

14002 Basic Mathematical Concepts II (4)

Learning Outcomes for Basic Math Concepts II (MATH 14002)

Knowledge

Students should be able to define geometric terms such as polygon, polyhedron, perimeter, area, surface area, and volume. Students will also define terms used in statistics such as mean, median, mode, variance, and standard deviation. They will tabulate probability of simple experiments.

Comprehension

Students should be able to understand the concepts necessary to find perimeter and area of polygons, as well as surface area and volume for polyhedral. Students will also understand the three types of “average” in statistics (mean, median, and mode). They will explain characteristics of quadrilaterals using algebraic terms such as slope and distance.

Application

Students will apply their understanding of perimeter and area of polygons to find appropriate perimeters and areas for polygons. They will apply their understanding of surface area and volume to find appropriate surface areas and volumes for solids. They will apply their understanding of formulas to solve problems efficiently. Given sets of data, students will find the mean, median, mode, variance, and standard deviation for the data. Students will determine the probability of simple and complex probability experiments.

Analysis

Students will use intuitive methods to determine the validity of formulas for perimeter and area of polygons as well as surface area and volume of polyhedral. They will appraise their current understanding of geometry and identify prior misconceptions. Students will discuss their methods for finding mean, median, and mode for a set of data. They will listen to each other’s explanations and try to make sense of them.

Synthesis

Students will integrate skills that were developed in Basic Algebra courses to solve word problems. They will also use these problem solving skills to develop appropriate strategies for finding solutions to more involved problems. Students will use construction techniques with compass and straightedge, algebraic reasoning with slopes and distances, and geometric reasoning to synthesize characteristics of geometric shapes.

Evaluation

Students will find algebraic solutions to geometry problems and evaluate various solution methods to find an efficient approach. Students will also use box and whisker plots and other graphical displays of data to determine efficient ways of projecting useful information from a set of data.

Class Activities

Students will work in cooperative groups to discuss the validity of statements and other topics so that a consensus of class understanding can be determined. They will discuss topics beginning with concrete objects then move to a pictorial and then an abstract discussion of topics. At each level they will endeavor to make sense of the concept.

Out of Class Activities

Students will have homework assignments that allow them to show their understanding of the concepts discussed in class and in the book. These assignments will be collected periodically and the instructor will randomly check problems to determine if sufficient understanding is demonstrated.