PHYS 500
HANDOUT 1

1. Round the following recordings at the digit which is underlined:

Recorded Value	12.1386	2567	23.647	0.0346	2.50001	6454	0.45
Rounded Value							

2. Fill in the following table by keeping significant figures and rounding properly the recorded values taken in an experiment for a physical quantity:

	Before the selection of significant figures		After the selection of significant figures		Final Result
Recorded value	x	δx	δx	x	x
1	263.2765	0.07813			
2	12.2	0.03116			
3	127.187	0.932			
4	17.2362	0.232			
5	1563	33.62			
6	178936	589			
7	11002380	9873			
8	78654	2486			
9	135067	1897			

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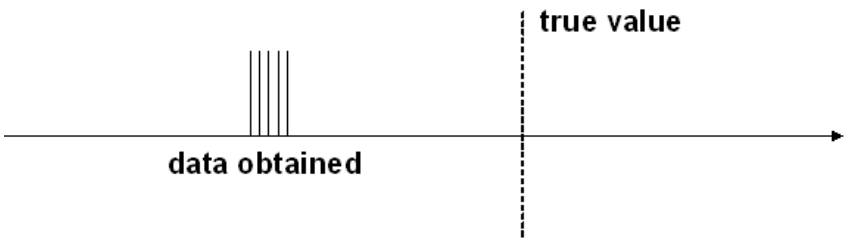
3. Regarding the reading error, what is the difference between an experiment with an analogue device and an experiment with a digital device?

4. A student measured a given quantity many times and got the results shown in figure. The true value of the quantity is indicated by the dotted line. Should she continue accumulating more data in the hope of getting a result that agrees with the true value?



5. In the data of the previous question, is the source of error random or systematic?

6. Express the following sum with correct number of significant figures: $1.00kg + 1531g + 2.54 \times 10^4 mg$.
a) 2.56 kg b) 27.9 kg c) 2.53 kg d) 2.79 kg

7. How many significant figures does the number 15.00 have?
a) 1 b) 2 c) 3 d) 4

8. What is the result of 1.58 / 3.793?
a) 0.41656 b) 0.4166 c) 0.417 d) 0.42

9. When a voltage *V* of 12.2 V is applied to a DC motor, the current *I* in the motor is 0.20 A. Which **one** of the following is the output power *VI* of the motor given to the correct appropriate number of significant digits?

A. 2 W B. 2.4 W C. 2.40 W D. 2.44 W

10. The reading of a constant potential difference is made four times by a student. The readings are: 1.176 V, 1.178 V, 1.177 V and 1.176 V. The student averages these readings but does not take into account the zero error on the voltmeter. The average measurement is:

a) precise and accurate
b) precise but not accurate
c) accurate but not precise
d) not accurate and not precise