University of Colorado
Denver | Anschutz Medical Campus

MATHEMATICS

GENERAL EDUCATION LEARNING OUTCOMES AND ASSESSMENT RUBRICS

Intellectual competency in mathematics refers to the ability to demonstrate critical and analytical thinking skills using mathematical language. This includes the ability to think logically, accurately manipulate mathematical representations and use mathematics to gain a deeper understanding of real-world problems. Students exhibiting intellectual competency in mathematics communicate their process and reasoning while demonstrating a conceptual understanding of mathematical principles.

In the Mathematics core area, students will be able to:

1) Calculate. Accurately and logically manipulate a mathematical representation to attain desired information.

2) Represent. Translate between representations to clearly represent information and gain insight. (Representations may include symbolic, graphical, numerical, or verbal.)

3) Interpret. Draw meaningful inferences and communicate insights from mathematical representations. (Mathematical representations may include statistical, graphical, algebraic, geometric, or symbolic.)

4) Model. Develop and/or apply an appropriate mathematical model for a real-world problem. (This can be demonstrated by, for example, developing a model, choosing an appropriate model from several, or explaining the primary assumptions needed to use a particular model.)

Mathematics Assessment Rubric

Outcome	*Below Proficient*	*Proficient*	*Above Proficient*
1 .Calculate	Calculations are performed with multiple mistakes and no meaningful progress toward a correct solution is made.	Calculations are performed with minor error causing an incorrect answer, but progress toward a correct solution is made.	Calculations are performed with no error and the correct solution is attained.
2. Represent	Representation(s) are used to display the mathematical information with multiple flaws such as computational or copying errors, mislabeling or misreading the problem. The representation could also be lacking in that variables are not clearly defined or the graph is incorrectly labeled and scaled.	Appropriate representation(s) are used to display the mathematical information with minor flaws such as misreading the problem, a copying error, a minor computational error or mislabeling.	Appropriate representation(s) are used to display the mathematical information or translate between representation(s). The representation(s) are correct and accurate in terms of format, mathematical terminology and language. Variables are clearly defined and graphs are correctly labeled and scaled.
3. Interpret	Interpretation(s) and/or inference(s) are incomplete or inaccurate due to multiple flaws or conceptual misunderstanding.	Interpretation(s) and/or inference(s) are incomplete or inaccurate due to a minor flaw, such as a computational or copying error or mislabeling.	Interpretation(s) and inference(s) are complete and accurate.
4. Model	Inappropriate choice and/or application of a model is used.	Choose and/or apply a reasonable mathematical model to make some advances in understanding of the physical problem.	Choose and/or apply appropriate mathematical models to further advance understanding of the physical problem in a meaningful way.