

UNIT 1

NUMBER CONCEPTS

1.1 Representing and Describing Whole Numbers

1.2 Comparing and Ordering Numbers

1.3 Representing and Classifying Numbers

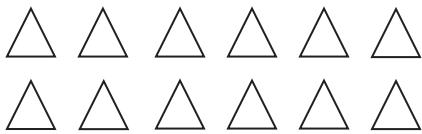
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1.1 Representing and Describing Whole Numbers

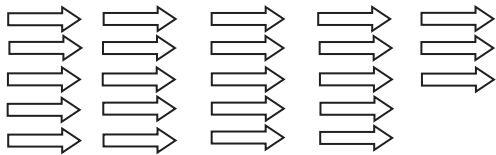
Whole Numbers

Whole numbers can be used to represent (show) how many objects are in a set. There can be no objects in a set, one object, two objects, and so on, up to any number of objects.

Examples: Count the objects below. Use a whole number to represent the number of objects in the set.



The number of triangles shown on the left is **12**.



The number of arrows shown on the left is **23**.

Whole numbers can be thought of as the numbers used for counting plus the number zero.

The set of whole numbers: **0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, ...**

Each number can be written in two ways: as a **numeral** and as a **word number**.

Note: We do not include the word “and” with word numbers for whole numbers. The word “and” will be used with decimal numbers.

Examples:

1. 12 is a numeral and twelve is its word number.
2. 145 is a numeral and one hundred forty-five is its word number (**not** one hundred and forty-five).

Numerals are made up of **digits**. For example, the numeral 435 is made up of the digits **4**, **3**, and **5**. Each of these digits represents a certain value. To better understand the value of each digit, we need to understand **place value**, which we will discuss in the next section.

Example: 3417 consists of the **digits** 3, 4, 1, and 7. Each of these digits have different values.

Examples with Solutions

1. Write the numerals for each of the following word numbers.

Eighty-five	85
One hundred twenty-five	125
Four hundred three	403
Five thousand two hundred fifty	5250
Nine thousand twenty	9020
Eight thousand seven	8007

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

655	six hundred fifty-five
1943	one thousand nine hundred forty-three
508	five hundred eight
2030	two thousand thirty
9007	nine thousand seven

3. Write all possible two-digit numerals that can be made from the following two digits.

7, 9	97 – ninety-seven
	79 – seventy-nine

4. Write all possible three-digit numerals that can be made from the following three digits.

4, 3, 1

431 – four hundred thirty-one

413 – four hundred thirteen

341 – three hundred forty-one

314 – three hundred fourteen

143 – one hundred forty-three

134 – one hundred thirty-four

Numerals, Digits, and Values

The **numeral** 427 contains 3 **digits**: 4, 2, and 7. The **value** of each digit depends on its location or **place** in the numeral.

In the numeral 427, the digit 4 has a value of 400 because it is in the hundreds place. The digit 2 has a value of 20 because it is in the tens place. The digit 7 has a value of 7 because it is in the ones place.

Place Value (ones, tens, hundreds, thousands)

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

Examples:

1. 6 is equal to six 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. 20 is equal to 2 tens and 0 ones.
2. 38 is equal to 3 tens and 8 ones.
3. 97 is equal to 9 tens and 7 ones.

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

Examples:

1. 639 is equal to 6 hundreds, 3 tens, and 9 ones.
2. 485 is equal to 4 hundreds, 8 tens, and 5 ones.

Numerals between 1000 and 9999 include the “**thousands, hundreds, tens, and ones**” digits. Below, the number 5628 is shown with the place value for each digit.

5	6	2	8
↑	↑	↑	↑
thousands	hundreds	tens	ones

5628 has 5 thousands, 6 hundreds, 2 tens, and 8 ones.

Writing Numerals Using Proper Spacing

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. Write as 11 250 instead of 11,250.
2. Write as 33 066 instead of 33,066.
3. Write as 5268 instead of 5,268.

Expressing a Numeral in 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, 328 is equal to $300 + 20 + 8$. Keep in mind the place values of the digits.

Examples:

$$1. 62 = 6 \times 10 + 2 \times 1 = 60 + 2$$

$$2. 549 = 5 \times 100 + 4 \times 10 + 9 \times 1 = 500 + 40 + 9$$

$$3. 7604 = 7 \times 1000 + 6 \times 100 + 0 \times 10 + 4 \times 1 = 7000 + 600 + 4$$

Examples with Solutions

1. Write the numeral that has 2 thousands, 5 hundreds, 0 tens, and 7 ones.

$$\underline{2} \times 1000 + \underline{5} \times 100 + \underline{0} \times 10 + \underline{7} \times 1$$
$$2000 + 500 + 0 + 7 = 2507$$

2. Write the word number for the numeral below.

6512

The numeral has 6 thousands, 5 hundreds, 1 ten, and 2 ones.

The word number is **six thousand five hundred twelve**.

3. Write 4084 in words.

The numeral has 4 thousands, 0 hundreds, 8 tens, and 4 ones.

The number is **four thousand eighty-four**.

4. Write three thousand six hundred twenty as a numeral.

There are 3 thousands, 6 hundreds, and 2 tens.

The numeral is **3620**.

5. Look at the numeral 6513.

- a. What is the value of the 5?

The 5 is in the hundreds column, so its value is $5 \times 100 = 500$.

- 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 6?

The 6 is in the thousands column, so its value is $6 \times 1000 = 6000$.

6. Express 759 in expanded form.

There are 7 hundreds, 5 tens, and 9 ones.

$$\begin{aligned} 759 &= 7 \times 100 + 5 \times 10 + 9 \times 1 \\ &= 700 + 50 + 9 \end{aligned}$$

7. Write a numeral for a number that has 3 thousands, 3 hundreds, 3 tens, and 3 ones.

3 thousands, 3 hundreds, 3 tens, and 3 ones is equal to $3 \times 1000 + 3 \times 100 + 3 \times 10 + 3 \times 1$

This is equal to $3000 + 300 + 30 + 3 = 3333$.

Exercises 1.1

1. Fill in each blank in the table below.

	thousands	hundreds	tens	ones
a. 9052				
b. 206				
c. 6300				
d. 5106				
e. 310				
f. 42				
g. 7007				

2. Write each of the following numerals in expanded form. The first one is done for you.

a. 3257

$$3000 + 200 + 50 + 7$$

b. 4433

c. 8056

d. 8506

e. 9990

3. Write the numeral for each description below.

a. 2 thousands, 9 hundreds, 7 tens, and 5 ones

b. 2 hundreds, 5 tens, and 6 ones

c. 8 hundreds and 5 ones

d. 9 thousands, 9 hundreds, 9 tens, and 9 ones

e. 2 thousands, 7 hundreds, and 3 ones

f. 6 thousands and 5 tens

g. 4 thousands, 5 tens and 4 ones

h. 3 thousands and 3 ones

i. 27 thousands and 8 ones

j. 38 hundreds and 20 ones

4. The word numbers below combine some of the place values. Three examples are done for you. Write the correct numeral for each of those that follow.

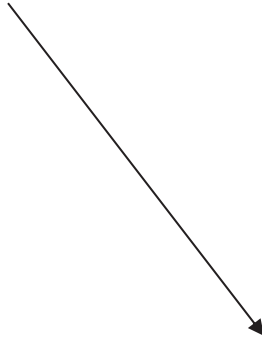
- | | |
|----------------------------------|----------------------------------|
| (i) five hundred twenty-seven | 527 |
| (ii) twelve hundred sixty-five | 1265 |
| (iii) twenty-six hundred eight | 2608 |
| a. eight hundred twelve | b. six hundred twenty-one |
| c. eighteen hundred seven | d. eleven hundred sixty-eight |
| e. twenty-five hundred forty-two | f. one thousand two hundred five |
| g. twenty-nine hundred six | h. nine thousand twenty |
| i. ten thousand six | |

5. Write the word number for each numeral listed below.

- | | |
|---------|---------|
| a. 106 | b. 67 |
| c. 235 | d. 610 |
| e. 501 | f. 1034 |
| g. 1528 | h. 5202 |

6. Match the word number in the left column with the numeral in the right column by drawing an arrow between them. The first one is done for you.

a. six hundred seventy	10 010
b. twenty-three hundred two	2320
c. forty-two thousand sixty-five	11 101
d. ten thousand ten	607
e. twenty-three hundred twenty	670
f. eleven thousand eleven	42 605
g. ten thousand one hundred one	42 065
h. forty-two thousand six hundred five	2302
i. six hundred seven	11 011
j. eleven thousand one hundred one	10 101



7. Use numerals to write each of the following numbers.

a. two hundred greater than twenty-one

b. one thousand greater than five hundred nine

c. two hundred less than one thousand three hundred

d. three hundred less than twenty-five hundred

ABORIGINAL APPLICATIONS

THE POTLACH



Talking Stick



BT Collection



Feast Bowl

The Potlatch is a feast in which gifts are given. It is usually held to celebrate a wedding, remember a death in a family, to honour a chief or another important person, or for adoptions into a family. Titles or names are frequently passed on from one person or family to another during the ceremonies. The rank of a family hosting a Potlatch is raised by the number and value of the gifts that are given out.

Ceremonies at a Potlatch include songs and dances used to tell stories that are remembered as the oral history of a family or individual. The stories are sometimes told by a person of influence holding a “talking stick,” which is passed from one speaker to another. Masks are often worn in the dances so that those witnessing the dances, the stories, or the giving of titles will remember them.

Math Applications

1. Three families hosted potlaches in their village last year. There were 1009 people who attended the first one, 1101 attended the second, and 1011 attended the third. Arrange these three numbers in order from smallest to largest.
2. A total of 3121 people attended the three potlatches. Write this number in expanded form

Answers

1. 1009, 1011, 1101
2. $3 \times 1000 + 1 \times 100 + 2 \times 10 + 1 \times 1$

ANSWERS TO EXERCISES AND UNIT TESTS

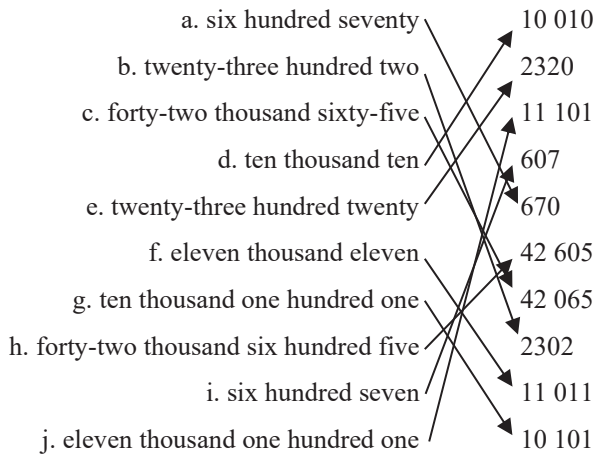
UNIT 1

Exercises 1.1 (page 7)

1.

	Thousands	Hundreds	Tens	Ones
a) 9052	9	0	5	2
b) 206	0	2	0	6
c) 6300	6	3	0	0
d) 5106	5	1	0	6
e) 310	0	3	1	0
f) 42	0	0	4	2
g) 7007	7	0	0	7

2. a) $3000 + 200 + 50 + 7$
 b) $4000 + 400 + 30 + 3$ c) $8000 + 50 + 6$
 d) $8000 + 500 + 6$ e) $9000 + 900 + 90$
 3. a) 2975 b) 256 c) 805 d) 9999 e) 2703
 f) 6050 g) 4054 h) 3003 i) 27 008 j) 3820
 4. a) 812 b) 621 c) 1807 d) 1168 e) 2542
 f) 1205 g) 2906 h) 9020 i) 10 006
 5. a) one hundred six b) sixty-seven
 c) two hundred thirty-five d) six hundred ten
 e) five hundred one f) one thousand thirty-four
 g) one thousand five hundred twenty-eight
 h) five thousand two hundred two
 6.



7. a) 221 b) 1509 c) 1100 d) 2200 e) 872
 f) 1300 g) 1517 h) 1200 8. a) five hundred
 twenty-eight b) nine hundred fifty c) two
 thousand two hundred seventy-five d) nine
 hundred ninety e) two thousand two hundred
 fifty-five f) seven hundred forty g) three
 hundred fifty 9. 6023 10. 360 11. 31
 12. 123 13. 1365 14. 421 15. 8045 16. 5555

Exercises 1.2 (page 17)

1. a) 540 b) 2110 c) 4810 d) 5110
 e) 11 111 2. a) 318 b) 1028 c) 3389
 d) 1009 e) 21 099 3. a) 210, 207, 165, 156
 b) 3165, 3155, 3090, 3033
 c) 8100, 8099, 947, 895
 d) 5010, 5005, 4990, 4988
 e) 4532, 4529, 4444, 4399
 4. a) 139, 159, 165, 240, 268
 b) 1009, 1029, 1034, 1040
 c) 4408, 4499, 4500, 4510
 d) 890, 908, 7009, 7010
 e) 10 009, 10 010, 10 110, 10 111
 5. 839, 893, 389, 398, 938, 983
 6. 542, 245, 524, 254, 425, 452 7. 7, 8, 9
 8. 0, 1, 2 9. 0, 1, 2, 3 10. 0, 1, 2, 3, 4, 5, 6, 7, 8
 11. 9999

Exercises 1.3 (page 22)

1. a) 8, 9 b) 0, 1, 2, 3, 4 c) 7 d) 0 e) 5
 f) 4, 5, 6, 7, 8, 9 g) 0, 1, 2, 3 h) 0 2. 6, 7
 3. 22, 24, 26, 28 4. 10, 20 5. 12, 24 6. 21, 63

Extra Practice – Unit 1 (page 24)

1. a) 202 b) 3333 c) 3300 d) 3330 e) 3030
 f) 3003 2. a) two thousand four hundred ten
 b) two thousand ten c) two thousand four
 d) nine thousand one hundred five
 3. 2, 4, 42, 24 4. 758 587 857 785 578 875
 5. a) $400 + 50 + 6$ b) $9000 + 800 + 2$
 c) $7000 + 60 + 7$ 6. 963 7. 2222 8. 5555
 9. a) 1210 b) 5011 c) 8114 10. a) 3302
 b) 7389 c) 10 101 11. 898, 899, 908, 910
 12. 2110, 2101, 2011 13. 8, 9
 14. 0, 1, 2, 3, 4, 5, 6, 7, 8 15. a) 15, 16, 17
 b) 18, 19 c) 15, 18 16. a) 5, 10, 15 b) 12, 18
 17. a) $200 + 30 + 4$ b) $400 + 2$
 c) $2000 + 900 + 30 + 9$ 18. a) 423 b) 965
 c) 5270

Unit 1 Test (page 28)

1. a) 45 b) 57 c) 2210 2. a) 400 b) 5000
 c) 80 3. a) 2612 b) 3047 c) 205 d) 30 200
 4. a) thirty-four thousand fifteen
 b) sixty thousand seven 5. a) 3420 b) 4000
 c) 2800 6. 2020 7. 2200 8. 7777