Roll-It Tic Tac Toe™

Recommended Grade Levels: 1st–12th

Recommended Subjects: Math, Science, any subject for "Review Game"

Applicable Concepts, Skills, and Strategies:

- Problem solving
- A variety of writing skills, including comparison/contrast
- Teamwork
- Cooperative learning
- Foreshadowing
- Oral communication

Objectives:

- To work cooperatively
- To reinforce learned material
- To express thought process in writing
- To make predictions

Components:

- Classroom lessons to provide the material for review game
- A structure for journal writing
- An introduction to the scientific method

Materials Needed:

- Roll-It Tic-Tac-Toe game
- Writing utensils
- Notebook or theme paper

Review Game - Activity #1

This activity is designed for any type of curriculum review. Before playing, the teacher:

- Chooses 9 categories for students to review. Category numbers correspond with the numbers on the Roll-It Tic-Tac-Toe board—3, 4, 5, 6, 8, 9, 10, 11, 12. The categories can be as simple as words that begin with certain letters, or a subject area can be broken down into 9 specific topics. For example, in a grammar review, the 9 categories could be 3 = nouns, 4 = verbs, 5 = adjectives, 6 = adverbs, 8 = pronouns, 9 = prepositions, 10 = conjunctions, 11 = interjections, and 12 = miscellaneous.
- Writes 10 or more review questions for each of the 9 categories.
- Puts a game board into the game tray.

To play the game:

- Students are divided into four to six groups. Each group has a different set of colored chips.
- The goal is to get the most Tic-Tac-Toes and Grand Tic-Tac-Toes on the nine grids by answering questions correctly. When your team has three of its colored chips in a row on one grid—either diagonally, horizontally, or vertically—that's a Tic-Tac-Toe. If your team has three Tic-Tac-Toes in three adjacent grids, that's a Grand Tic-Tac-Toe. The Tic-Tac-Toes do not need to connect—just the grids. (See diagram in game rules.)
- A student from Group 1 starts by rolling the dice and must answer a question from the category that corresponds with the dice roll. For example, if 8 is rolled, a question from Category 8 would be asked.
- The student may consult other group members before answering.
- If the answer is correct, the group puts one of its colored chips on one available 8 (or whatever number was rolled) on any grid on the game board.

- If Group 1's answer is incorrect, Group 2 can steal the question and put its colored chip on an available 8 if the answer is right. If not, Group 3 has a chance to steal and so on.
- If no group answers the question correctly, that question is discarded and no chip is placed on the board.

Special rules:

- When a student rolls a 2 or a number that is no longer available on any of the grids, his or her group loses its turn.
- When a 7 is rolled, the student chooses which number category to answer. For example, if a student picked Category 6 and answered correctly, the chip would be placed on any available 6. If the answer is wrong, the next group would have a chance to steal the question. If correct, that group's chip would be placed on any available 6.
- Each group should have a different dice roller for each round to ensure that everyone is participating.
- The game is always played in sequential order with Group 1 going first; Group 2, second; and so on. That order is followed no matter which group earned the number by answering the question correctly. For example, if Group 1 answers its question incorrectly and Group 2 gets it right, Group 2 rolls the dice next to begin its turn.

Scoring:

- The game ends when no group can possibly get any more Tic-Tac-Toes or when all numbers in the grids are filled with chips. Groups add up their scores based on the following point system:
    - 1 point for each chip of their color on the game board, including those that make a Tic-Tac-Toe.
    - 3 points for each Tic-Tac-Toe.
    - 5 points for each Grand Tic-Tac-Toe.
- Regardless of the score, the review game's goal is to reinforce student learning and have some fun during the process.

Journal Writing - Activity #2

This activity is designed for older students, who may reflect on these questions after playing Roll-It Tic-Tac-Toe:

- What was your strategy for playing the game?
- If you rolled a 7, how did you decide which number to choose?
- What is more important to your game: the number itself or where the number is located on the board? Explain your answer.
- Would you call yourself an offensive player or defensive player? Why?
- Did your strategy change during the game? If yes, how come? If no, why not?
- If you play this game again, explain how you would change your strategy.

Probability-Scientific Method - Activity #3

Step 1:
This activity is designed for older students. Using four groups of students, play the game as described in the Roll-It Tic-Tac-Toe rules. Take statistics on the following:

- Number of dice rolls.
- Number of times 2 is rolled.
- Number of times 7 is rolled.
- Final score for each team.
- Margin of difference between high and low score.

Step 2:
Change the variables. Now, you lose your turn if you roll 7 and can choose any number if you roll 2.

Step 3:
Just like with any experiment where variables have been changed, students should predict how these changes would affect the outcome of the game. In their journals, students should write answers to the following questions:

- Will the number of rolls taken in Game 2 be greater or less than the number of rolls taken in Game 1? Explain your answer.
- Will the number of times 2 is rolled in Game 2 be greater or less than in Game 1? Explain your answer.
- Will the number of times 7 is rolled in Game 2 be greater or less than in Game 1? Explain your answer.
- Will the final scores for each team in Game 2 be greater or less than the final scores in Game 1? Explain your answer.
- Will the margin of difference between the high and low score in Game 2 be greater or less than the margin of difference in Game 1? Explain your answer.

Step 4:
With the same four groups of students, play the game using the variables in Step 2. Take statistics on the following:

- Number of dice rolls.
- Number of times 2 is rolled.
- Number of times 7 is rolled.
- Final score for each team.
- Margin of difference between high and low scores.

Step 5:
Compare/contrast the statistics from Game 1 and Game 2. Was your prediction accurate for the:

- Number of dice rolls?
- Number of times 2 is rolled?
- Number of times 7 is rolled?
- Final score for each team?
- Margin of difference between high and low scores?

Step 6:
Examine the changed variables to determine why or why not the predictions were accurate.