10 -1/4 Theoretical and Experimental Probability, Independent and Dependent Events

Grade Level and Subject:
Grade 8 Pre-algebra (OL and BL, 1 periods, 50 minutes)

Instructional Objectives:
1. Students will be able distinguish between theoretical versus experimental probability and independent versus dependent events.
2. Students will be able to calculate probability for theoretical and experimental situations and independent and dependent events.

Concepts Addressed/Related Content Standards or Framework:
Concepts
Probability, Theoretical, Experimental, Independent Events, Dependent Events

PDE Standards
M8.E.3.1.1 Find the probability for a mutually exclusive or an independent event (written as a fraction in simplest form).

NCTM Standards
1. Use proportionality and a basic understanding of probability to make and test conjectures about the results of experiments and simulations.

Materials Required:
1. TV/Monitor for displaying warm-ups/notes/worksheets problems
2. Lesson packets (Notes, practice and work sheets)
3. Textbook – *Pennsylvania Mathematics Course 3* Pearson/Prentice Hall 2008 Edition
4. 6 Coins
5. Blackboard

Engagement:
See attached warm-up.

Procedure:
1. Ask students to complete the warm-up problem. Hand out lesson packets and exit ticket papers.
2. As a class, discuss the warm-up problems.
3. Use the PPT notes to instruct the class on theoretical versus experimental probability and independent versus dependent events. (For experimental probability on Slide #2 of the PPT, ask 6 students to flip the coins.)
4. Ask the students to complete the 2 examples on the last slide.
5. Review 2 examples.
6. Ask class to complete the 10-1 Practice #1, 3, 5, 9 – 10 and Puzzle 10 – 1 #1 – 5. **Make sure to adjust the dart board on the practice problems.** Monitor student progress for any questions, issues.

Key Discussion Questions:
1. What is the difference between theoretical and experimental probability?

2. How do we calculate theoretical and experimental probability?
3. What is the difference between independent and dependent events?
4. How do we calculate the probability of independent and dependent events?

Closure:
Exit ticket: See last PPT slide

Assessment:|
Step #4 of the procedure section for an informal assessment.
Step #6 of the procedure section for an informal assessment.
Exit Ticket for an informal assessment.

Extension Activities:
If students finish early, they should work on the following 10-4 assignment (tickets will be awarded).

Practice 10-4 # 1 – 4, 9
Practice 10-1 Complete the rest of the problems

Warm-up:

1.) Find the 19^{th} and 20^{th} term in the sequence.

$2(n - 1)$

2.) Sketch a potential graph for the speed of a roller coaster that starts by slowly pulling you up a hill.