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## **Intelligence of mathematical aptitude among science and arts students of tenth standard belonging to Bareilly**

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### **ABSTRACT:**

*The study of mathematical aptitude among science and arts students of the tenth standard in Bareilly highlights the significant impact of curriculum and educational practices on cognitive development. While science students tend to exhibit higher mathematical aptitude, arts students develop strong verbal and analytical skills. Recognizing and addressing these differences can help create a more inclusive and effective educational environment that nurtures the diverse talents of all students*

**RESULTS OF RESEARCH:** *There is no significant relationship in between Intelligence and mathematical aptitude of male students from Science and Arts, There is no significant relationship in between Intelligence and mathematical aptitude of female students from Science and Arts.*

**Keywords:** *Intelligence, Mathematical Aptitude, science and arts students, students of tenth standard.*

### **Introduction**

Education is a crucial determinant in shaping the future of students, and understanding the variations in intellectual aptitudes across different streams can help educators tailor their teaching methodologies. The study of mathematical aptitude among tenth standard students in the science and arts streams reveals significant insights into how different educational tracks influence cognitive development and problem-solving skills.

Mathematical aptitude refers to the ability to understand, interpret, and solve mathematical problems. It encompasses a range of cognitive skills, including numerical reasoning, logical thinking, and spatial visualization. Mathematical aptitude is not just about performing calculations; it also involves understanding concepts, identifying patterns, and applying knowledge to solve real-world problems.

Intelligence, often defined as the capacity to learn, understand, and apply knowledge, plays a vital role in mathematical aptitude. It influences how students process information, solve problems, and adapt to new situations. In the context of education, intelligence can be measured through standardized tests that assess various cognitive abilities.

Students in the science stream typically engage more intensively with mathematical concepts as part of their curriculum. Subjects like physics, chemistry, and biology require a strong foundation in mathematics, leading to a more focused development of mathematical skills. Consequently, science students often exhibit higher mathematical aptitude due to their continuous exposure and practice.

On the other hand, arts students might have less rigorous mathematical training as their curriculum often emphasizes subjects such as literature, history, and social sciences. While these subjects develop critical thinking and analytical skills, they may not specifically target the mathematical problem-solving abilities in the same way the science curriculum does.

Understanding these differences has important implications for educational strategies. For arts students, integrating more mathematical problem-solving tasks into the curriculum could help improve their mathematical aptitude. Similarly, providing science students with opportunities to develop their verbal and analytical skills can create a more balanced cognitive skill set.

Educational policymakers should consider these findings when designing curricula to ensure that all students, regardless of their chosen stream, receive a well-rounded education that prepares them for various future challenges. Teachers should be encouraged to adopt diverse teaching methods that cater to the strengths and weaknesses of their students.

## **Need and Importance of Study**

Recognizing the varying levels of mathematical ability helps in creating personalized learning experiences that cater to the strengths and weaknesses of individual students. Identifying students who struggle with mathematics enables educators to design specific interventions to assist these students, thereby improving their overall academic performance. Understanding the differences in mathematical abilities can guide the development of a curriculum that is relevant and challenging for both science and arts students. Ensuring that the curriculum does not disproportionately favour one group over another, thereby promoting a balanced educational experience. Insights into students' mathematical abilities can aid in providing better career guidance, helping students choose fields that align with their strengths. Preparing students for future academic pursuits or careers that require strong mathematical skills, especially those in science-related fields. Studying mathematical ability offers insights into the cognitive development of students, helping educators understand how students process and apply mathematical concepts. Promoting intellectual growth by identifying and nurturing mathematical talent, especially in students who might not traditionally excel in this area. Ensuring that all students, regardless of their stream, have equal opportunities to develop their mathematical skills. Identifying and addressing any biases that may exist in the educational system regarding the mathematical abilities of science and arts students. Enhancing teaching methods by understanding which approaches are most effective for different groups of students. Implementing innovative teaching strategies that can improve mathematical understanding and performance across diverse student groups. Improving overall academic performance by strengthening foundational mathematical skills, which are crucial for success in many subjects. Conducting comparative analyses to understand the strengths and weaknesses of different groups, leading to improved teaching practices and student outcomes.

Studying the intelligence of mathematical ability among science and arts students of class 10th is crucial for fostering a comprehensive and equitable educational environment. It allows for the development of tailored teaching strategies, informed career guidance, and a balanced curriculum that supports the intellectual growth and academic success of all students.

## **REVIEW OF THE RELATED LITERATURE:**

Salim (2021), Shetty and Raj (2022), Manikandan & Ambedkar (2022), Arthur, Kofi and Asiedu-Addo (2022), Mukuka (2023), Crompton and Burke (2023), Rani (2024), Boruah and Padu (2024).

### **Statement of the Problem**

Intelligence of mathematical aptitude among science and arts students of tenth standard belonging to Bareilly.

### **Definition of Variables**

**District Bareilly** - District Bareilly is an administrative region in Uttar Pradesh known for its agricultural activities, cultural diversity, educational institutions, and connectivity. It encompasses both urban and rural areas, contributing to the socio-economic fabric of the region with a focus on agriculture, industry, education, and cultural heritage.

**Secondary Students** - Secondary students are individuals enrolled in the educational stage that bridges primary education and higher education. This stage typically involves a comprehensive curriculum that includes both core academic subjects and elective courses, catering to a wide range of interests and career goals. Secondary education is marked by the developmental changes of adolescence, the formation of identity, and preparation for future academic and career pursuits through a variety of academic tracks, standardized testing, and extracurricular activities.

**Science Students** - Science students engage in disciplines that seek to understand and explain natural phenomena through systematic study, experimentation, and analysis. Their education emphasizes critical thinking, problem-solving, and analytical skills. Science subjects include biology, chemistry, physics, geology, astronomy, mathematics, engineering, computer science, environmental science, and health sciences, preparing students for careers in research, healthcare, engineering, technology, and various scientific fields.

**Arts Students** - Arts students engage in academic disciplines that focus on the study of human culture, expression, and social structures. Their education emphasizes creativity, critical thinking, analysis, and interpretation. Arts subjects include humanities, social sciences, fine arts, communication, media studies, and cultural studies, preparing students for diverse careers in creative, academic, and professional fields.

**Mathematical Aptitude** - Mathematical aptitude is a composite of various cognitive abilities and skills that enable an individual to understand, process, and work effectively with mathematical concepts and problems. It includes numerical ability, logical reasoning, abstract thinking, problem-solving skills, spatial ability, analytical thinking, attention to detail, and pattern recognition. This aptitude is important for success in mathematics and related fields.

**Intelligence** - Intelligence is a complex and multifaceted construct that involves the ability to reason, solve problems, think abstractly, learn from experience, and adapt to new situations. It can be understood through various theories and perspectives, each highlighting different aspects and types of cognitive abilities.

### OBJECTIVES OF THE STUDY:

1. To study the relationship between Intelligence and mathematical aptitude of male students from Science and Arts.
2. To study the relationship between Intelligence and mathematical aptitude of female students from Science and Arts.

### HYPOTHESIS:

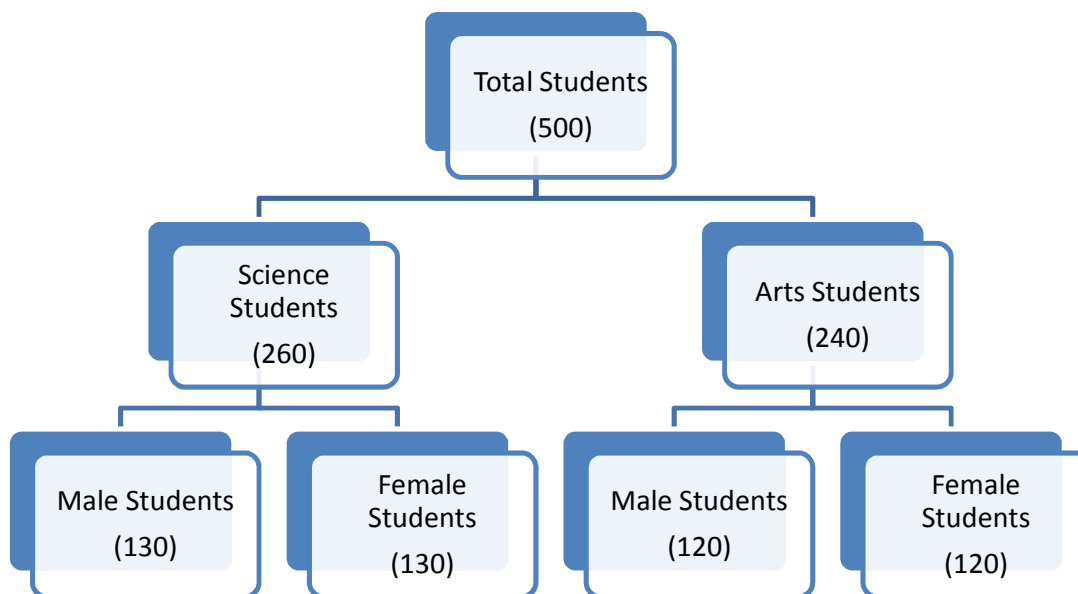
1. There is no significant relationship between Intelligence and mathematical aptitude of male students from Science and Arts.
2. There is no significant relationship between Intelligence and mathematical aptitude of female students from Science and Arts.

### METHOD

The study is descriptive survey type of research aiming at a study of effect of Intelligence of mathematical aptitude among science and arts students of tenth standard.

### SAMPLE SIZE

The sample of this study 500 students.



### TOOLS USED

- Intelligence : *DR. R.K. Tandon*  
Mathematical Aptitude : *Dr. Ali Imam & Dr. Tahira Khatoon*

## ANALYSIS AND INTERPRETATION OF DATA

**Table 1**

**The correlation in between Intelligence and Mathematical Aptitude of Male Students from Science and Arts.**

Male Students	No. of Students	Correlation	Significant Level
Science	130	0.028	Positive Correlation
Arts	120	0.006	Positive Correlation

**Interpretation:** -In table 1 shows the correlation in between Intelligence and Mathematical Aptitude of Male students from Science and Arts. The correlation value in Intelligence and Mathematical Aptitude of Science Students is 0.028. The result demonstrates a favourable association between the Science Male students in the intelligence and mathematical aptitude. The correlation value in Intelligence and Mathematical Aptitude of Arts Students is 0.006. The result demonstrates a favourable association between the Arts Male students in the intelligence and mathematical aptitude.

**Table 2**

**The correlation in between Intelligence and Mathematical Aptitude of Female Students from Science and Arts.**

Female Students	No. of Students	Correlation	Significant Level
Science	130	0.116	Positive Correlation
Arts	120	0.072	Positive Correlation

**Interpretation:** -In table 2 shows the correlation in between Intelligence and Mathematical Aptitude of Female students from Science and Arts. The correlation value in Intelligence and Mathematical Aptitude of Science Students is 0.116. The result demonstrates a favourable association between the Science Female students in the intelligence and mathematical aptitude. The correlation value in Intelligence and Mathematical Aptitude of Arts Students is 0.072. The result demonstrates a favourable association between the Arts Female students in the intelligence and mathematical aptitude.

## RESULTS OF RESEARCH

1. There is no significant relationship in between Intelligence and mathematical aptitude of male students from Science and Arts.
2. There is no significant relationship in between Intelligence and mathematical aptitude of female students from Science and Arts.

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