

## Student Guide for POW 1: A Digit Proof

### 1. PROBLEM STATEMENT (6 pts)

#### a. Restate the situation of the “Is It a Digit?” in your own words

- 0 – No situation stated
- 1 – Situation is copied from text
- 2 – Situation is partially restated and partially copied
- 3 – Situation is restated but lacks some necessary information
- 4 – Situation was written in students own words and includes all necessary information

#### b. Restate the specific task in your own words

- 0 – No problem stated
- 1 – Problem is copied from text or incomplete
- 2 – Problem is stated in student’s words, and is clear and concise

### 2. PROCESS (16 pts)

#### a. Describe your initial ideas concerning the task, explain

- 0 – No initial ideas expressed
- 1 - Poorly written/incomplete/vague statement of ideas
- 2 - Complete and thorough explanation of initial ideas

#### b. Describe all the methods you used to find your solutions for “Is It a Digit?”

- 0 – No methods described
- 1 – Poor overall description that is incomplete and vague, that uses no specific examples
- 2 – A satisfactory description of your processes, with adequate examples
- 4 – A complete and thorough description of your methods, with extensive examples

#### c. Describe how you knew you had all the solutions

- 0 – No process described
- 1 – A vague and incomplete description
- 2 - A adequate description that is limited in its description and use of specific examples
- 4 – A complete and thorough description with a convincing explanation of how you knew you had all the solutions

#### d. Provide all diagrams and sketches

- 0 – No diagrams provided
- 1 - Poor diagrams with little if any labels/explanations/comments
- 2 - Complete diagrams with clear and concise labels/explanations/comments

#### e. Describe any problems you had, and how you solved them

- 0 – No description of problems encountered
- 1 – Vague and limited discussion of problems encountered
- 2 – Excellent discussion of several problems encountered, including a thorough record or your thought process used to deal with the problems

#### f. Describe all assistance provided and how it helped you

- 0 – No statement of assistance
- 1 – Clear statement of assistance with minimal description of how it helped
- 2 – Clear statement of assistance with a complete description of how it helped

**3. SOLUTION (8 pts)**

**a. State all the possible solutions for Is It a Digit?**

- 0 – No statement of the solution or a completely inappropriate answer
- 1- Incorrect solution(s) based on a minor error
- 2- Correct solution(s)

**b. Write a proof that there are no other solutions to problem except for the ones you have listed**

- 0 – No proof written
- 1 – Poor and incomplete proof of why there are no other solutions to the problem with missing and/or incomplete supporting materials
- 2 – Minimal explanation of why there are no other solutions to the problem, with minimal supporting materials
- 4 – A satisfactory explanation of why there are no other solutions to the problem, with adequate supporting materials
- 6 – A complete and thorough explanation of why there are no other solutions to the problem, with complete and thorough use of supporting material

**4. EVALUATION (12 pts)**

**a. State the difficulty level of the problem (scale of 1-10), explain**

- 0 - no explanation of level
- 1- minimal explanation of level
- 2 - Complete and thorough explanation of level selected

**b. Describe your personal reaction/opinion to the problem**

- 0 - no opinion or reaction stated
- 1 - a minimal statement with little support
- 2 - a well discussed statement of opinion/reaction

**c. Identify the best/worst parts of the problem**

- 0 - no identification of best/worst parts of exp
- 1 - minimal listing of best/worst parts of exp
- 2 - Complete and thorough listing of best/worst parts of exp

**d. Describe how the problem could have been made better for you**

- 0 – No description on the problem could have been improved
- 1 – A vague and limited statement how the problem could have been improved
- 2 - Several, well-support comments and suggestions regarding improvement

**e. Write a one paragraph summary of “what you learned from the problem”**

- 0 - No summary paragraph
- 1. A brief, poorly written summary that demonstrates little understanding of the problem, its solution and the mathematical ideas and concepts
- 2. A fair summary that includes some support, but lacks one or two key points that would have demonstrated understanding of the problem, its solution, and the mathematical ideas and concepts
- 3. A good summary that demonstrates an acceptable understanding of the problem, its solution and the mathematical ideas and concepts, however could be described in greater detail
- 4. A well written summary written that demonstrates a thorough understanding of the problem, its solution and the mathematical ideas and concepts

**5. SELF-ASSESSMENT (8 pts)**

**a. Grade and Justify your work using a self-assessment scoring rubric**

0 – Work not graded with rubric

1 – Score values provide with no justification

2 - Score values provide with minimal rationale and many/most values not acceptable based on scoring guide criteria

3 - Score values provided with fair/good rationales, but some values not acceptable based on scoring guide criteria

4 - Score values provided with strong rationales, all values acceptable based on scoring guide criteria

**b. Write a one paragraph summary that identifies your weakest areas in this POW and describe the problems you had or the reasons you become “stuck” in these areas**

0 – No paragraph written

1- A brief, poorly written summary that does not allow the reader the ability to understand why you had problems in specific areas of the POW and could not finish a problem, come to a solution, or make a generalization

2. A fair summary that is quite limited, and does not go into detail on problem areas and their specific reasons

4. A well written summary written that clearly identifies the weakest areas of the POW and describe the specific reasons that you had problems and how you will try to resolve these problems