Grading the Calculator Applications Test

Punch Problems and Geometry Problems:

- Must use 3 significant digits
- Can use regular notation OR scientific notation
- Must be formatted in one of the following acceptable forms:
  12.3, 123, 123., 1.23×10^{1}, 1.23×10,
  1.23×10^{0}, 1.23×10^{01}, .0190, 0.0190, 1.90×10^{-2}
- Cannot be in any of the following forms:

Incorrect Answer	Reason	Incorrect Answer	Reason
12.30	4 significant digits (0 is significant when behind the decimal point)	1.230×10^{2}	4 significant digits (0 is significant when behind the decimal point)
123.0	4 significant digits (0 is significant when behind the decimal point)	0.19	2 significant digits (0 is not significant before the first non-zero digit)
$1.23(10)^{2}$	Incorrect form for scientific notation	1.9×10^{-2}	2 significant digits
$1.23\cdot10^{2}$	Incorrect form for scientific notation (dot for multiplication is not permitted)	19.0×10^{-3}	Incorrect scientific notation form (Must be exactly one digit before the decimal point)
$1.23*10^{2}$	Incorrect form for scientific notation (star for multiplication is not permitted)	1.90E-02	Incorrect scientific notation form

- The third significant digit can be off by ±1. For example, if the correct answer is 48000, then both student responses of 47900 and 48100 would be counted correct.

Word Problems:

- All word problems follow the rules for Punch Problems and Geometry Problems except for Integer problems and Money Problems.
- Integer problems are denoted by "(integer)" in the answer blank. Answers must be exact integers and cannot be written in scientific notation. No error in the last digit is permitted. No decimals are permitted.
- Money problems with dollar signs must be accurate to the penny. These answers cannot be written in scientific notation. Students are allowed a ± one cent error in their answers.

Practice
Determine which of the following answers are correct based on the answer key given.

Student Responses **Punch Problems & Geometry Problems**	**Answer Key**
....1: 8.44	1: 8.54 8.54×10^{0}
....2: 56700	2: 56600 5.66×10^{4}
....3: 3.982×10^{2}	3: 398 3.98×10^{2}
....4: 819×10^{5}	4: 819000 8.19×10^{5}
....5: $5.67\cdot10^{-03}$	5: 0.00567 5.67×10^{-3}
Word Problems	
....6: 48392 (integer)	6: 48393 (integer)
....7: $ 45.20	7: $ 45.19
....8: 312900 gallons	8: 313000 3.13×10^{5}

ANSWERS: 1. Wrong – off in the second significant digit. 2. Correct – off in third significant digit by 1. 3. Wrong – too many signficant digits. 4. Wrong – no decimal point. 5. Wrong – dot notation not permitted. 6. Wrong – integers must be exact. 7. Correct – money problems with dollars can be off by one cent. 8. Wrong – too many significant digits