Historically Famous Experiments

Name_____TA_____

Partners_____

Section#_____Date_____

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1. The Circular Constant, π

Object 1:

Diameter D_____(cm) Circumference ℓ_____(cm)

π = ℓ/D = _____

Object 2:

Diameter D_____(cm) Circumference ℓ_____(cm)

π = ℓ/D = _____

◈Questions◈

- Did you get a close number for π even if the size of objects is different?
- Which is the closest value as π=3.14159265358979323846264338327950288419716939937510…?

  377/120, √10, 355/113, 25/8, 63(17+15√5)/25(7+15√5)

  *These were used as π many years ago for the approximate expressions.

2. The Galilei's Experiment in the Tower of Pisa

- Preparation

The weights of two objects:

Wood ball _____ a metal object _____

- The imitation of his experiment

Did you see those objects reach ground simultaneously even each has different mass?

- Confirmation with photo gates

	Wood Ball	Metal
Falling Time (s)		

Did you make sure that those falling times are almost the same?

3. Specific Gravity with Archimedes' Principle

The name of object: _____

The initial mass of beaker and water, W_0=_____(g)

The mass of beaker + water + object, W_1=_____(g)

The mass of beaker + water + the water equal to the volume of object,

W_2=_____(g)

Specific Gravity of the Object, $d=(W_1-W_0)/(W_2-W_0)$=_____

Density of the Object _____(g/cm^3)

◈General Discussion◈

- Do you have any idea to obtain more accurate values for these experiments?
- If you have some impression on this lab, please write down on your report.

Lab Procedure for Historically Famous Experiments

1. The Circular Constant, π

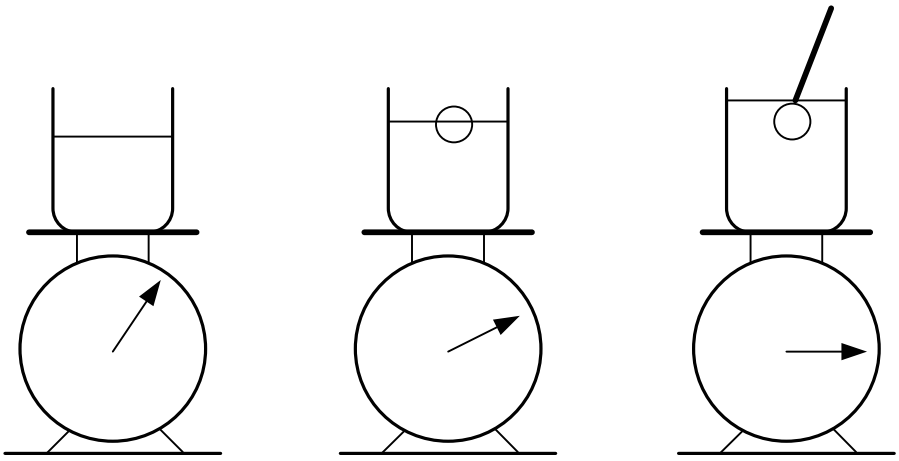
a. Take enough string or wire to measure the circumference of an object.
b. After you obtain the circumference with a string, measure the length with a meter stick or other scalar.
c. Measure the diameter with a caliper or a meter stick.
d. Calculate π with the circumference, ℓ and the diameter, D; $\pi = \ell/D$.
e. Repeat the above for the other objects.

2. The Galilei's Experiment in the Tower of Pisa

a. Weigh two objects with a balance.
b. Someone drops those at the same position simultaneously. And other sees if they will reach ground simultaneously.
c. Make sure this experiment with photo gates. And you can see if both objects take almost the same time to fall.

3. Specific Gravity with Archimedes' Principle

a. Write down the name of object.
b. Weigh the mass of beaker and water, W_0. The amount of water should be between 700 mℓ and 800 mℓ.
c. Put the object into the beaker with water, and weigh the total mass, W_1.
d. Immerse the object in water with your fingers or a stick; then read the weight, W_2.
e. Calculate the specific gravity, $d=(W_1-W_0)/(W_2-W_0)$, and write down the density, too.



W_0 W_1 W_2

4. Lab Report

Please answer the questions on the data sheet.