(4) Comparing Representations of Four-Digit Numbers

Things You Can Show About a Number

Different ways of representing or showing a number can make it easier to see different things about that number.

Here are some things you might show about a whole number, using a particular representation:

- if it's <u>even</u> or <u>odd</u>

- if it's greater than or less than another number

- if it's half of another number

- if it's double another number

- if you can group it into equal groups of 3, 4, 5, and so on

Representing 2000 Different Ways

Here are some ways that 2000 can be represented. You can see that each representation shows certain things about the number 2000 well and doesn't show certain things about it as well.

Representation of 2000
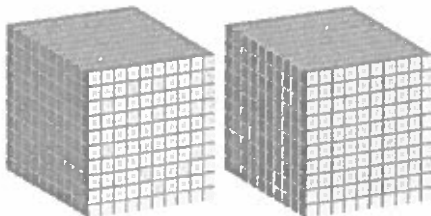
What it shows well and not as well

This shows that ...
- 2000 is 2 thousands.
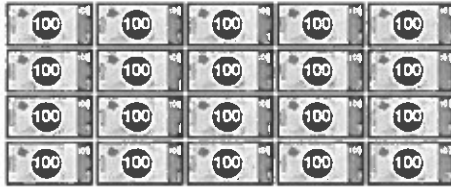- 2000 is even, since it can be shared equally by 2 people (each would get 1 block, or 1000).

What it doesn't show as well
This representation makes it difficult to see that 2000 can be grouped in equal groups of 4. You'd have to count how many groups of 4 small blocks there are.

Representing 2000 Different Ways (continued)

Representation of 2000	What it shows well and not as well
	This shows that … • 2000 is 20 hundreds. • 2000 is even, since 2 people could share the bills equally. Each would get two rows of five $100 bills. **What it doesn't show as well** This representation makes it difficult to see that 2000 is 2 thousands. You'd have to count the $100 bills in groups of 10 ($1000) to know that twenty $100 bills is 2 thousand dollars.
1000 + 500 + 500	**This shows that …** • 2000 is greater than 1000, since you add 500 + 500 to 1000 to get 2000. **What it doesn't show as well** This representation makes it a bit more difficult to see that 2000 is even. You could share the two 500s equally between 2 people, but you'd have to figure out if 1000 could be split into two equal parts (it can, but it's not visually obvious).
5000 – 3000	**This shows that …** • 2000 is less than 5000, since you subtract from 5000 to get to 2000. **What it doesn't show as well** This representation makes it a bit more difficult to see that 2000 is greater than 1000. You'd have to figure it out.

Notes

You may be wondering why we are focusing on different representations of a number and what each representation shows about the number. This is important for getting students ready for more complex mathematics, but it is also useful at the moment to provide students with more tools for visualization and for showing their mathematical thinking.

Definitions

even number: a whole number that can be grouped into 2 equal groups; for example, 100 is even because 100 = 50 + 50

odd number: a whole number that cannot be grouped into 2 equal groups; for example, 101 is odd because 101 = 50 + 50 + 1