## **Problem 1: Identifying the Digit**

"I am thinking of a 5-digit number.

- The digit in the thousands place is **twice** the digit in the ones place.
- The digit in the hundreds place is **half** the digit in the tens place.
- The digit in the ten-thousands place is the largest possible digit.
- The digit in the ones place is the smallest non-zero digit.

## What is my number?

#### **Answer:**

- The ten-thousands place is the largest possible digit, which is 9.
- The **ones place** is the smallest non-zero digit, so it's 1.
- The thousands place is twice the digit in the ones place, so it's  $2 \times 1 = 2$ .
- The **hundreds place** is half the digit in the tens place, so the tens place must be an even number. Let's try 4 for the tens place, meaning the hundreds place is  $4 \div 2 = 2$ .

The number is **92,241**.

## **Problem 2: The Value Switch**

Take the number 523,841.

- Switch the digits in the hundreds place and the ten-thousands place.
- What is the new number?
- By how much has the value changed?

### **Answer:**

- The hundreds place in the original number is 8, and the ten-thousands place is 2.
- Switch these digits to get the new number: **583,421**.

To find how much the value has changed:

• Original number: **523,841** 

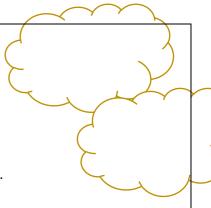
• New number: **583,421** 

• Change: 583,421 - 523,841 = 59,580

The value has increased by **59,580**.

## **Problem 3: Largest and Smallest Numbers**

Using the digits 4, 8, 1, 5, 2, form the largest and smallest 5-digit numbers possible.



• What is the difference between the two numbers?

#### **Answer:**

- Largest number: Arrange the digits in descending order: 85421.
- Smallest number: Arrange the digits in ascending order: 12458.

## Difference:

85421-12458=72963

The difference between the largest and smallest numbers is 72,963.

# **Problem 4: Missing Digit**

In the number 4\_428, a digit is missing.

- The value of the entire number is 1,000 more than 42,428.
- What is the missing digit?

### **Answer:**

If the number is 1,000 more than 42,428, the total number must be:

42,428+1,000=43,428

Therefore, the missing digit is 3.