

## Portfolio Assignments for Mathematics 396

There are **three** portfolio assignments. There are two parts to each assignment.

### PART A

Write a word problem to illustrate a given prescribed problem solving strategy. The problem should require at least three mathematical steps to solve!

- The problem should be appropriate for grades levels 4 – 7.
- Include with each problem a rubric created specifically for the problem.
- Include a solution that would receive a perfect score according to your rubric.
- Include a section giving comments for teachers.
- Try to make the problems interesting and relevant to children's lives, and thus useful for you upon entry into the teaching profession.
- Try to write each problem ON YOUR OWN, without borrowing from other resources. Cite your reference if applicable.
- Have fun and use your imagination.

**Please organize your writing in the following format:**

- **Problem**
- **Prescribed Strategy**
- **Problem Rubric**  
You must use a different rubric for each portfolio problem.
- **Solution**
- **Comments for Teachers**  
Can include ideas for (a) extending or generalizing the problem, or (b) reflective comments about which topics this problem illustrates within the elementary or middle school mathematics curriculum.

### Strategies

- **Portfolio 1**  
**Strategy options** (choose one)
  - Draw a diagram (see chapter 1)
  - Make a systematic list (see chapter 2)
  - Eliminate possibilities (see chapter 3)
- **Portfolio 2**  
**Strategy options** (choose one)
  - Look for a pattern (see chapter 5)
  - Identify sub-problems (see chapter 7)
  - Using counting techniques (see class activities)
- **Portfolio 3**  
**Strategy options** (choose one)
  - Draw Venn diagrams (see chapter 12)
  - Work backwards (see chapter 10)
  - Analyze the units (see chapter 8)

## PART B

For Part B you will be looking at Portfolio PART A written by a classmate.

1. Read their problem and solution. Score their problem according to the *Problem Rubric* they submitted.
2. Score their work according to the following *Portfolio Class Rubric*. Support your scores with comments. Use the *Portfolio Part B Handout*.

**Problem:** Possible 10 points (*Contains the wording of the actual problem*)

- 2 points for prescribing a strategy which is appropriate and efficient.
- 2 points for writing a problem that illustrates an important mathematical idea.
- 2 points for writing a multi-step problem that uses at least 3 steps.
- 2 points for an interesting story.
- 2 points for clarity and good use of language.

**Prescribed Strategy:** Possible 2 points

- 2 points for specifying the illustrated problem-solving strategy

**Problem Rubric:** Possible 6 points

- 3 points for a *Problem Rubric* clearly stating the expectations.
- 3 points for a *Problem Rubric* which appropriately assesses the problem.

**Solution:** Possible 4 points

- 4 points for a complete and correct **solution** that would receive full credit according to the *Problem Rubric*.

**Comments for Teachers:** Possible 2 points

- 2 points for complete and clear *Comments for Teachers*

Portfolio Class Rubric						
<b>Problem</b>						
	Strategy	2	1	0		
	Idea	2	1	0		
	Multi-step (at least 3)	2	1	0		
	Story	2	1	0		
	Language	2	1	0		
<b>States Prescribed Strategy</b>		2		0		
<b>Problem Rubric</b>						
	Clear expectations	3	2	1	0	
	Appropriate assessment	3	2	1	0	
<b>Solution</b>		4	3	2	1	0
<b>Comments</b>		2	1	0		

## PART B continued

### 3. Final Comments

After scoring a peer problem, answer the following questions:

- What could be added to the problem to make it clearer or what information is unnecessary for the problem and does not add value?
- Give a specific, thoughtful suggestion on how to modify the problem to make it more difficult for an advanced learner.
- Give a specific, thoughtful suggestion on how to modify the problem to make it easier for a struggling learner.
- Comment on the *Problem Rubric*. Was it appropriate? Were there categories missing? List at least one change you would make to improve the rubric. Justify your change.

## OVERALL PORTFOLIO GRADING

**Part A** will be graded by your peers using the *Portfolio Class Rubric*. The scores will be reviewed by your instructor who may modify the scores.

**Part B** will be graded by the instructor according to the following *Portfolio Instructor Rubric*:

- (Step 1) Up to 4 points for scoring using the *Problem Rubric* written by your peer.
- (Step 2) Up to 6 points for thoughtful grading using the *Portfolio Class Rubric* supported by appropriate comments.
- (Step 3) Up to 8 points for complete, thoughtful and effective responses to the *Final Comments* questions.

Portfolio Instructor Rubric						
1. Scoring with the <i>Problem Rubric</i>	4	3	2	1	0	
2. Scoring with the <i>Portfolio Rubric</i>						
Are the scores appropriate?	4	3	2	1	0	
Are the scores backed up by comments?			2	1	0	
3. Final Comments						
Are all questions answered clearly and completely?		3	2	1	0	
Are the answers to the questions thoughtful, appropriate and mathematically sound?	5	4	3	2	1	0