = 700 + 90 + 3$
3. $8408 = 8 \times 1000 + 4 \times 100 + 0 \times 10 + 8 \times 1 = 8000 + 400 + 8$

Examples with Solutions

1. Write each numeral in expanded form.

   a. 5642 — $5642 = 5 \times 1000 + 6 \times 100 + 4 \times 10 + 2 \times 1$

   b. 4059 — $4059 = 4 \times 1000 + 5 \times 10 + 9 \times 1$

   c. 24 040 — $24\,040 = 2 \times 10\,000 + 4 \times 1000 + 4 \times 10$

2. Write the numeral that has 5 thousands, 2 hundreds, 3 tens, and 0 ones.

   $\underline{5} \times 1000 + \underline{2} \times 100 + \underline{3} \times 10 + \underline{0} \times 1$
   $= 5000 + 200 + 30 + 0 = 5230$

3. Write the word number for the numeral **7215**.

   The numeral has 7 thousands, 2 hundreds, 1 ten, and 5 ones.

   The word number is **seven thousand two hundred fifteen**.

4. Write 30 574 in words.

   The numeral has 3 ten thousands, 5 hundreds, 7 tens, and 4 ones.

   The word number is **thirty thousand five hundred seventy-four**.

5. Write three hundred thousand five hundred twenty as a numeral.

   There are 3 hundred thousands, 5 hundreds, and 2 tens.

   The numeral is **300 520**.

6. In the numeral 70 218,

   a. What is the value of the 2?

   The 2 is in the hundreds column, so its value is $2 \times 100 = 200$.

b. What is the value of the 1? The one is in the tens column, so its value is $1 \times 10 = 10$.

c. What is the value of the 7? The 7 is in the ten thousands column, so its value is $7 \times 10\,000 = 70\,000$.

Exercises 1.1

1. Write a numeral for each of the following word numbers.

a. one hundred seventy

b. five hundred nine

c. four hundred twenty-four

d. six thousand fifteen

e. two thousand thirty-six

f. twenty-two thousand ten

g. thirty thousand two hundred one

h. two hundred thousand six hundred

2. Write a word number for each of the following numerals.

a. 345

b. 304

c. 1250

d. 2253

e. 32 753

f. 70 150

g. 125 344

h. 333 303

3. Write as many different numerals as possible from the following digits.

a. 5, 2

b. 1, 7

4. Rewrite each numeral using proper spacing and deleting commas.

a. 4 790

b. 7,666

c. 5,555

d. 12,456

e. 30,148 f. 22,088

g. 470,031 h. 330,022

5. Fill in each blank with the correct digit in the table below.

	ten thousands	thousands	hundreds	tens	ones
a. 405					
b. 2210					
c. 6070					
d. 5055					
e. 20 245					
f. 31 042					
g. 78 103					

6. Write each numeral using expanded notation.

a. 4522 b. 3022

c. 40 250 d. 12 090

e. 38 0 80 f. 120 790

7. Write each numeral described below.

a. I have 3 thousands, 2 tens, and 7 ones. b. I have 6 hundreds and 9 ones.

c. I have 2 ten thousands, 3 hundreds, 5 tens, and 2 ones. d. I have 8 thousands, 3 tens, and 5 ones.

8. What is the value of the digit underlined in each numeral?

a. 5<u>6</u>71 b. 60<u>9</u>2

c. 6<u>3</u> 697

d. <u>5</u>4 207

9. Draw an arrow to match the numeral on the left with the correct word number on the right. The first one is done for you.

a. 125 430	nine hundred eight thousand eight
b. 750 209	one hundred twenty-five thousand four hundred thirty
c. 300 025	four hundred ten thousand ten
d. 908 008	seven hundred fifty thousand two hundred nine
e. 410 010	three hundred thousand twenty-five
f. 125 043	three hundred thousand two hundred fifty
g. 300 250	one hundred twenty-five thousand forty-three

<u>Extra for Experts</u>

WHAT NUMBER AM I?

10. I have 3 thousands, 2 hundreds, 0 tens, and 2 ones.

11. I have 2 hundreds, three times as many tens as hundreds, and half as many ones as hundreds.

12. I have 15 ones and 9 tens.

13. I have 30 tens and 2 ones.

14. I have 14 hundreds, 6 tens,
and 18 ones.

15. I have twice as many thousands as tens,
twice as many tens as ones,
and 2 less than 4 ones.

16. I have 6 thousands, half as many hundreds
as thousands, and the same number of
tens and ones as hundreds.

17. I have the same number of thousands,
hundreds, tens, and ones. The sum of my
digits is 28.

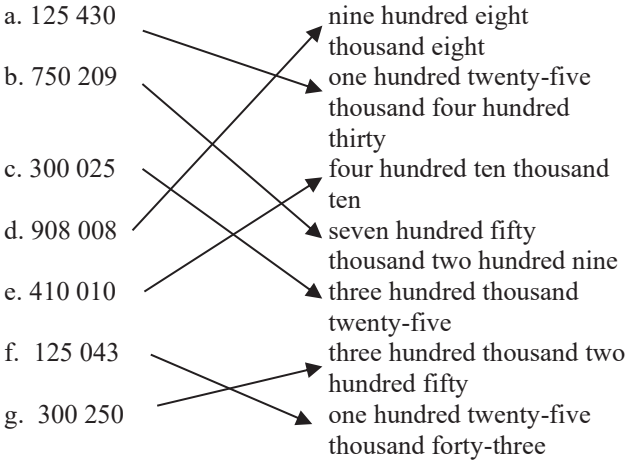
18. List all of the 3-digit numerals that can be made from the digits 3, 6, and 9.

19. List all of the numerals containing one, two, or three digits than can be made from the digits 5, 2, and 3.

ANSWERS TO EXERCISES AND CHAPTER TESTS

CHAPTER 1

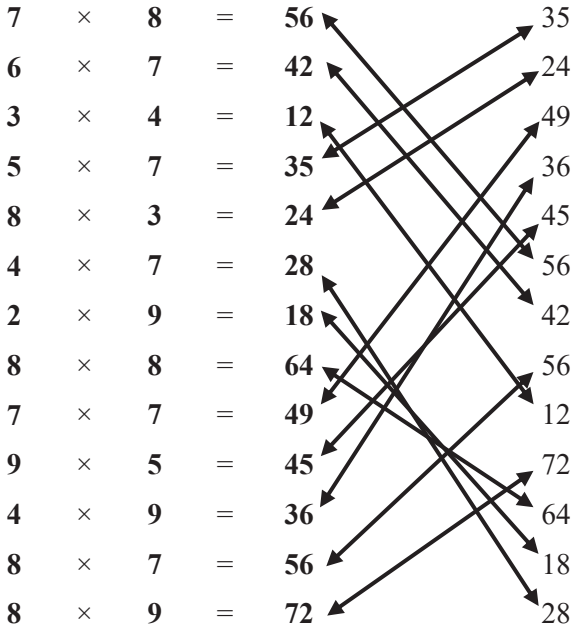
Exercises 1.1 (page 7)
1. a) 170 **b)** 509 **c)** 424 **d)** 6015 **e)** 2036
f) 22 010 **g)** 30 201 **h)** 200 600
2. a) three hundred forty-five
b) three hundred four
c) one thousand two hundred fifty
d) two thousand two hundred fifty-three
e) thirty-two thousand seven hundred fifty-three
f) seventy thousand one hundred fifty
g) one hundred twenty-five thousand three hundred forty-four
h) three hundred thirty-three thousand three hundred three **3. a)** 2, 5, 25, 52 **b)** 1, 7, 17, 71
4. a) 4790 **b)** 7666 **c)** 5555 **d)** 12 456
e) 30 148 **f)** 22 088 **g)** 470 031 **h)** 330 022
5. a) 0 0 4 0 5 **b)** 0 2 2 1 0 **c)** 0 6 0 7 0
d) 0 5 0 5 5 **e)** 2 0 2 4 5 **f)** 3 1 0 4 2
g) 7 8 1 0 3
6. a) $4 \times 1000 + 5 \times 100 + 2 \times 10 + 2 \times 1$
b) $3 \times 1000 + 2 \times 10 + 2 \times 1$
c) $4 \times 10\,000 + 2 \times 100 + 5 \times 10$
d) $1 \times 10\,000 + 2 \times 1000 + 9 \times 10$
e) $3 \times 10\,000 + 8 \times 1000 + 8 \times 10$
f) $1 \times 100\,000 + 2 \times 10\,000 + 7 \times 100 + 9 \times 10$
7. a) 3027 **b)** 609 **c)** 20 352 **d)** 8035
8. a) 600 **b)** 90 **c)** 3000 **d)** 50 000
9.



10. 3202 **11.** 261 **12.** 105 **13.** 302 **14.** 1478
15. 8042 **16.** 6333 **17.** 7777
18. 369, 396, 639, 693, 936, 963 **19.** 2, 3, 5, 23, 32, 25, 52, 35, 53, 523, 532, 253, 235, 352, 325

Exercises 1.2 (page 15)
1. a) 500 **b)** 11 000 **c)** 3600 **d)** 300 **e)** 20
2. a) 6700 + 10000 = 7900 **b)** 3400 + 700 = 4100 **c)** 3200 – 2100 = 1100 **d)** 4300 – 400 = 3900 **e)** 230 × 10 = 2300 **f)** 450 ÷ 5 = 90
3. a) 500 + 3400 = 3900 **b)** 6400 – 400 = 6000
c) 40 × 40 = 1600 **d)** 260 ÷ 20 = 13 **4. a)** 60
b) 90 **c)** 200 **d)** 12 200 **e)** 19 000 **f)** 2540
g) 72 000 **h)** 1660 **i)** 90 900 **j)** 191 920
k) 65 000 **5. a)** 30 × 40; 1200 **b)** 100 × 300; 30 000 **c)** 50 × 100; 5000 **d)** 300 × 300; 90 000 **e)** 1000 × 100; 100 000 **6.** 300 + 300 + 600; 1200 **7.** 500 + 600 + 500 + 600; 2200 km
8. 40 + 60 + 70 + 110; 280 tickets
9. 300 + 500 + 200 + 500; 1500 cards
10. 70 + 70 + 40 + 70 + 90 + 90 + 90 + 60; 580 students **11.** 15 675, 15 676, 15 677, 15 678, 15 679 **12.** 1, 2, 3, 4 **13.** Round 21 months down to 20 and round the number of days in each month to 30. 30 × 20 = 600
14. a) 35, 36, 37, 38, 39 40, 41, 42, 43, 44
b) 8550, 8551, 8552, 8553, 8554, 8555
15. a) 9842 **b)** 2489

Exercises 1.3a (page 19)
1. a) 24, 30 **b)** 32, 48, 56 **c)** 28, 35
d) 18, 24, 27 **e)** 16, 28, 32, 36
f) 10, 14, 16, 18 **g)** 63, 72 **h)** 48, 54
2.



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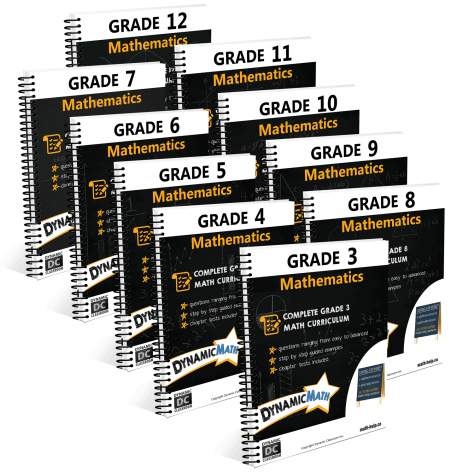

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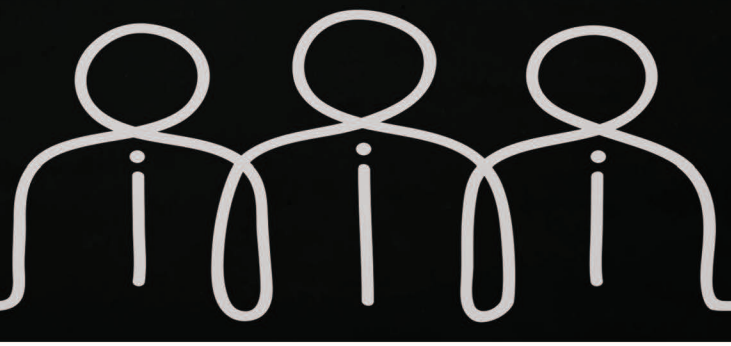

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