

P.I.'s (aka -- Probability Investigators)

Summary

This activity helps students to understand probability more fully and how it affects their daily lives.

Materials

Additional Resources

Books

Holes, by Louis Sachar; ISBN 0-439-12845-5

Articles

R2 Math News, Granite School District, January 2004

Background for Teachers

Students need to understand that probability is all around them, it's used in everyday life. What is the probability you will get the prize you want out of the box of cereal you bought? How many boxes will it take? What are the chances it will rain, snow, or be sunny? There are chances each day that you don't realize you are doing. What is the probability you will get the parking spot, bike, a certain roll of the dice, or you will even get the lunch you want? When students understand probability and how it works they will see how it affects their lives.

Instructional Procedures

Invitation to Learn

Put the question up on the board: How many ways do people use probability in the real world? Make sure you have them list as many as they can in their math journal or on a piece of paper, example- weather person.

Instructional Procedures

Explain the scenario to the students then read aloud *Holes* by Louis Sachar -- from page 229, "This is pretty much. . ." through page 230, ". . . and for Hector to hire a team of private investigators."

They are the investigators and need to help Hector. Investigators/Detectives cannot make mistakes or it could affect the final results.

Put students in small groups and explain the following situation.

There are 5 women who are claiming to be Hector's mom. The news has spread that Hector is worth a lot of money, now everyone wants to be his mother. How will the detectives prove the true identity to the media, themselves, and Hector? They decide to use the coding of blood samples.

They coded the blood samples of the women with color counters and put them in 5 sacks. One sack contains an exact match to Hector's blood. Show sample of Hector's blood.

Pull one tile out at a time, record the result, then replace the tile. Shake the sack before drawing the next tile. By doing this your team of detectives will be able to reveal the contents of the sack. Give each group one copy of [The Situation](#) (pdf). This will give the students something to refer to when doing this activity.

Your group will need to present the results and rationale after gathering the data, during a class discussion.

(Idea from NCTM)

Strategies for Diverse Learners

Advanced learners could find another book and try the same idea.

Students with special needs such as (ELL), or learning disabilities can work with partners.

Extensions

Family Connections

Work with their families to add to their list of jobs or situations that use probability

Assessment Plan

Students explain in their journals how they came to the conclusion of who is Hector's mother.

Bibliography

Van De Walle, J.A., (2004). Elementary and Middle School Mathematics. Boston, Mass: Pearson Education Inc.

Van De Walle talks about how statistics bombards the public in all areas of our society from advertising to health risks, from opinion polls to students' progress in schools. Students face the same types of situations; from lunch to which assignment to do first, from which friend to go with to winning a game.

Ask Dr. Math, (1944-2006), Probability in the Real World, The Math Forum @ Drexel, November 20, 2006, <http://mathforum.org/dr.math/faq/faq.prob.world.html>

This article describes how students need a basic understanding of probability. Students need this to understand things from batting averages to the weather report, to being struck by lightning.

O'Connell, T., Dymont, J., (2006), Reflections on Using Journals, ERIC Source, December 9, 2006, from <http://www.eric.ed.gov>

This research document noted that even through higher education teachers are having their students do journaling daily. The faculty that participated found that students' perceptions of journal writing changed along with the faculty. Journaling helped them process the subject on which they were writing. It concluded that journal writing should be used as an instructional technique in all areas of the curriculum.

Authors

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