Graphical Analysis Report

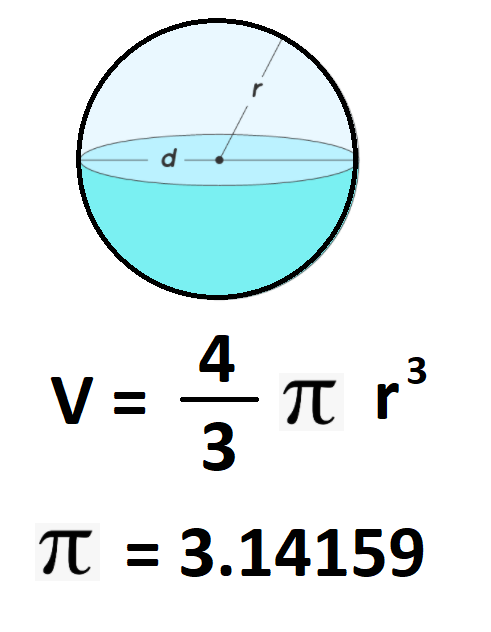
Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Version 10.22 Date of Exp. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lab Section \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Ball #*** | ***Mass (g)*** | ***Diameter (cm)*** | ***Volume (cm3)*** | ***Density (g/cm3) Correct Sig Figs!*** |
| *Ball #1* |  |  |  |  |
| *Ball #2* |  |  |  |  |
| *Ball #3* |  |  |  |  |
| *Ball #4* |  |  |  |  |
| *Ball #5* |  |  |  |  |
| *Ball #6* |  |  |  |  |
| *Ball #7* |  |  |  |  |
| *Unknown Ball #1* |  |  |  |  |
| *Unknown Ball #2* |  |  |  |  |
| *Unknown Ball #3* |  |  |  |  |

1. Calculate the volume of ball bearings 1 – 7 and record the result with **excess significant   
 figures** in the table above.  
 Show one example calculation below.



2. Calculate the density of ball bearings 1 – 7 and record the result with the **correct number of significant figures** in the table above. Show one example calculation below. (D=mass/Volume)

3. Using your results calculate the average density of the steel ball bearings. Use the internet to find the   
 density of steel from two different sources.

* *URL1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Density1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*
* *URL2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Density2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

4. What is an “alloy” and how does this explain different reported steel densities?

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5. Referring to your best straight line graph, what are the units of the slope? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What **physical** property of steel is the slope of this line related to? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. Use the graphed data and your best trendline equation to predict the diameters of the three unknown ball bearings.   
 Show your calculations below and report your three results in the data table above with 2 decimal place accuracy.

7. How could we improve the accuracy of the largest unknown ball bearing’s diameter prediction?

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**Insert your six graphs with trendlines and R2 values below in order from best to worst trendline fit**

**Clearly identify which graph was “BEST” for our purposes in this lab.**

