

# Mass vs. Weight

## Summary

Students will use balances and spring scales to distinguish between mass and weight and their units. Students should see relationship between mass and weight (ex. The weight is always about a ten times the mass which corresponds to the acceleration due to gravity).

## Time Frame

1 class periods of 45 minutes each

## Group Size

Pairs

## Materials

balance and Newton spring scale for each group  
three or more objects to mass and weigh. Objects should have a place to hang from the spring scale. Bathroom scales could be used in place of spring scales.

- [student worksheet](#)  
(attached)

## Background for Teachers

Review use of balance and spring scale. Lab could be used to introduce the differences and similarities between mass and weight or you may have already discussed how weight is the pull of gravity on an object's mass. You might want to discuss SI units and English units of measurement before the lab.

## Instructional Procedures

### Procedure

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Read the instructions on the student page with the students.  
Remind students that the balances and spring scales are delicate.  
Let students determine how the data table will be labeled.  
Remind students to zero out the balance and spring scale before they start.

### Procedure if done as a demonstration/discussion:

Have balance and spring scale out. Ask what is measured when they go to the doctor, mass or weight.

Define what mass is and show them how the balance works. Point out that the balance uses a known mass to measure against and that it uses grams or kg as its units.

Define weight using the spring scale. Remind them that a bathroom scale is the same thing as the spring scale. You might ask them how the two springs would be different in the two scales. You might want to discuss the differences between the English and SI systems of mass and weight and point out that they have never really been massed before, only weighed. You could extend the discussion by pointing out that they can find their mass using Newton's second law on motion.  $\text{Mass} = \text{force}(\text{weight}) / \text{acceleration due to gravity}$

Ask them which would read the same no matter where they were in the universe and which would read differently depending on location and why that would be true.

## Assessment Plan

Scoring guide

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- 1. Student participates and contributes to the activity.....5
- 2. Student collects data accurately.....5
- 3. Student correctly answers analysis questions.....5

Bibliography

Lesson Design by Jordan School District Teachers and Staff.

Authors

[Utah LessonPlans](#)