

## Lesson Plans - Chad Shoeck & Jerid Shoeck

Discrete

Grade 5/6

**Key Content:** Discrete

### Day 1

**Materials:** Paper cut-out uniforms (hats, pants, and jerseys)

**Developing Plan:** Students will use the cut-outs to find all the possible Little League uniforms they can make. They must use a hat, jersey, and pants using 4 different hats, 5 different jerseys and 2 pair of pants. Students will share their findings with class. Another problem like this will be given with ice cream from Dairy Queen that offers 2 flavors of ice cream, 4 fruit toppings and 5 other toppings (nuts, chocolate, etc). Students will learn to use/make tree diagrams as a method of listing all the possible combinations after working on these two sample problems.

### Day 2

**Materials:** Minnesota License Plates

**Developing the Lab:** Students will learn the possible ways to fill spaces on a license plate with numbers and letters. Teacher will ask students to list possible Minnesota license plates. Students will be asked if making a tree diagram would be helpful in finding the total number of possibilities. Based on what they learned in day one and day two they will develop and use the counting principle.

### Day 3

**Materials:** Pascal's Triangle

**Developing Plan:** Students will discover Pascal's Triangle by looking at all the different combinations of boys and girls in families of different sizes. Give students the problem of a town called Rypkemaville where all families have the last name Rypkema. They all have exactly five children. How many different combinations of boy-girl families are there in Rypkemaville? Students can either make a list or make a tree diagram of the outcomes. The connection to Pascal's triangle can be made.

$$\begin{array}{c} 1 \\ 1 \ 1 \\ 1 \ 2 \ 1 \\ 1 \ 3 \ 3 \ 1 \\ 1 \ 4 \ 6 \ 4 \ 1 \\ 1 \ 5 \ 10 \ 5 \ 1 \end{array}$$

## **Day 4**

**Materials:** Pascal's Triangle

**Lesson:** Using Pascal's triangle and a tree-diagram students will find all the combinations of ordering ingredients on a pizza when there are 7 toppings. A pizza made be made with 0-7 toppings.

## **Day 5-7 Project/Assessment**

**Materials:** Sample menus, construction paper, markers, scissors, white board

**Lesson:** Students will create their own menu for a restaurant which provides the customers choices. Students will need to develop and advertising campaign that demonstrates the wide numbers of available options at their restaurant. Students will be assessed on their menu, advertising and tree diagram or Pascal's Triangle which show the various selections at their restaurant.

**Content Standard:** Discrete (Patterns and Functions) **Level: 5/6**

***Specific Statement(s) from the Standard:***

Minnesota Standard: Identify patterns in numbers, shapes, and tables and explain how to extend those patterns.

***Product(s):***

Students will create a restaurant menu along with an advertising campaign.

***Task Description:***

The students will create their own menu for a restaurant which provides the customers choices. Students will need to develop an advertising campaign that demonstrates the wide number of options a person has at their restaurant. Students will need to submit their menu, advertising, and either tree diagram or Pascal's Triangle which depicts the selections.

PERFORMANCE PACKAGE TASK 1  
(Title of Package)

**FEEDBACK CHECKLIST FOR TASK 1**

The purpose of the checklist is to provide feedback to the student about his/her work relative to the content standard. Have the standard available for reference.

Y=Yes

N=Needs Improvement

<u>Student</u>		<u>Teacher</u>
_____	Restaurant menu provides multiple choices	_____
_____	Advertising campaign includes correct number of menu items/options	_____
_____	Pascal's Triangle/Tree Diagram appropriately organized	_____
_____		_____
_____		_____
_____		_____

**Overall Comments** (information about student progress, quality of the work, next steps for teacher and student, needed adjustments in the teaching and learning processes, and problems to be addressed):