1. Lesson Title: The Fundamental Counting Principle

2. Grade/Age Level: 7th Grade

3. Subject Area: Mathematics

4. Time allotted for the lesson (express in number of class meetings and/or number of hours): 42 minutes (1 class period)

5. Short description of lesson (write a brief, yet concise description of what occurs in this lesson):
   a. In this one day lesson, students will learn the definition of sample space and how to calculate the total number of possibilities for a given situation. Students will also learn to write probabilities using the sample space.

6. State Curriculum Standards met in this lesson (if applicable):
   a. Compute probabilities of compound events; e.g. multiple coin tosses or multiple rolls of a number cube, use such methods as organized lists, tree diagrams, and area models

7. Instructional Objectives (Each instructional objective [learning outcome] for this lesson):
   a. Students will be able to explain the meaning of sample space.
   b. Students will be able to use the Fundamental Counting Principle to find the size of the sample space.
   c. Students will be able to express the probability of an outcome as a fraction in simplest form and as a percentage.

8. Instructional Procedures
   a. Lesson Set (How will you open the lesson to motivate the learners?)

   Teacher will present a menu to the students that contains different choices for a main course, a side item, and a drink. Together the class will determine if there is enough options for each student to get a different meal.
b. Techniques and activities (List the step-by-step activities in sequential order as they occur in the lesson. They clearly identify what is to take place in the lesson. Within the procedures a variety of classroom teaching strategies (methods) should be identified. Learner centered activities should be included as well as guided practice of the learning.)

After opening segment, teacher will lead a class discussion on sample space and the Fundamental Counting Principle. Beginning with Fundamental Counting Principle Visual, teacher will point out the Fundamental Counting Principle is used and describe what it is used for. PowerPoint presentation will be the guide for the rest discussion. Teacher will walk through the first couple of examples as students copy the examples into their notebook. Then students will work examples on their own with teacher guidance if needed. Formative assessments will be conducted throughout the presentation by teacher as he/she walks around classroom helping students. Students will then use the sample space to find probabilities of different events.

c. Lesson Closure (How will the lesson come to a close? The content should be summarized and related to future lessons, and actively involve the learners)

Teacher will summarize the lesson and explain the importance of knowing the Fundamental Counting Principle. Teachers will stress the relationship between it and the denominator of probability fraction.

9. Adaptations for special learners (How will you adapt the learning/equipment for learners with special needs?)

a. Lessons will be recorded with SMART Recording Software to produce a video of the examples that were discussed that allows students to watch lesson again at their own pace for increased understanding. This will be posted online and linked to from classroom forum.

b. Kinesthetic learners will be provided with a physical example of probability experiment in order to see and experiment with the possible outcomes for the given situation.

c. Students who struggle with handwriting each example will be allowed to use electronic devices such as AlphaSmarts for note-taking and other required tasks.

10. Supplemental Activities: Extension and remediation (Extensions are additional activities to expand learning on the lesson content. Remediation activities include methods to re-teach the learning for learners who need more instruction/practice.)

Students who comprehend the material will be asked to explain the processes to others who have difficulty with the problems. This will extend the knowledge for the peer tutor by having to explain it in different ways in order to help the other student. These students could also choose to work a more difficult problem set where there are more options with more outcomes, creating situations that are more complex. Teacher will
also establish a small group setting for those who prefer that type of instruction when whole class instruction is not the most efficient means.

11. Assessment/Evaluation (How will you measure the learner’s success? Formally or informally? Formal evaluation of learner work requires that a grade is taken while informal might be monitoring of work, or class discussion. This section should contain a description of the assessment process, the criteria for achievement, and performance levels. The criteria should directly align to objectives and instruction. Describe your plan for providing feedback to your learners.):

Students will be assessed informally throughout discussions to gauge understanding. All students will be evaluated in this fashion during the discussion while some students will also be informally evaluated when illustrating problems on the SMART Board that are given as part initial presentations. Students will be formally assessed with a homework assignment. This will determine if class is ready to proceed with the next topic or if more examples/discussion/remediation is needed. More formal assessment will be conducted with future quizzes and tests.

12. Learner Products (What artifact(s) or products will result from the lesson? (such as a report, newsletter, diagram, slideshow, drawing, etc.)

This will be the first piece of a combined portfolio for this unit. Each section will constitute another part of portfolio along with quizzes and test.

* Note for learners: This lesson plan template is adapted from the model that is recommended in the book Preparing to Use Technology: A Practical Guide for Technology Integration.