# 6 Solve Problems Using Organized Lists

**Goal** **Solve place-value problems using an organized list.**

Rachel chose 6 base ten blocks.
The value of her blocks is more than 200
and less than 220.

**?** **Which blocks did Rachel choose?**

## Ben's Solution

### Understand the Problem

There are 6 blocks, which can be hundreds, tens, or ones.

The total value is between 200 and 220.

There must be 2 hundreds blocks.

### Make a Plan

I need to find 4 blocks with a total value less than 20.

I'll use a chart to list the different combinations for the
4 other blocks. One of the combinations should work.

### Carry Out the Plan

I start with 4 tens 0 ones and
record it in the chart.

Then I use 1 less ten and
1 more one each time.

Rachel could have chosen
2 hundreds, 1 ten, and 3 ones
or 2 hundreds, 0 tens, and
4 ones.

| Hundreds | Tens | Ones | Value | Does it work? |
|----------|------|------|-------|---------------|
| 2 | 4 | 0 | 240 | too much |
| 2 | 3 | 1 | 231 | too much |
| 2 | 2 | 2 | 222 | still too much |
| 2 | 1 | 3 | 213 | this works |
| 2 | 0 | 4 | 204 | this works too |

## Reflecting

1. a) How did Ben know there were 2 hundreds blocks?
   b) How did he know that the value of the 4 other blocks must be less than 20?

2. How did Ben know that he had found all the possible answers?

3. Why is Ben's chart called an **organized list**?

**organized list**
The strategy of following a certain order to solve a problem

## Checking

4. Derek has 8 base ten blocks worth between 300 and 400. What blocks could he have?
   Find all the possible answers using an organized list.

## Practising

5. Alana has 5 base ten blocks.
   She has at least one of each type of block.
   The value of her blocks is greater than 140.
   What blocks could she have?

6. Saman has at least one of each type of base ten block.
   The value of his blocks is 203.
   What blocks could he have?

7. You have at least one of each coin shown.
   The value of your coins is $1.73.
   a) What coins might you have?
   b) How do you know that you have found all the answers?

1¢

$1

10¢

8. Use the clues to figure out the mystery house number.
   • The house number is a 3-digit odd number.
   • The number is greater than 930.
   • The sum of the digits in the number is 14.