

Class #4

- Finish our work on proof
- Introduce and discuss divisibility rules
- Begin talking about place value
- Wrap-up & assignment

Proofs in Elementary Mathematics

- Proofs *explain why* something is true
- Proof requires establishing something is true for all cases
 - Proving in mathematics does not mean giving examples
 - A lot of evidence for a claim is not enough to know that it is true
- Counterexamples are sufficient to show that a claim is false

Proving is Part of Teachers' Work

- Teachers need to be attentive to what it means to explain something or show something to be true mathematically
 - Students will make claims that are not clearly true or false
 - Teachers need also to consider possible counterexamples

Can you explain the following statement?

To determine if a whole number is even, you can check whether its ones digit is 0, 2, 4, 6, or 8.

Why does this method of determining if a whole number is even work with whole numbers of any number of digits?

Divisibility Rules

- Practice using the divisibility rules for 2, 3, 4, 5, 6, 8, 9, and 10 on the following numbers:

148,953

23,508,576

Place Value

- Fundamental mathematical structure and set of ideas that spans kindergarten through calculus
- Underpinning for system of notation, structure of number for computation, representation of number systems
- Root of many student mathematical difficulties
- Central to school curriculum topics from K - 8

Core Ideas of Place Value

- Distinction between quantity and numeration
- Grouping (tens, but could be other)
- Fundamental “ten-ness”: “decimal notation”
- Directionality
- Representational materials (bundling sticks)

Multiplying by Powers of 10

What is 82×10 ?

What is 8.2×10 ?

Why do we have two different rules — one for whole numbers and one for decimals?

Comment Cards

- Any thoughts about today...
 - Insights
 - Lingering questions or concerns
 - Other feedback

Assignments

- Individual assignment (due Monday, July 25th)
 - To be posted by 7pm today
- Don't forget to leave your notebooks!