

Measurement & Laboratory Safety (p. 11 - 14)

I. Measurement

1. Define the term measurement.

Measurement - comparison between an unknown quantity and a standard

II. Comparing Results

1. Results of experiments are often reported with uncertainty.

Circle One :

True

False

± 3 Weather Guarantee

2. What is the name of the range of statistical uncertainty? (Not in the book.)

Standard Deviation

3. Why is important for an overlap of uncertainty to be present in data?

To show agreement (Reliable + valid data)

III. Precision Versus Accuracy

1. Define the term precision.

Precision - degree of exactness of a measurement
(more numbers = more precise)

Track + Field Stop watch

2. What determines the precision of a measurement?

Instrument + technique used to make the measurement.

3. The precision of a measurement is $\frac{1}{2}$ the smallest division of the instrument.

Circle One :

True

False

Finest division = Most precise

4. How are significant digits and precision related?

Significant figures in an answer show its precision.
(67.10 is not as precise as 67.100)

5. Define the term accuracy.

Accuracy - how well the results of a measurement agree with the "real" value

accepted value measured by competent experimenters

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Fantasy Baseball Tie Breaker

Target Transparency

6. What are two ways to determine accuracy of an instrument using two-point calibration?

1. Does instrument read zero when it should?
2. Does instrument give correct reading when measuring an accepted standard?

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IV. Techniques Of Good Measurement

1. Measurements need to be made carefully to maximize the precision of the instrument.

Circle One :

True

False

Other inherent errors?

- Fans
- Humidity
- Air Pressure
- Multiple Users

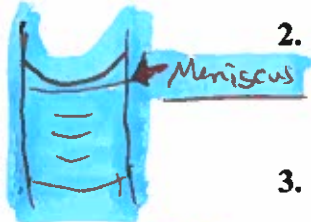
2. Instruments such as graduate cylinders should be read from an angle.

Circle One :

True

False

Straight on, eye-level



3. Define the term parallax.

Parallax - apparent shift in the position of an object when it is viewed from different angles

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Spring Scales

V. Laboratory Safety (To be covered in class.)

1. Prevent Accidents

1. Why should long hair be tied back during an investigation?

To avoid accidentally catching on fire.

2. Why should sandals not be worn during in the lab?

In case glass is broken / something spills

3. Why should a student NEVER eat or drink anything in the lab?

Don't really know what it is Ex: Black Acetone Bottle

4. What are the consequences of improper behavior in the lab?

Loss of Labs / Damage / Injury

↳ "You break it, you buy it."

Safety Symbols

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2. Laboratory Work

1. Why is important for only one person to collect lab materials for their group?

To increase efficiency.

2. Why should test tubes be slanted away from yourself when being heated?

Pressure could increase + burn
Kevin + radiator

3. Do you like having two eyes? (Why should goggles be worn in the lab?)

Yes → (Uncomfortable, but protective)

4. Why should a student respect lab equipment (not steal, misuse, or break)?

Labs are privileges, not rights.

5. Why is an appropriate speaking level essential for performing lab investigations?

Peet peeve (Loss of labs)

3. Laboratory Clean-Up

1. When completing a lab, it is necessary to clean and return all equipment.

Circle One : True False

2. What should be done with used chemicals or broken glass in the lab?

Ask teacher for proper disposal.

3. What should the science lab look like when you leave after an investigation?

The same as when we entered.

4. Why is it important to wash your hands after most lab investigations?

Avoid contamination + sickness.

4. Emergencies

1. What should a student do in case of ANY emergency in the lab?

Report the emergency to the teacher.

2. Who is the only person that should come into direct contact with blood?

The person that is bleeding. (No one else!)