



INVESTIGATION 5

What are the risks?

NOTES TO TEACHER

PURPOSE: to explore the principles of probability and relate probability or risk to the radon problem.

MATERIALS:

- Two dice for every two students

BACKGROUND:

People live with risk around the clock. Statisticians tell us that there is a mathematical risk in everything from walking to the local 7-11 convenience store on a weekday to traveling to work each morning. There are even potential health risks at home, stemming from such phenomena as radon, asbestos, and lead.

How do you, as a teacher, communicate risk to your students? There is not an easy answer to this question. This student investigation examines risk as a mathematical concept called probability.

WARM-UP:

It is recommended that you first review with students the terminology associated with probability (e.g., probability, ratio, outcomes) prior to beginning this activity.

Outcome *is defined as something that follows as a result or consequence.*

Probability *is defined as the ratio of the number of favorable outcomes to the total number of possible outcomes (both favorable and unfavorable).*

Ratio *is defined as the relationship in quantity, amount, or size between two or more things*

PROCESS SKILLS:

Science	Mathematics	Social Studies	Social or Group
Communicating	Classifying	Judging information	Collaborating with
Categorizing	Investigating	related to a problem	others
Applying	Verifying		

ACTIVITY SUMMARY:

STEP 1

Prior to beginning this activity, students predict what sum of the die will occur or appear most often and least often after 150 rolls. For example, will the most frequent sum of two dice be 7 or 9 or perhaps 2? Similarly, will the least frequent sum of two dice be 12 or 6 or perhaps 4

STEP 2

Students assign a risk value or odds to events that they have either experienced, read about, or watched on television.

STEP 3

Students explore similarities between occupational risks and the risk from radon exposure.

STEP 4

Students draw what a radon gas atom might look like based on the model from the Radon Fact Sheet.

MINIMUM RECOMMENDED TIME

Four to six hours.

STUDENT RESPONSES

Handout #1

1. Responses will vary.
2. Responses will vary.

Handout #2

1. Responses will vary.
2. The bar graph started to appear more symmetrical.
3. 1 out of 6.

Handout #3

Responses will vary.

Handout #4

1. Wild Animal Trainer
2. Responses will vary
3. Responses will vary
4. Responses will vary
5. Responses will vary

EXTENSION ACTIVITIES

1. Have students assign different risks for other potential household dangers such as falls in the home, fires, food poisoning, floods, etc.





Radon Alert
Lesson Plan Evaluation Sheet
and FREE POSTER AND STORYBOOK offer

The New Jersey Department of Environmental Protection is happy to provide these lesson plans for use by teachers. In order to evaluate the use of the lesson plans, we would greatly appreciate your response to the following questions. All teachers who return these forms will receive a FREE RADON POSTER depicting information about radon in a colorful format and a STORYBOOK about a Native American child and his experience with radon in his home.

1. Which Radon Alert lesson plan(s) did you use?

2. How useful did you find it/them (check one) ?

- Not useful
- Slightly useful
- Moderately useful
- Very useful
- Extremely useful

3. Do you plan to use them again in the future? Yes No

4. In your view, what would make the lesson plans MORE useful:

Your name: _____ **Phone Number:** _____

Subject area: _____ **Grade:** _____

Mailing address:

To receive your FREE RADON POSTER and STORYBOOK, mail or fax this completed form to:

NJDEP Radon Program, P. O. Box 415, Trenton, NJ 08625

Fax: 609-984-5595.

(Questions? Call the Radon Program at 1-800-648-0394.)