Lesson: Snowmobile Permutations and Combinations

Teacher: Jamie Droegemeier
Level: Algebra II

Overview:
- This lesson introduces the concepts and methods of calculating permutations and combinations for later use in computing probabilities of compound events.

Objectives and Goals:
- Kansas Standards
  - Use permutations and combinations to compute probabilities of compound events and solve problems.
- The student will learn to create a simple quiz in Alice.

Anticipatory Set (5-10 min):
- Put up photos of a five course meal and a buffet.
  - How does the serving of each differ?
  - If you eat the first course at the dinner, does that limit what the next plate could be? What about at the buffet?
  - Does the order in which you eat your food matter?
- Use the meal discussion to lead into an introduction of permutations and combinations.

Direct Instruction and Guided Practice (15-20 min):
- Compare and contrast permutations and combinations.
- Introduce the formulas for calculating each one.
- Present sample scenarios for calculating permutations and combinations.
- Work one example of each together with the class.

Independent Practice (10 min):
- Demonstrate how the Alice program “Snowmobile Permutations and Combinations” will look and run.
- Have each student open and play the program “Snowmobile Permutations and Combinations” and complete the quiz questions.

Assessment
- Walk around the classroom as students play the program. Observe how students are doing on the quiz questions.

Closure (10 min):
- Discuss the use of quiz questions in the Alice program “Snowmobile Permutations and Combinations”.
- Show the Alice code that displays the quiz questions.

Independent Practice (Homework):
- Have students complete the Alice tutorial “A Simple Quiz”.

Required Materials and Equipment:
- Computer(s) with Alice software
- Students will need paper, pencil, and calculator