Overall Mathematics Content:
Suggestions from *The High Performance Toolbox*, S. Rogers & S. Graham (2000)

Performance Based Activities for <u>Math</u>

1. Design a cardboard package that is most economical for given dimensions and weights of the intended contents. Justify your design.
2. Determine with justification whether contestants on "Let's Make a Deal" should stick with their first choice or switch to a new door after they are shown what's behind one of the doors.
3. Examine and analyze tabularly presented data in order to create representative graphs; then make and defend predictions based on the trends in the data.
4. The school is interested in knowing exactly how much tile it will take when the floor is retiled. Determine the square footage necessary, and the number of nine inch square tiles that will be needed if there is about a 2% waste factor. Use written text and diagrams to describe your procedures.
5. Postal rates have been figured by the ounce since July1. 1885. Here are the rates for the past 62 years: … Based on the postal rates since 1932, predict the cost of mailing a one ounce first class letter in 2001. When if ever do you think the cost will be $1.00? Explain your reasoning.
6. Assuming the earth's population will continue to increase at the same rate it is today, how long will it be until the earth will probably not be able to produce enough food for everyone? Present your findings in the form of a school science advisory.
7. Use a motion detector and a TI 82/83 calculator to develop graphical representations showing the relationships between distance, rate, and time.
8. Estimate the number of blades of grass in your lawn using appropriate statistical procedures.
9. Design and produce a quilt pattern and describe its symmetry. Put all of the class patterns together and display your quilt in an appropriate area.
10. Determine how many people are in attendance at a major event by sampling areas within a photograph.

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Incorporating Math, Social Studies, and Science

1. Use sampling to determine, track, and predict the population of a targeted entity within an environment.

Incorporating Math, Science, and Technology

1. Find places in our community where the concepts we have been studying are being used or exist. Determine why each of the concepts was used the way it was or why each is an example of the concept. Put together a picture/ drawing album showing the application and the reason why it is an application. Use your album to teach younger students the reasons why what we're learning is important.
2. Given trends or sample data, make and justify predictions.

Incorporating Math, Science, Technology, and Social Studies

1. Given multiple or competing interpretations of given data, justify each interpretation.
2. Make predictions based on the identification and analysis or trends.

Incorporating Math and Technology

1. Build a city skyline to demonstrate skill in linear measurements, scale drawing , ratio, fractions, angles, and geometric shapes.
2. For actual maintenance projects being planned at your school, research the projects in order determine the specified amount of materials and resources necessary to complete the projects.
3. Plan a city including efficient road networks, garbage collection and mail routings, plans for voting processes and equitable precincts. Develop and present a paper that explains the mathematics and design decisions. Te paper is also to provide rationale to support the selection of your plans by a company wishing to construct a planned community.

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Incorporating Math and Social Studies

1. Refer to the attached charts and graphs distributed by various political candidates. Determine how the charts actually misrepresent the data. In writing, explain how the misrepresentations are created. Also, describe how the charts should be done to accurately reflect the data. Explain the potential disadvantage to the voters inaccurately interpreting the data.

Incorporating Math and Science

1. Many people believe J.F. Kennedy was shot by someone on the "grassy knoll". Prove or disprove the "shot fro the grassy knoll" theory using physics, mathematics, and publicly available archives.
2. Make a record of reported earthquakes and volcanoes during the past 20 years. Identify and interpret the pattern formed worldwide. Report your findings and interpretations through the use of appropriate graphics. Make predictions based on observed trends.

Incorporating Math and Language Arts

1. Given data on graphs, write a story that represents the data or graph.
2. Given headlines or claims with background data, explain whether or not the claims are reasonable.

Incorporating Language Arts, Social Studies, and Math Ideas for PBI

1. Publish a newsletter portraying inaccurate perceptions being created through misuses of statistical procedures.
2. Study a wide range of magazines, newspapers, televised commentaries, and the like. Identify several issues of interest, watch and read widely about these issues, chart the various viewpoints on each issue, and discuss the information supporting each.

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Major Interdisciplinary Performances Ideas

1. Collect news reports from overseas, and in groups work to produce an international newspaper that reflects the perspectives in foreign countries with those in the United States.
2. Produce a well supported recommendation to consumers based on a study of "truth in advertising."
3. Write and share or perform stories/ plays around real-world problems and solutions.
4. Based on a survey of at least 20 students and 10 parents of children between the ages of 5 and 10, determine the predominant position in hour sample toward regulating violence in cartoons on Saturday mornings. Develop and present a position paper to be presented to your local television station that represents this predominant position and supports it using the constitution and recent court rulings.
5. Create and operate a micro-society.