

Appendix C – Math Quotes

Quotation 1

“EDUCATOR TEAM REFLECTION

When we began the full-day Kindergarten program, we established a time in our day in which the children explored mathematics. As we learned more about what it meant to be numerate, we began to question the effectiveness of this practice. We started to look for opportunities throughout the day in which we could make explicit links to mathematics in various contexts – or “mathematize” the contexts. For example, we started with the routine of taking attendance. We used to just have the children find their name card in the basket and place it in the pocket chart and then look at the cards that were left in the basket to help us determine who was away. We decided that we could “mathematize” this daily routine by asking the children how we could find out how many children were at school and how many were away. We were intentional in our use of mathematics vocabulary, such as “Are more children away than are at school?”, and in being explicit that we were using mathematics to figure out the answer. We continue to look for opportunities to integrate mathematics into the daily routines.”

-The Kindergarten Program (2016), P. 75

Quotation 2

“High quality instruction in mathematics and high quality free play need not compete for time in the classroom. Engaging in both makes each richer, and children benefit in every way.” (Sarama & Clements, 2009a, p. 331)

-The Kindergarten Program (2016), P. 75

“...the presence alone of mathematics in play is insufficient for rich learning to occur. Intentional, purposeful teacher interactions are necessary to ensure that mathematical learning is maximized during play” (Baroody, Lai, & Mix, 2006; deVries, Thomas, & Warren, 2007; Balfanz, 1999; Ginsburg, Lee, & Boyd, 2008).

-The Kindergarten Program (2016), P. 76

Quotation 3

“Young children come to school already knowing a great deal about mathematics. Children bring with them an intuitive knowledge of mathematics that they have developed through curiosity about their physical world and through real-life experiences. It could also be said that, upon entering school, most children are interested in learning to persist, to try something new, and generally to engage in problem solving. Educators play a critical role in fostering a positive attitude towards mathematics by valuing a child’s early attempts at problem solving, by sharing and celebrating the child’s learning, and by encouraging in each child a love of mathematics.”

- The Kindergarten Program (2016), P. 76

Quotation 4

“When designing learning experiences, educators should consider the children’s cognitive, communication/language, physical, social, and emotional development. The most successful learning takes place when the educators provide mathematical experiences that are based on an understanding of the child’s total development. The child needs to:

- have the cognitive ability to do the mathematics;
- be able to understand the language of instruction, including the mathematical vocabulary;
- have sufficient fine-motor control to manipulate the materials;
- be emotionally mature enough to deal with the demands of the learning experience so that frustration does not set in. Since all children will demonstrate a developmental progression in the understanding of foundational

mathematical concepts, the educators need to ask themselves, “Why have we chosen this learning for this child at this time in this context?”, observe each child, and use their observations to gain insights to negotiate and plan the learning.”

-The Kindergarten Program (2016), p. 77

Quotation 5

“Problem solving and reasoning that involve conceptual understandings of mathematics are the foundations of mathematics in Kindergarten classrooms. Rich and relevant mathematical problems involve important mathematical ideas and arise out of real-life situations, and can be approached in a variety of ways so that all children can be involved in exploring solutions. Solving such mathematical problems requires persistence, flexibility in thinking, and multiple perspectives, since there may not be a single, easy-to-find, correct answer. Through mathematics investigations in a wide variety of contexts, children develop their ability to use mathematics as a way of making sense out of their daily experiences. Through these investigations, they also develop increasing confidence along with the knowledge, skills, and attitudes needed to be numerate. Some examples of contexts for investigations are the following:

- in the blocks, sand, or water areas
- at a computer or tablet
- in a small or large group
- during transitions or routines
- in the outdoors”

-The Kindergarten Program (2016), P.81

Quotation 6

“The development of understanding of mathematical concepts is not limited to a particular time in the day. Mathematics learning is incorporated throughout the day – it can be made visible, or explicit, to the children in any context, and can be observed by the educators at any time.”

-The Kindergarten Program (2016), p. 83

“Young children have the curiosity and the capability to engage in complex mathematical thinking and learning. Children need to experience mathematics concepts in depth through revisiting and repeating investigations over a long period of time (e.g., the idea of “five” can be represented by the numeral “5” [numerality] to indicate the number of items [quantity] or the fifth person in a line [ordinality]). Enabling children to revisit and think about mathematics in multiple contexts allows their current thinking to be demonstrated and new thinking and learning to be revealed and made visible.”

-The Kindergarten Program (2016), p. 83

Quotation 7

“As educators in Kindergarten interact with children in play and inquiry, provide descriptive feedback, and review documentation of the children’s learning with them, they use “noticing and naming the learning” to articulate what the children are doing (e.g., “I see you’ve put down two blue blocks and one green block, then two blue ones and one green one again. We call that a pattern.”). They introduce language that enables the children to describe their own learning. They make the children’s thinking and learning “visible” to them.”

-Growing Success- The Kindergarten Addendum, (2016)

Quotation 8

“Young children engage in significant mathematical thinking and reasoning in their play ... Combining free play with intentional teaching, and promoting play with mathematical objects and mathematical ideas, is pedagogically powerful. (D.H. Clements & J. Sarama, “The Importance of the Early Years”, in R.E. Slavin [Ed.], Science, Technology & Mathematics [STEM], 2014, p. 5)”

-The Kindergarten Program, p. 181