# Regression Analysis Results with Hypothesis Testing, Discussion, and Conclusion

## Hypothesis Testing

This study sought to test whether student attitude, availability of learning materials, and teacher in-service training significantly influence students’ grade points in mathematics.

### Null Hypotheses (H₀):

• H₀₁: Student attitude has no significant effect on mathematics grade points .  
• H₀₂: Availability of learning materials has no significant effect on mathematics grade points .  
• H₀₃: Teacher in-service training has no significant effect on mathematics grade points .

### Alternative Hypotheses (H₁):

• H₁₁: Student attitude significantly affects mathematics grade points .  
• H₁₂: Availability of learning materials significantly affects mathematics grade points .  
• H₁₃: Teacher in-service training significantly affects mathematics grade points .

### Decision Criteria:

At a 5% significance level (α = 0.05), the null hypothesis is rejected if the p-value < 0.05.

### Results:

• Attitude (coeff= 0.4627, t = 6.07, p < 0.001) → Reject H₀₁. Attitude has a significant positive effect.  
• Availability of learning materials (coeff= 0.3679, t = 4.25, p < 0.001) → Reject H₀₂. Availability significantly improves performance.  
• In-service training (coeff= 0.2999, t = 3.45, p = 0.001) → Reject H₀₃. Training has a significant positive impact.

### Conclusion:

Since all three predictors yielded p-values below 0.05, we reject all the null hypotheses (H₀₁–H₀₃). The findings confirm that student attitude, availability of learning materials, and in-service training significantly and positively influence mathematics grade points in Kenyan day secondary schools.

## Discussion

The regression analysis provided compelling evidence that student attitude, availability of learning materials, and teacher in-service training are all significant predictors of students’ performance in mathematics in Kenyan day secondary schools. This aligns with findings from prior studies such as Oyugi (2018) and Adino (2015), which similarly identified the importance of teacher professional development and student perceptions toward mathematics as key determinants of achievement. Unlike Mulupi (2011), who reported limited impact of resources, this study demonstrates that learning material availability has a strong and positive effect when modeled together with other factors.

The high explanatory power of the model (R² = 0.984) suggests that these three factors account for almost all the variation in mathematics performance within the dataset. This provides empirical support for the assumption in the proposal that measurable school- and student-level factors significantly influence outcomes. The results highlight the interdependence of teacher-related and student-related dimensions: motivated learners supported by well-trained teachers and sufficient resources are much more likely to achieve higher grades.

From a policy perspective, these findings underscore the need to strengthen investment in continuous teacher training, while simultaneously ensuring equitable distribution of mathematics learning resources across schools. Additionally, fostering positive student attitudes through guidance and mentorship programs emerges as a practical intervention for improving performance.

## Conclusion

This study set out to analyze factors influencing low performance in mathematics in Kenyan day secondary schools. The results demonstrate that student attitude, resource availability, and teacher in-service training each exert a significant and positive influence on performance. These findings confirm that improvements in these areas can yield substantial gains in student outcomes.

The study therefore concludes that targeted interventions aimed at enhancing teacher capacity, ensuring adequate learning resources, and cultivating positive student attitudes are crucial for improving mathematics performance. Future work should expand the dataset across multiple regions to validate generalizability and incorporate additional variables such as socio-economic status and teaching methodologies.

Ultimately, the evidence points to the importance of a holistic, data-driven approach in addressing low mathematics performance, thereby supporting the study’s objective of generating actionable insights for educators, administrators, and policymakers.