

## Central Bucks School District

### K-12 Mathematics Teaching and Learning Principles

1. Investigating, problem-solving, and communicating about mathematics (speaking, reading, writing, representing, and listening) stimulates students' curiosity, builds confidence, and leads students' toward deeper conceptual understanding.
2. Lessons should address students' strengths, interests, and learning styles through differentiated instruction.
3. All students can achieve excellence in mathematics when:
  - instruction is appropriately paced
  - teachers set high expectations
  - students feel supported by their teachers, parents and administrators
4. Students must be actively engaged in learning experiences designed to connect to their prior knowledge.
5. For students to transfer and use knowledge meaningfully teachers need to:
  - present new ideas within rich and meaningful contexts
  - help students to make connections to their lives both within and outside of school
6. Mathematics instruction is more effective when teachers incorporate:
  - manipulatives
  - calculators
  - technology
  - real-time data collection devices (motion detectors, temperature probes,...)
7. Assessment should be ongoing, diagnostic, and aligned with instruction.

#### Documents Considered:

(2000). Principles and Standards for School Mathematics. Reston, VA: National Council of Teachers of Mathematics.

Kilpatrick, J., Swafford, J., & Findell, B. (2001). *Adding It Up: Helping Children Learn Mathematics*. Washington, DC: National Academy Press.

Marzano, R., & Pickering, D. (1997). *Dimensions of Learning*. Alexandria, VA: Association for Supervision and Curriculum Development; Aurora, CO: Mid-continent Regional Educational Laboratory.

Tomlinson, Carol Ann. (1999). *The Differentiated Classroom: Responding to the Needs of All Learners*. Alexandria, VA: Association for Supervision and Curriculum Development.

Zemelman, S., Daniels, H., & Hyde, A. (1998). *Best practice: New standards for teaching and learning in America's schools*. Portsmouth, NH: Heinemann.