

Whole Numbers—Explanation & Practice

Digits

The **decimal system** of writing numbers uses the **ten digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10** to write any number. For example, these digits can be used to write the whole numbers: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 and so on.

If a number is formed with two digits, it is called a **two-digit** number. If a number is formed with three digits, it is called a **three-digit** number. 75 is a two-digit number. 454 is a three-digit number.

Practice Exercise 1

1. How many digits are there in the number 267?
2. How many digits are there in the number 30?
3. How many digits are there in the number 7,906?

Place Value

Each digit in a whole number has a **place value**. The following place value chart shows the name of the different places used most often.

MILLIONS			THOUSANDS			ONES		
Hundred	Ten	One	Hundred	Ten	One	Hundreds	Tens	Ones
3	9	1	4	5	6	7	2	8

Consider the number 3 9 1,4 5 6, 7 2 8

ones
tens
hundreds
one thousands
ten thousands
hundred thousands
one millions
ten millions
hundred millions

The number 391,456,728 is a nine-digit number. The value of the place occupied by the 8 is ones. The value of the place occupied by the 2 is tens; by the 7 is hundreds; by the 6 is one thousands; by the 5 is ten thousands; by the 4 is hundred thousands; by the 1 is one millions; by the 9 is ten millions; by the 3 is hundred millions.

Practice Exercise 2

In the number 406,352,719

1. What is the value of the place occupied by the 7?
2. By the 5?
3. By the 9?
4. By the 3?

In the number 35,607,892

5. What is the value of the place occupied by the 0?
6. By the 7?
7. By the 5?
8. By the 8?
9. By the 3?
10. By the 9?

Identifying Numbers

In the number 53, since the 3 is in the **ones** place it has a value of 3 **ones**.

In 38, since the 3 is in the **tens** place it has a value of 3 **tens** or 30.

In 307, since the 3 is in the **hundreds** place it has a value of 3 **hundreds** or 300.

In 437,605 since the 3 is in the **ten thousands** place it has a value of 3 **ten thousands** or 30,000.

Practice Exercise 3

1. What is the value of the 4 in the number 5,471?
2. What is the value of the 9 in the number 392,751?
3. What is the value of the 3 in the number 65,230?
4. What is the value of the 8 in the number 804,675?
5. What is the value of the 5 in the number 4,785,203?

Expanded Notation

Consider the number 82. This number represents 8 tens and 2 ones, or $8 \times 10 + 2 \times 1$. This way of writing a number is called **expanded notation**. A shortened version of this would be written $80 + 2$. Here we have written 82 as the **sum of the values of each of its digits**.

The number 4,653 represents:

4 thousands and 6 hundreds and 5 tens and 3 ones, or
 $4000 + 600 + 50 + 3$

We have now shown 4,653 as the sum of the values of each digit. Written as the sum of the values of each digit 53,617 would be:

$50,000 + 3,000 + 600 + 10 + 7$

We can reverse this procedure to write in standard form a number which is written in expanded notation.

$300 + 20 + 4$ means 3 hundreds and 2 tens and 4 ones.

We can place 3 in the hundreds place, 2 in the tens place, and 4 in the ones place to write the number in standard form: 324.

Example: $800 + 40 + 6$ in standard form is 846.

Example: $50,000 + 3,000 + 5$ in standard form is 53,005. Note: here zeros are written in the hundreds place and in the tens place because the expanded notation contains no 100's and no 10's.

Practice Exercise 6

1. Show 132 as the sum of the values of each digit. _____ + _____ + _____
2. Show 465 as the sum of the values of each digit. _____ + _____ + _____
3. Show 3,629 as the sum of the values of each digit.
4. Show 54,978 as the sum of the values of each digit.
5. What number is represented by $300 + 70 + 2$?
6. What number is represented by $6,000 + 800 + 50 + 7$?
7. What number is represented by $5,000 + 40 + 3$?
8. What number is represented by $80,000 + 500 + 6$?

Answer Key
Whole Numbers – Explanation & Practice

Practice Exercise 1

1. 3
2. 2
3. 4

Practice Exercise 2

- | | |
|----------------------|------------------|
| 1. hundreds | 6. one thousands |
| 2. ten thousands | 7. one millions |
| 3. ones | 8. hundreds |
| 4. hundred thousands | 9. ten millions |
| 5. ten thousands | 10. tens |

Practice Exercise 3

1. 400 or 4 hundred
2. 90,000 or 9 ten thousands
3. 30 or 3 tens
4. 800,000 or 8 hundred thousands
5. 5,000 or 5 thousands

Practice Exercise 4

1. Seventy eight thousand, six hundred three
2. Five hundred seventy three thousand, nine hundred fourteen
3. Four million, six hundred thirty two thousand, fifty three
4. Seven hundred twelve million, nine hundred fifty six thousand, six hundred eighty four
5. Ninety three million, four hundred thousand, two hundred two
6. Six hundred fifty-two million, seventy-three thousand, eight hundred ninety-one

Practice Exercise 5

1. 861,457
2. 8,206
3. 941,517
4. 32,006
5. 190,013

Practice Exercise 6

- | | |
|-----------------------------------|-----------|
| 1. $100 + 30 + 2$ | 5. 372 |
| 2. $400 + 60 + 5$ | 6. 6,857 |
| 3. $3000 + 600 + 20 + 9$ | 7. 5,043 |
| 4. $50,000 + 4000 + 900 + 70 + 8$ | 8. 80,506 |