

Precision of the Balance

Summary

Students will learn that they and their balances have a degree of precision that can be measured. They will mass the same object several times and see how the mass varies each time. The degree of difference between readings is the precision of the balance.

Time Frame

1 class periods of 60 minutes each

Group Size

Individual

Materials

- a triple beam balance or other weighing device that students will regularly use
- a light object such as a stopper, pencil or ruler.
- a heavier object such as a beaker, small book or ring stand ring
- [student worksheet](#)
attached

Student Prior Knowledge

Students should know how to use a balance. Explain that precision is the ability to repeat a measurement and get the same result over and over. It is different than accuracy which is measuring a result against a known standard and matching it. In a classroom, precision is the best hope.

Instructional Procedures

Go over instructions with students. It is important to emphasize that they must ALTERNATE the light and heavy object or the results will be meaningless. The act of shifting the riders on the balance influences precision.

Allow time for students to work. They should write the difference in mass for the light and heavy object on the board as they finish steps 1-3.

Discuss the results with students. Hopefully they will get less than a gram of difference in their readings of the light object and no more than a gram on the heavy object.

The number plus or minus on their measurements needs to be kept in mind when other labs are done. Particularly the Conservation of Mass experiments will depend on understanding that a change in mass may not have taken place, only a lack of precision in the balance.

Assessment Plan

Scoring Guide

:

1. Students complete Student Sheet accurately.....15 pts.
2. Students alternate readings.....5 pts
3. Students report results and write conclusion.....5 pts

Answers to analysis on Student Sheet:

Students will not get the same mass each time.

Answers will vary.

Answers will vary.

Answers will vary.

The mass of the objects does not change, the balance and the students using it have a degree of precision.

The balance will be more accurate when the riders are not moved from one measurement to another.

Precision is the ability to get the same results over and over again.

Bibliography

Lesson Design by Jordan School District Teachers and Staff.

Authors

[Utah LessonPlans](#)