College Mathematics Preparation (2 of 2)

Course Description:

This course is designed to prepare students for mathematics coursework in postsecondary settings. Topics addressed in the course include set operations with Venn diagrams, finding probability and odds, determining statistical measures, and working with normal distributions and curves.

Course Objectives:

- Identify whether a subset is a proper subset of a set.
- Solve problems related to intersections, unions, and complements of sets.
- Solve problems related to finding theoretical and experimental probabilities.
- Solve problems related to finding conditional probabilities of dependent events.
- Calculate odds and probabilities in relation to given odds or probabilities.
- Solve problems related to probability with combinations and permutations.
- Analyze and interpret data represented in different data displays.
- Calculate and interpret measures of central tendency and dispersion.
- Calculate and interpret quartiles and percentiles of data sets.
- Solve problems related to normal distributions.
- Describe processes and results in probability problems.
- Model and solve probability problems.

Required Materials:

In course.

Schedule of Work:

Unit 1: Sets and Venn Diagrams

- Texts (Lessons 1-5)
    - Sets and Subsets
    - Proper Subsets
    - Complement of a Set
    - Union of Sets
    - Intersection of Sets
    - Complement of a Set in a Venn Diagram
    - Union of Sets in a Venn Diagram
    - Intersection of Sets in a Venn Diagram
    - Represent Sets in a Venn Diagram
    - Apply Venn Diagrams
    - Represent Situations
    - Solve Problems
- Workbook Assessments (Lessons 1-5)
- Checkpoints (Lessons 1, 3, and 4)
    - Sets
    - Set Operations and Venn Diagrams
    - Drawing and Applying Venn Diagrams
- Unit Exam: Sets and Venn Diagrams (Lesson 5)

Unit 2: Explore Probability

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- Texts (Lessons 6-10)
    - Probability Terms
    - Find Theoretical Probability
    - Complement of an Event
    - Find Experimental Probability
    - Tree Diagrams
    - Fundamental Counting Principle
    - Different Methods to Find Probabilities
    - Independent and Dependent Events
    - Find the Probability of A and B
    - Find the Probability of A or B
    - Find Conditional Probability
    - Two-Way Frequency Tables
- Workbook Assessments (Lessons 6-10)
- Checkpoints (Lessons 7-9)
    - Theoretical and Experimental Probability
    - Finding and Counting Outcomes
    - Compound Probability
- Project: Probability Project (Lesson 7)
- Unit Exam: Explore Probability (Lesson 10)

Unit 3: Combinatorics, Odds, and Expected Values

- Texts (Lessons 11-15)
    - Determine Permutations
    - Use Permutations to Find Probabilities
    - Determine Combinations
    - Use Combinations to Find Probabilities
    - Odds in Favor of an Event
    - Odds Against an Event
    - Find Probabilities Based on Odds
    - Understand Expected Value
    - Calculate Expected Value
- Workbook Assessments (Lessons 11-15)
- Checkpoints (Lessons 12 and 14)
    - Permutations and Combinations
    - Odds and Using Odds to Find Probability
- Project: Probability Project (Lessons 13 and 14)
- Unit Exam: Combinatorics, Odds, and Expected Values (Lesson 15)

Unit 4: Explore Statistics

- Texts (Lessons 16-20)
    - Statistical Terms
    - Sampling Methods
    - Sampling Bias
    - Misleading Graphs
    - Identify and Create Frequency Distributions
    - Scatter Plots
    - Line Graphs

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    - Histograms
    - Circle Graphs
- Workbook Assessments (Lessons 16-20)
- Discussion Board: Random Samples (Lesson 18)
- Checkpoints (Lessons 17 and 19)
    - Sampling Methods and Evaluating Graphs
    - Frequency Distribution and Data Displays
- Unit Exam: Explore Statistics (Lesson 20)

Unit 5: Measure and Analyze Data

- Texts (Lessons 21-25)
    - Find Mean, Median, and Mode
    - Interpret Mean, Median, and Mode
    - Range and Standard Deviation
    - Interpret Range and Standard Deviation
    - Quartiles
    - Percentiles
    - Create Box Plots
    - Identify Outliers
    - The Effects of Outliers on Measures
- Workbook Assessments (Lessons 21-25)
- Checkpoints (Lessons 21, 22, and 24)
    - Measures of Central Tendency
    - Spread of Data
    - Measures of Location and Box Plots
- Unit Exam: Measure and Analyze Data (Lesson 25)

Unit 6: Normal Distribution and Curves

- Texts (Lessons 26-28)
    - Shape of Data
    - Define Normal Distribution
    - Define Normal Curves
    - The 68-95-99.7 Rule
    - Find z-Scores
    - Apply z-Scores
- Workbook Assessments (Lessons 26-28)
- Checkpoints (Lessons 27-28)
    - Normal Distribution and Normal Curves
    - z-Scores
- Course Review (Lesson 29)
- Final Exam (Lesson 30)

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