## Math 6 - Act. 23: Drawing Conclusions

## Summary

This activity poses a fun probability problem concerning changing odds.

## Materials

One box per group of four students
Three counters (one blue and two red) per group of four students
Paper
Pencil
Additional Resource
1000 Play Thinks: Puzzles, Paradoxes, Illusions \& Games by Ivan Muscovich (Workman Publishing).

## Background for Teachers

In the following experiment, it would appear that the chances of a red counter remaining in the box are $50 \%$. However, there are actually three (not two) equally possible states.

The initial red counter was drawn, leaving the added red counter.
The added red counter was taken, leaving the initial red counter.
The added red counter was taken, leaving the blue counter.

## Intended Learning Outcomes

2. Become mathematical problem solvers.

Instructional Procedures
Invitation to Learn
The Sock Problem
Instructional Procedures
Hold up the box and explain that it contains either a red or a blue counter.
Add a red counter, so the box now contains two counters.
Ask the question, " f I pull out a red counter, what is the probability that the remaining counter is also red?"
Pass out materials to teams.
Teams will conduct a series of experiments (at least 10).
Teams will determine an appropriate format for displaying results (e.g., bar graphs, line graphs).
Have the teams share their results with the class and propose a reason for these results.

## Extensions

Possible Extensions/Adaptations
Add more counters to the bag. Does it change the odds? How so?
Homework \& Family Connections
Challenge students to conduct the same experiment with their families using materials commonly found at home.

## Assessment Plan

Have students design and complete a probability problem concerning changing odds.

## Authors

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