

Intel Math Why Statement

Intel Math is an intensive, content-based curriculum that explores the connections between topics along the K-8 progression. Units include problem solving, addition, subtraction, multiplication, division, operations with fractions, rational numbers, linear relations, and functions. *The Intel Math course is designed specifically to improve teacher understanding and math confidence.* It is a course for teachers as learners. This teacher content knowledge design is important for two main reasons.

1 - There is value in understanding the content along the full K-8 progression. Learning what teachers in lower grades focus on helps to see the foundation students are getting in basic math. Learning what teachers in higher grades focus on helps to see what students will need to know as they get into more advanced math.

2 - Research supports that stronger teacher content knowledge in math leads to better classroom instruction and student achievement. Research connects stronger teacher understanding to high quality mathematics instruction. Studies also show greater gains from content-based professional development institutes that focus on proof, analysis, exploration, communication, and representations. Intel Math does all these things.

Mathematical Knowledge for Teaching (MKT), the specialized knowledge that teachers need in the classroom that differs from other professional math careers, is critical in teaching math content. MKT involves mathematical reasoning (content) and pedagogical thinking (teaching practice) in areas like:

- *Why* mathematical procedures work
- *Mathematical language* to avoid student confusion and misconceptions
 - Vocabulary completely and accurately defined
 - Vocabulary appropriate for target age group
 - Metaphors accurate
 - Connections to prior learning
 - Fluency to bridge general everyday language with more specialized math language
- *Common student misconceptions* to better interpret and redirect questions and errors

High Quality Mathematics Instruction includes:

- Rigor and richness of mathematics – more than computational answers, memorization tricks
- Mathematical explanation and justification – insight into the method and why it works
- Care and precision with mathematical language
- Demonstration of various strategies for solving problems using mathematical representation (visuals and manipulatives)
- Low incidence of mathematical errors
- Respectful student argument and discussion of content, connection to other areas, review of prior learning
- Thoughtful examples that are understandable and accessible to all students; for example using school-based context in examples gives a common ground for all students because they share that experience
- Lessons with clear directionality and closure