

## 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.