Geometry Honors (2 of 2)

Course Description:

Geometry Honors (2 of 2) explores the Pythagorean theorem, distance formula, midpoint formula, and slope formula to solve geometric problems and develop coordinate proofs. Topics include: understand and apply theorems about circles to find arc lengths and areas of sectors of circles; apply the distance formula to write equations of circles in the coordinate system; and understand the concepts of permutations and combinations to explore the concept of probability.

Course Objectives:

- Solve problems and complete and analyze proofs using coordinate geometry.
- Solve problems using linear relationships.
- Make formal geometric constructions using different tools and methods.
- Identify and use relationships in circles to solve problems and complete proofs.
- Calculate numbers of outcomes for events using different methods.
- Identify probability events as sets, subsets, and combinations of sets.
- Calculate probabilities using formulas and tables.
- Make and analyze decisions using probability.
- Identify independent events using different formulas or probabilities.

Required Materials:

In course.

Course Overview:

Unit 1: Pointing to the Problem (Coordinate Proofs with Distance Formula, Slope, and Midpoint Formula)

- Course Pretest (Lesson 1)
- Math Muscle Exercise (Lessons 2-5)
- Prologue
- Level Up
    - Key Terms
    - Text and Videos: Finding Distances in the Coordinate Plane; Polygons and Coordinate Geometry; Perimeter and Area of Polygons in the Coordinate Plane; The Concept of Slope; Midpoint Formula
    - Workbook assessments
- Epilogue
- Checkpoint assessments (Lessons 1-4)
- Unit 1 Exam (Lesson 5)
- Project 1: Tools of the Trade: Hypatia and Elibri (Lessons 1-5)
- To Be Continued...!

Unit 2: Slippery Slopes (Coordinate Proofs with Distance Formula, Midpoint Formula, and Slope)

- Math Muscle Exercise (Lessons 6-10)
- Prologue
- Level Up
    - Key Terms

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    - Text and Videos: Partitioning Segments; Slope-Intercept Form; Point-Slope Form; Parallel Lines and Their Equations; Perpendicular Lines and Their Equations
    - Workbook assessments
- Epilogue
- Checkpoint assessments (Lessons 6-9)
- Unit 2 Exam (Lesson 10)
- Project 2: Tools of the Trade: Partition a Directed Line Segment (Lesson 6)
- To Be Continued...!

Unit 3: Circular Logic (Theorems about Circles, Arc Length, Area of Sectors)

- Math Muscle Exercise (Lessons 11-15)
- Prologue
- Level Up
    - Key Terms
    - Text and Videos: Chords, Diameters, and Their Relationships; Tangent Lines of a Circle; Arcs, Chords, and Similar Circles; Arc Length and Radian Measure; Sectors
    - Workbook assessments
- Epilogue
- Checkpoint assessments (Lessons 11-14)
- Unit 3 Exam (Lesson 15)
- Project 3: Tools of the Trade: Three Constructions (Lessons 11-13)
- To Be Continued...!

Unit 4: Circumventing (Theorems about Angles and Segments of Circles, Equations of Circles)

- Math Muscle Exercise (Lessons 16-20)
- Prologue
- Level Up
    - Key Terms
    - Text and Videos: Central, Inscribed, and Circumscribed Angles; Other Angle Relationships in Circles; Segment Relationships in Circles; Writing Equations of Circles; Recognizing Equations of Circles
    - Workbook assessments
- Epilogue
- Checkpoint assessments (Lessons 16-19)
- Unit 4 Exam (Lesson 20)
- Project 4: Tools of the Trade: Construct a Circumscribed Circle (Lesson 16)
- To Be Continued...!

Unit 5: One Problem, Many Faces (Permutations, Combinations, Theoretical and Experimental Probabilities)

- Math Muscle Exercises (Lessons 21-25)
- Prologue
- Level Up
    - Key Terms
    - Text and Videos: Permutations; More About Permutations; Combinations; The Concept of Probability; Theoretical and Experimental Probability
    - Workbook assessments
- Epilogue
- Checkpoint assessments (Lessons 21-24)
- Unit 5 Exam (Lesson 25)

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- Project 5: Probability in Theater
- To Be Continued...!

Unit 6: Probability and Certainty (Independent Events, Conditional Probability, Compound Events)

- Math Muscle Exercises (Lessons 26-29)
- Prologue (Lessons 26-29)
- Level Up
    - Key Terms
    - Text and Videos: Independent Events; Conditional Probability; Probabilities with Frequency Tables; Compound Events
    - Workbook assessments
- Unit Review (Lesson 30)
- Epilogue
- Checkpoint assessments (Lessons 26-28)
- Unit Exam (Lesson 29)
- Course Final Exam (Lesson 30)
- Project 6: Casino Games
- To Be Continued...! (Lessons 26-29)
- Aftermath (Lesson 30)

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