

# The Mathematician's Expedition

## *A Journey into Creative Problem Solving*

### Procedure

1. Learning about problem solving
  - a. Have students think about the characteristics of a good problem solver.
  - b. Use the concept attainment strategy to determine the characteristics of good problem solvers
  - c. Have class come to a consensus/solution for the presented problem.
2. Present a real world mathematics problem from home, school or community for the students to brainstorm possible solutions.
  - a. Analyze responses of the students
  - b. Discuss what could be a realistic solution (some solutions just are not realistic due to time constraints, money, or personnel.)
  - c. Have students share examples of problems being solved in the world that use mathematics. This could be a homework assignment.
3. Introduce the Mathematician's Expedition as a long term project during which students will investigate a problem in their home, school, or community. Most of the work will be independent, and therefore, completed at home.
4. Brainstorm ideas of problems that can be solved using math to give students a springboard to begin their projects. Send home parent letter so they are informed about the project,
5. Have students complete the Purpose Statement and have it signed by the parent.
6. Review each Purpose Statement with each child, who should be very clear as to what problem they want to solve. Provide recommendations or alternate study for her reading.
7. Set up a 4-6 week chart with intervals. Meet with students to review projects were given new ones and check off progress on the Project Checklist.
8. Have students participate in Praise Question, Polish after about 1-2 weeks or so students are able to verbalize their project and what they are doing with all that information.
9. Plan for the actual event. Secure a location for the event, contact TV and newspapers, and arrange to have the primary grades visit at the end of their lunch period.
10. Have students prepare for the event by preparing their board. This will require 1-2 class periods as they are taught elements of design.
11. Event day! Plan to have parents visit at some point. If using judges, ensure that they are clear about how to give points.
12. Assessment: Determine at the beginning of the project whether the student will self-assess, be judged by points earned, or by effort shown throughout the process.

*Don't Forget to Have Fun!*

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Dear Parents,

Finding ways to involve students with real world problems that must be solved by using computation and problem solving skills is not always the easy task! An excellent opportunity to apply mathematics skills is now being offered. Our class will participate in a special mathematical event called The Mathematician's Expedition.

For this project, your child has been asked to think of a problem in his/her home, school, or community that is interesting to him/her. The problem may be about almost anything! Then you child must fill out the Statement of Purpose form describing the problem and how it might be solved. This form needs to be submitted to the teacher for approval. At that point, your child will be following a step-by-step process for solving the problem, which is included on the Project Checklist. Please read this over with your child as the majority of the project will be completed at home. As we continue through our journey, your continued interest will make this a meaningful experience for your child.

The project will be displayed on a tri-fold board or sturdy poster board. This can be purchased at a craft shop or office supply stores. We will take time in class to learn about design elements to make an eye-catching board to display the finished project.

The project will have a time frame of \_\_\_\_\_ weeks. During this time, your child will be responsible for bringing updates of his/her research to class to share with others. The sharing process will help him/her gain new ideas for solving the problem.

The Mathematician's Expedition will take place on \_\_\_\_\_ at \_\_\_\_\_. You are cordially invited to view all the projects at \_\_\_\_\_. I hope you can spend some time viewing all the projects that the students worked investigated.

In the meantime, if you have any questions, please do not hesitate to contact me.

Sincerely,

*Don't Forget to Have Fun!*

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## Statement of Purpose

Student: \_\_\_\_\_

Grade: \_\_\_\_\_

Return form to my teacher by \_\_\_\_\_

I have chosen the following problem to investigate:

My reasons for choosing this problem are:

I plan to use the following resources:

What else should your teacher know about your problem?

\_\_\_\_\_  
Parent Signature

\_\_\_\_\_  
Student Signature

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## Project Checklist

### *Week 1*

- Complete the Statement of Purpose thoughtfully and return to your teacher.
- Have a conference with your teacher about your problem for approval.
- Obtain a pocket folder to store your research and papers.

Due:

### *Week 2*

- Brainstorm how to solve your problem and write all your ideas on sheet of paper.
- Decide which solution you prefer to investigate.
- Share your ideas with the class and listen to their ideas.

Due:

### *Weeks 3 and 4*

- Work on researching your problem. This is a good time to write letters and make phone calls. Talk to the “experts” who may help you solve your problem.
- Collect your data in an organized manner.
- Discuss your progress during the Praise-Question-Polish session in class.

Due:

### *Week 5*

- Draw conclusions about your research.
- Begin making models, diagrams, charts, graphs, or take pictures that you will use to explain your results.
- Work on your written report. Use the guidelines discussed in class.
- Have an adult proofread your work.

Due:

### *Week 6*

- Work on your visual presentation.
- Practice your oral presentation.

Due:

*Week 7:* Bring your completed project to school on \_\_\_\_\_.

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## Praise-Question-Polish

### Praise

I really like...

Something that was interesting to me...

### Question

Would you explain...

Have you thought about...

### Polish

Maybe you could think about ...

You might want to try...

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*Given to* \_\_\_\_\_

*for successfully solving the problem of*

*Congratulations on a job well done!*

\_\_\_\_\_  
Teacher

\_\_\_\_\_  
Date

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