

THE STRUCTURE OF MATHEMATICAL ABILITIES

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We present a systematization of all components of mathematical abilities based on previous research in the area. Consider one of possible classifications of components of mathematical abilities of pupils.

Block 1. Components of mathematical abilities, influencing the development of general abilities of pupil.

1.1. Components of mathematical abilities describing inherent qualities of the person and singularities of mental activity.

1.1.1. Qualities of the person: strong-willed activity and capacity of working hard; persistence in reaching the purpose; good memory; arbitrary control of attention; introvertness; intellectual inquisitiveness.

1.1.2. Qualities of mental activity; skill of abstract thinking; economy of thought; exactness, conciseness, clearness of verbal expression of a thought; quickness; ability of analyzing.

1.2. Components of mathematical abilities helping to raise the effectiveness of any educational activity of pupils.

1.2.1. Possession of basic means of educational activity: habit of working regularly; skill of schematizing; ability of independent extracting knowledge; skill of making conclusions.

1.2.2. Possession of means of research and creative educational activity; the art of consistent and correctly partitioned logical reasoning; skill of raising new problems; skill of comparing conclusions.

Block 2. Components of mathematical abilities, ensuring effective mathematical activity.

2.1. Components describing mathematical activity of the pupils.

2.2. Components describing “mathematical style” of thinking: flexibility of mental process; a reversibility of mental process during mathematical reasoning; economy of thought, strictness of a thought and its expression; clearness, simplicity and beauty of solutions.

2.3 Components describing qualities of the person of pupils as mathematicians: Inclination to discovering the logical and mathematical sense in all phenomena of the reality; a habit to rigorous logical argumentation; speed of mastering of an educational material; geometric imagination or “geometric intuition”; possession of sufficient patience in mathematical problem solving; mathematical memory.