

Task Specific Rubric: Perplexing Palindrome Problem

Level	Understanding	Strategies, Reasoning & Procedures	Communication
Novice	<ul style="list-style-type: none"> ✓ There are no solutions or the solutions have no relationship to the task. ✓ The student may demonstrate a beginning knowledge of palindromes and can identify 1 to 3 palindromes, but the student is not consistent in identifying the 3-digit palindrome pattern of ABA. 	<ul style="list-style-type: none"> ✓ The student cannot start the task or s/he has started the task using manipulatives (number cubes or tiles) but cannot complete the task. ✓ Sample Strategies: The student creates 3-digit number patterns, but they are not consistently palindromes (i.e. 121, 122, 123). 	<ul style="list-style-type: none"> ✓ There is little or no communication, the student did not label the work and their thinking is difficult to follow. ✓ The student cannot write/verbalize his/her palindromes numbers or the number patterns they have created. ✓ The student has no system for tracking his/her numbers. ✓ The student uses little/no math terms and/or symbols in his or her explanation of their palindrome numbers.
Apprentice	<ul style="list-style-type: none"> ✓ The student demonstrates a beginning understanding of the palindrome pattern ABA and can create palindromes using the number cube and/or number tiles, however the student may not identify all 36 palindromes. ✓ The student can identify and create palindromes, but does not equate this understanding to place value. 	<ul style="list-style-type: none"> ✓ The student uses an appropriate strategy to find the 3-digit palindromes, but cannot complete the task by identifying all 36 palindromes. ✓ Sample Strategies: The student begins to identify the 3-digit palindromes using the digit 1 (i.e. 111, 121, 131, 141 etc.), but may not use all of the digits on the number cube (1 – 6). ✓ The student does not use any system to keep track of the numbers s/he used. 	<ul style="list-style-type: none"> ✓ The student has attempted to communicate their findings by labeling their work, but does not attempt to summarize their work by stating their final answer. ✓ The student can write/verbalize his/her palindrome numbers clearly, but does not establish an accurate system for tracking his/her numbers. ✓ The student uses some math terms and/or symbols in his or her explanation of their palindrome numbers.

Level	Understanding	Strategies, Reasoning & Procedures	Communication
Practitioner	<ul style="list-style-type: none"> ✓ The student demonstrates their understanding of the palindrome pattern ABA, creates palindromes using the number cube and/or number tiles, and identifies all 36 palindromes. ✓ The student can identify and create palindromes, and can equate this understanding to place value (i.e. the number in the hundreds place, must be the same as the number in the ones place). 	<ul style="list-style-type: none"> ✓ The student uses an accurate and appropriate strategy for creating and identifying the 36, 3-digit palindromes. ✓ Sample Strategies: The student can list all 36 palindromes and uses a system for tracking his/her numbers. ✓ The student may make a statement and/or a generalization about the 3-digit palindrome pattern ABA (i.e. The first and third number have to be the same.). 	<ul style="list-style-type: none"> ✓ The student represents his/her work in a clear, organized manner, and uses appropriate math terms and/or symbols in his/her explanation of their palindrome number and patterns. ✓ The student can write their palindrome numbers clearly and has created an efficient system for tracking his/her numbers.
Expert	<ul style="list-style-type: none"> ✓ The student has a solid understanding of the palindrome pattern ABA, creates palindromes using the number cube and/or number tiles, identifies all 36 palindromes, and can connect this understanding to place value. ✓ The student can make a rule/generalization about their understanding of palindromes or the connection to place values. For Example: The first and last number must be the same, but the middle number changes. OR The first number is the hundreds place, the second number is the tens place, and the third number is the ones place. 	<ul style="list-style-type: none"> ✓ The student uses an accurate and appropriate strategy for creating and identifying the 36, 3-digit palindromes and makes a statement or generalization about the palindrome pattern ABA. ✓ Sample Strategies: The student applies his/her understanding of 3-digit palindromes to 4- or 5-digit numbers. ✓ The student can identify and state the place values of the hundreds, tens and ones. 	<ul style="list-style-type: none"> ✓ The student represents his/her work in a clear, organized manner, and uses appropriate math terms and/or symbols in his/her explanation of their palindrome number and patterns. ✓ The student can write their palindrome numbers clearly and has created an efficient system for tracking his/her numbers. ✓ The student includes a statement or generalization either verbally or in writing about the number patterns or place values observed