

*Important Concepts . . .*

# **Preview Review**



**Mathematics   Grade 4   *TEACHER KEY***

***W1 - Lesson 1: Number Concepts***

## Important Concepts of Grade 4 Mathematics

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## Materials Required

Mathematics Grade 4

Version 5

Preview/Review W1 - Lesson 1 TEACHER KEY

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# Preview/Review Concepts for Grade Four Mathematics

## ***TEACHER KEY***



***W1 - Lesson 1:  
Number Concepts***

# OBJECTIVES

By the end of this lesson, you should

- understand the difference between digit and number
- read and write numbers to 10 000
- read number words to 10 000
- represent and describe numbers to 10 000 in several ways
  - standard form
  - words
  - base ten drawings
  - expanded form
- state the value of selected place value digits
- compare and order numbers up to 10 000
- round numbers to the nearest ten, hundred, and thousand
- use the 4-step problem-solving process

## GLOSSARY

**abacus** - beads arranged in a frame, used for counting and calculating

**digit** - any of the symbols 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 used to write numbers

**expanded form** - a way of writing numbers to show place value

**place value** - the value a digit has depending on where it is placed in the number

**rounding** - to change a number to a more convenient value

**strategy** - a plan or method used to solve a problem

## Introductory Information for Teachers

Preview/Review courses are designed to be used in a classroom setting under the supervision of a teacher. They are aimed mainly at students who have already worked on the concepts in the regular course, but who need to review these concepts again before beginning the next grade. Some students may find Preview/Review courses useful in preparing for a course they will be taking in a new grade. No Preview/Review course is intended to replace the regular course because Preview/Review courses cover only some of the important concepts from the Program of Studies for each grade.

The Preview/Review course for Mathematics 4 contains fifteen lessons in three sections. Each section has five lessons. Some of the lessons have homework assignments. A short quiz is provided at the end of each section to test the student's mastery of the material covered. The course is designed to be covered over a three week period. No textbook is required.

Teachers are encouraged to use the Preview/Review materials in a way that meets the needs of each student. Different students have different needs depending on their strengths in mathematics. For example, a student who has already mastered *addition with regrouping* may not need to do all the questions provided in Week 1 – Lesson 2. On the other hand, students who need extra practice with *long division with remainders* should be assigned most of the questions in Week 2 – Lesson 4, including the homework assignment at the end of the booklet.

Similarly, students who work at a slower pace likely will not be able to master as many new concepts or complete as many questions in the allotted time as students who work more quickly. The expectations for each student must vary depending on the student's ability and how fast the student can work through the material. Therefore, the teacher must monitor all students and assign a reasonable amount of work for each student to complete in the allotted time. Most of the booklets have an abundance of questions from which to choose. Not all students should do all questions.



## W1 - Lesson 1: Number Concepts

### A. Numbers and Digits

Numbers can be small or large. To write a number, we use **digits**. The digits are 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9. Some numbers have only one digit. Some numbers have several digits.

The number 7 is made using one digit – **7**.

The number 63 is made using two digits – **6** and **3**.

The number 515 is made of three digits – **5**, **1**, and **5**.

1. How many digits are in the number 289?

3

2. What digits are used to write the number eighteen?

1, 8

3. a. Which digits are used to write the year 2002?

2, 0, 0, 2

- b. Which digits are used twice in 2002?

2, 0



## B. Place Value

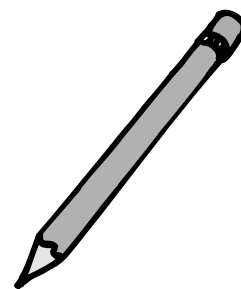
Place value in numbers is very important. **Place value** means the *value* a digit has depending on where it is *placed* in a number.

1. What digits are used to write the number thirty-six?

3, 6

2. What digits are used to write the number sixty-three?

6, 3



In both numbers the same digits are used, but the value of each digit is different.

Depending on where a 4 is placed in a number, the 4 could mean

4 ones	4 tens	4 hundreds	or	4 thousands
↓	↓	↓		↓
1 78 <u>4</u>	1 84 <u>7</u>	7 48 <u>1</u>		<u>4</u> 178

Knowing which place value column a digit is in helps us to read large numbers.

3. Read the following numbers to your instructor:

***To be done orally. Check to see that students are not saying "and".  
E.g., six hundred thirty-eight not six hundred and thirty-eight.***

a. 638

b. 1 234

c. 7 896

d. 5 061

e. 7 002

f. 9 909

Remember, don't use the word "and" when writing or reading a large number





Ten Thousands	Thousands	Hundreds	Tens	Ones

— The place value of the number to the left of the one-thousands place is called the ten-thousands place just as the number to the left of the ones place is called the tens place.

Write the number **15 342** in the place value chart above. Put one digit in each box. Read the number aloud like this:

**Fifteen thousand three hundred forty-two**

The number 15 342 can be written in **expanded form** to show the value of each digit:

$$15\ 342 = 10\ 000 + 5\ 000 + 300 + 40 + 2$$

Number	Ten Thousands	Thousands	Hundreds	Tens	Ones
15 342 =	1 +	5 +	3 +	4 +	2

4. Read the following numbers to your instructor or partner:

- a. 8 136      b. 37 425      c. 60 309      d. 52 030      e. 21 473

***To be done orally. Check to see that students are not saying “and”. E.g., eight thousand one hundred thirty-six not eight thousand one hundred and thirty-six***

5. Now, try writing numerals for each of the following words. Remember that each place value column must have a digit. Use a zero if no other digit is needed.

- a. one thousand four hundred seventy-three

1      4      7      3

- b. seventeen thousand four hundred twenty-five

1      7      4      2      5

- c. six thousand nine

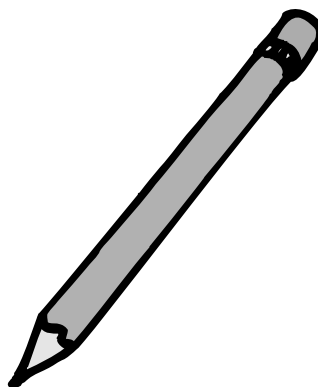
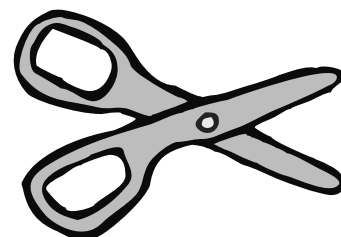
6      0      0      9

- d. nineteen thousand nine hundred ninety-nine

1      9      9      9      9

- e. four thousand fourteen

4      0      1      4



## Just for Fun

Try saying this poem using rap rhythm. Does it help you understand what we mean by place value?

### Place-Value Rap

The number of digits  
in our system is ten.  
They never change  
But their value can.

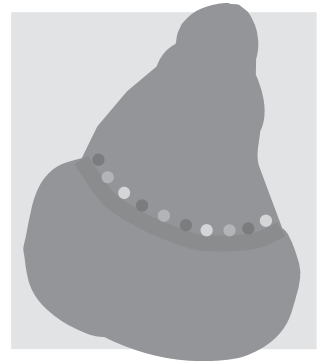
There's a zero, there's a one,  
There's a two, three, four,  
There's five, six, seven, eight,  
Nine—no more!

Every digit has a value  
on its face;  
Every digit has a value  
when it's in place.

Two can be two ones or  
two can be two tens.  
It's always a two,  
but its value depends

On where you put it,  
On where you put it.  
Its value depends on  
the column where you put it.

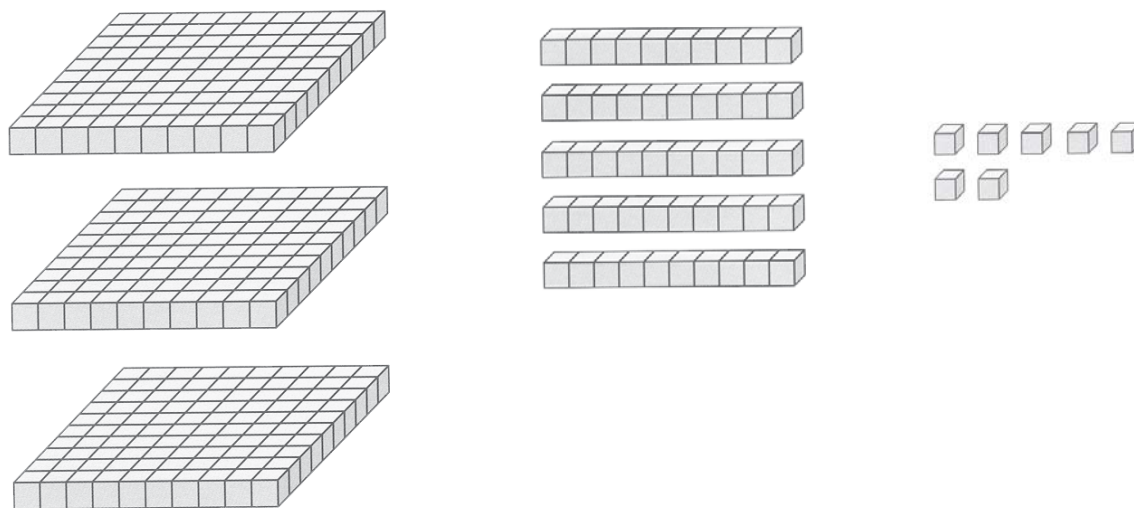
Two tens are twenty and  
two ones are two.  
So you see, place value  
is easy to do.



## C. Different Way of Showing Numbers

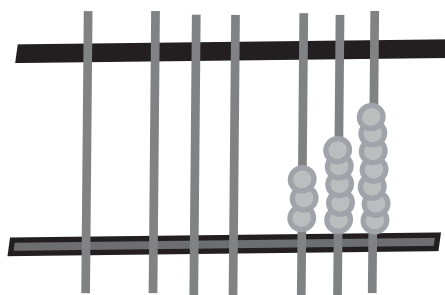
You have already learned to show numbers in three different ways:

- standard form: **357**
- words: **three hundred fifty-seven**
- base ten model:



Numbers can be shown in three other ways:

- expanded form:  **$300 + 50 + 7$**
- expanded form with words: **3 hundreds + 5 tens + 7 ones**
- abacus:



**Let's Do It!**

1. Write each of the following numbers in words:

a. 865 *eight hundred sixty-five*

b. 329 *three hundred twenty-nine*

c. 907 *nine hundred seven*

d. 1 356 *one thousand three hundred fifty-six*

2. Write the numeral for each:

a. seven hundred fifty-two *752*

b. four hundred eight *408*

c. six hundred twenty *620*

d. nine thousand six hundred ninety-nine *9 699*

3. Write each of the following numbers in expanded form:

**Example:**  $4\ 821 = 4\ 000 + 800 + 20 + 1$

a.  $3\ 256 =$  *3 000 + 200 + 50 + 6*

b.  $5\ 934 =$  *5 000 + 900 + 30 + 4*

c.  $8\ 502 =$  *8 000 + 500 + 2*

d.  $1\ 243 =$  *1 000 + 200 + 40 + 3*



4. For each number below tell the value of each underlined digit.

**Example:** 3 875 70

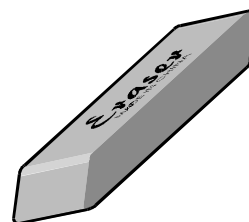
*The value of 7 is **70** because 7 is in the tens column.*

a. 1 284 200

b. 3 981 80

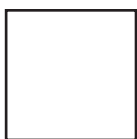
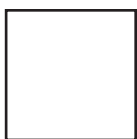
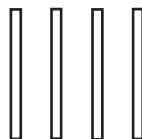
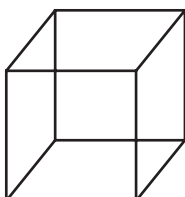
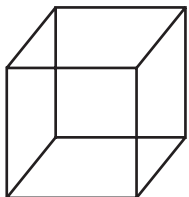
c. 5 076 5 000

d. 9 304 4

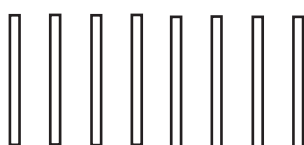
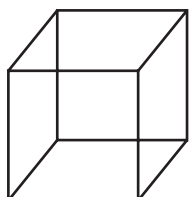


5. Show each number by using base ten drawings:

a. 2 645



b. 1 083

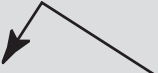


## D. Comparing and Ordering Numbers

To compare larger numbers, start at the left side of the numbers and compare the thousands first. If the thousands have the same value, move one place value column to the right and compare the hundreds, then the tens, then the ones.

**Example:** 6 832 \_\_\_\_\_ 6 823

*To decide which number is larger, start by comparing the thousands first, then the hundreds, then the tens.*

$\begin{array}{c c c c} 6 & 8 & 3 & 2 \\ \hline 6 & 8 & 2 & 3 \end{array}$	 <p>6832 is larger than 6823 because there are more tens</p>
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ANSWER: 6 832 > 6 823

1. Compare each of the following pairs of numbers. Use  $<$  for *less than* and  $>$  for *greater than*.

a. 6 478 < 6 748

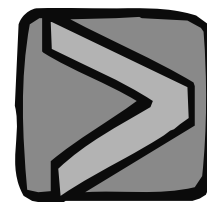
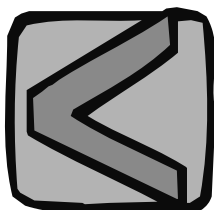
b. 5 775 < 7 557

c. 9 123 > 1 987

d. 4 286 > 4 268

e. 9 370 > 9 307

f. 1 009 < 1 090



2. Rewrite each set of numbers in order from smallest to largest:

a. 6 789, 6 879, 6 798, 6 987

**6 789, 6 798, 6 879, 6 987**

---

b. 1 243, 1 234, 1 342, 1 423

**1 234, 1 243, 1 342, 1 423**

---

c. 7 887, 8 787, 8 778, 7 878

**7 878, 7 887, 8 778, 8 787**

---

d. 3 020, 3 200, 0 320, 3 002

**0 320, 3 002, 3 020, 3 200**

---

3. Use the following numbers to answer questions 3a and 3b.

**134, 268, 495, 906, 593, 140, 256, 597, 958, 507**

a. List all the numbers that are less than five hundred ten.

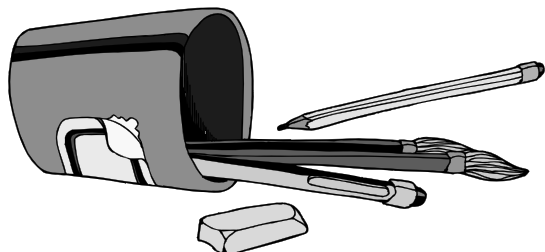
**134, 140, 256, 268, 495, 507**

---

b. List all the numbers that are greater than four hundred sixty.

**495, 507, 593, 597, 906, 958**

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4. Use **only** the numbers 4, 9, 6, and 2.

a. Write the smallest possible four-digit number: 2 469

b. Write the largest possible four-digit number: 9 642

c. Write **three** four-digit numbers in order from smallest to biggest:  
*Answers will vary. E.g.,*

2 469, 4 629, 6 942,

d. Write any **five** four-digit numbers in order from greatest to least:  
*Answers will vary. E.g.,*

9 642, 9 462, 9 264, 9 246, 6 249



## E. Rounding Numbers

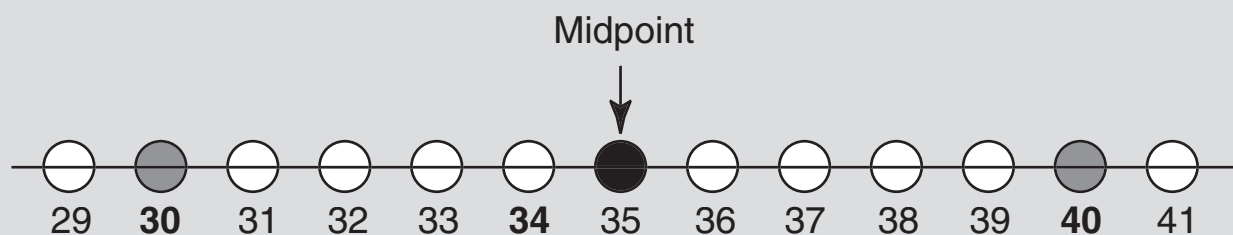
We round numbers when we do not need to have the exact number. Sometimes approximate numbers are easier to use. For instance, it is easier to say that there are about 3 000 people at a hockey game, rather than counting each of the 2 987 people as they come through the gate.

### Rounding to the Nearest Ten

We can round numbers to the nearest ten, to the nearest hundred, and to the nearest thousand. When rounding numbers to the nearest **ten**, you need to look at the **ones** to decide which **ten** the number is closest to.

**Example 1:** Round 34 to the nearest **ten**.

To round 34 to the nearest ten, we are really asking, “Is 34 closer to 30 or to 40?” To find out, look at the number line below:

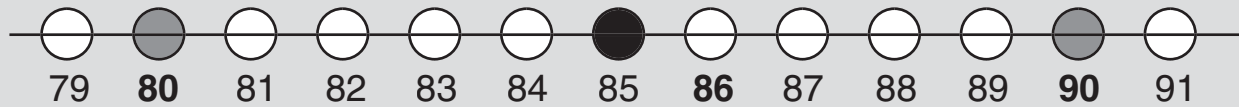


Does **34** look closer to **30** or to **40**?

The midpoint between 30 and 40 is 35. When rounding a number to the nearest ten, we use this rule: “If the digit in the ones column is 5 or greater, round the number up to the next ten. If the ones digit is less than 5, keep the number of tens the same.”

Therefore, 34 rounds to 30 because the value of the ones digit is less than 5.

**Example 2:** Round 86 to the nearest ten.



Answer: 86 rounded to the nearest ten is 90

Was your answer 90? On the number line, 86 is closer to 90 than to 80. The rule tells you that if the ones digit is 5 or greater, you round the number up to the next higher ten.

### Your Turn!

1. Round the following numbers to the nearest **ten**:

**Remember:** You have to worry only about the ones column and the tens column. The other digits in the hundreds and thousands columns stay the same.

- a. 36 40      b. 253 250      c. 749 750      d. 1 236 1 240



## Rounding to the Nearest Hundred

When rounding numbers to the nearest hundred, look at the digit in the **tens** place to decide which hundred the number is closest to.

### Example 1:

Round 456 to the nearest **hundred**.

Because the tens digit is **five or greater**, the hundreds digit is rounded up to 5 (and 456 is rounded to 500).

### Example 2:

Round 239 to the nearest **hundred**.

Because the tens digit is **less than five**, the hundreds digit remains the same (and 239 is rounded to 200).

2. Round the following numbers to the nearest **hundred**:

- a. 324 300    b. 852 900    c. 1 286 1 300    d. 3 729 3 700

## Rounding to the Nearest Thousand

When rounding numbers to the nearest thousand, look at the digit in the **hundreds** place to decide which thousand the number is closest to. Use the same rule that you used to round to the nearest ten or hundred.

### Example:

Round 3 468 to the nearest **thousand**.

### Follow these steps:

1. Find the digit in the thousands column. *It's a 3.*
2. Look at the digit to the right. *It's a 4.*
3. Ask yourself: Is the hundreds digit 5 or greater?  
*It's not, so the 3 in the thousands column remains the same.*

The number 3 468 is rounded down to 3 000.

3. Round the following numbers to the nearest thousand:

a. 8 672 9 000

b. 5 349 5 000

c. 9 876 10 000

d. 12 455 12 000

**Remember:** Always look at the digit to the right of the place value that you are rounding to. If that digit is **less than five**, round the entire number down. If that digit is **five or greater**, round the entire number up.

## Homework

**Directions:** Round the following numbers to the nearest ten, hundred, and thousand.

	nearest 10	nearest 100	nearest 1 000
974	<u>970</u>	<u>1 000</u>	<u>1 000</u>
4 567	<u>4 570</u>	<u>4 600</u>	<u>5 000</u>
3 355	<u>3 360</u>	<u>3 400</u>	<u>3 000</u>
8 796	<u>8 800</u>	<u>8 800</u>	<u>9 000</u>
9 628	<u>9 630</u>	<u>9 600</u>	<u>10 000</u>



## F. Problem Solving

The math skills you have learned in school so far are designed to help you solve problems in mathematics and in your daily life.

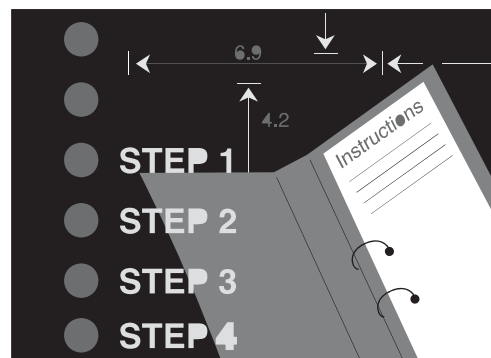
To solve any problem, follow the Four-Step Problem-Solving Process.

**Step 1:** Understand the problem.

**Step 2:** Make a plan.

**Step 3:** Try the plan.

**Step 4:** Look back.



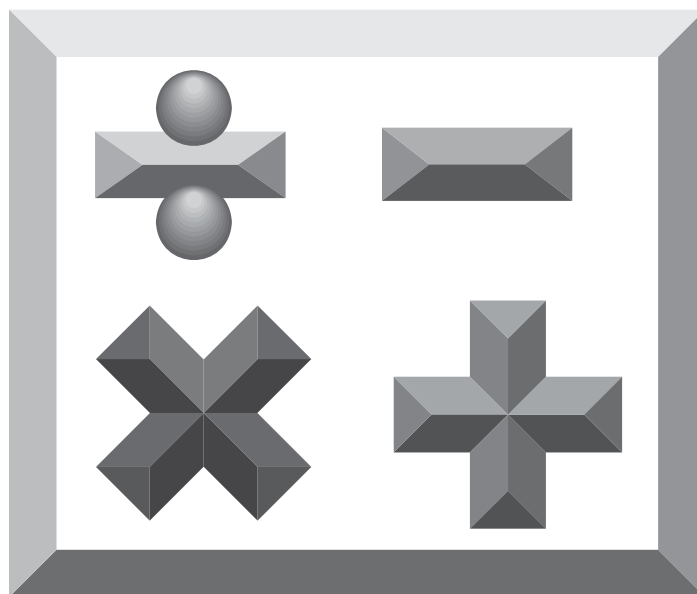
STEP 1 is very important. In this step, you take time to read carefully the information contained in the problem, and you decide what exactly you are being asked to find.

STEP 2 is deciding how you will go about solving the problem. Some problems are very easy. All you have to do is choose which operation to use. Can the answer be found by simply adding, subtracting, multiplying, or dividing? If not, then you have to plan a **strategy** that will lead you to the correct answer.

Most problems can be solved using more than one strategy. It is a good idea, however, to learn and practice several strategies. Then, if one does not work, you can try a different one.

In W1 - Lesson 3 you will be introduced to the *Guess-and-Check* strategy.

STEP 3 is trying your strategy or plan. If you're doing a simple calculation, check to be sure you have used the correct numbers. If you need to use more than one operation (such as multiplication and subtraction), you may want to use a calculator for some of the calculations. If you are using a special strategy (such as *Guess-and-Check*), be sure that each guess you make is reasonable and based on the information given in the problem.



STEP 4 is taking time to look at your answer and ask, “Does this **answer** make sense? Is it reasonable?” Write your answer in a complete sentence to see if you have answered the question the problem was asking.

If not, perhaps you have made a calculation error. Or, perhaps you used the wrong strategy. If so, go back to Step 2, and think of another method instead.



Answer the following questions.

1. List the steps in the Four-Step Problem-Solving Process.

a. ***Understand the problem.***

b. ***Make a plan.***

c. ***Try the plan.***

d. ***Look back.***

2. Why is the “look back” step important?

***It asks you to check whether you have really answered the question being asked in the problem. It asks you to check whether your answer is reasonable or if it makes sense.***



