



**Title**

**Sweet measuring of the mass**

**Author**

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**Table of activities**

<b>School subject</b>	<i>Physic</i>
<b>Topic</b>	<i>Measuring mass with a scale</i>
<b>Age</b>	<i>12 years</i>
<b>Required time fo the acitivity</b>	<i>90 minutes</i>
<b>Required materials</b>	<i>Scale, beaker or glass, butter, honey, chopped almonds or pistachios, saffron, water, sugar.</i>
<b>Cultural concept</b>	<i>Making a cake that originates from Iran</i>



# Education Resilience in Europe

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## Teaching concept

*The goal of this activity is for students to learn about mass measurement, including its meaning, methodology, and importance. They will learn how to use standards and instruments to measure appropriate physical quantities and understand the concepts of mass and weight and how to distinguish between them. The activity involves making a cake from Iran, which exposes students to different cultures and helps develop their ability to apply physics knowledge and actively acquire knowledge through research.*

*Through the activity, students will learn to measure the mass of ingredients for the cake using appropriate instruments such as a kitchen scale. They will also learn about the mass of the finished product and the weight of the cake, as well as the difference between them. This will give them a deeper understanding of physical concepts and the practical applications of measuring mass.*

*Additionally, by exploring the cultural origin of the cake, students will develop a global perspective and an appreciation for diverse traditions and customs. Overall, this activity provides a fun and engaging way for students to learn about mass measurement and apply their knowledge in a real-world context.*

## Cultural concept

*Cakes are a beloved treat in every culture, known by different names around the world. The skill of baking has always been highly valued and continues to be so today. The origins of the modern cookie can be traced back to Persia (modern-day Iran) in the 7th century, where sugar was first produced. From there, sugar spread to the eastern Mediterranean and beyond. Today, cakes and pastries are enjoyed worldwide and continue to symbolize love, gratitude, and joyous occasions.*

*Soft, fragrant cakes are a delightful indulgence in any part of the world. From Persia (now Iran) in the 7th century, the first versions of what we now call "cookies" emerged. Sugar, which was produced in Southeast Asia, found its way to Persia and then to the eastern Mediterranean. Today, we can find all sorts of cakes and pastries in different cultures, but they all share the same message of warmth, appreciation, and pleasure.*

*Cakes are a universal treat that have been enjoyed for centuries. The art of baking has always been highly prized, and it's still a valued skill today. The earliest cookies that resemble the ones we know today were made in Persia (now Iran) in the 7th century, where sugar was first produced. Over time, sugar spread to other parts of the world, and different cultures put their*

*own spin on cakes and pastries. Despite the differences, these sweet treats continue to signify love, gratitude, and happy moments.*

### **Physic concept**

*Mass is a fundamental property of matter and is defined as the amount of matter in an object. It is measured in units such as kilograms or grams. The mass of an object is a measure of its resistance to acceleration, meaning that a more massive object will require more force to accelerate it than a less massive object. In this activity, students will learn how to measure mass using standard units and instruments, and they will also learn about the concepts of density and acceleration. To solve problems related to mass and density, students will need to have a good understanding of how to calculate the mean value and determine the absolute error in measurements. They will also need to be able to write down measurement results accurately. Through these activities, students will develop their mathematical and scientific skills while learning about the importance of accurate measurement in science and in everyday life.*

### **Aim of activity**

*In this activity, students will learn how to measure mass accurately, and understand the importance of precise measurement in daily life, through the process of making cakes. By measuring the ingredients precisely, students will learn the concept of mass and the importance of using the correct amount of each ingredient for the recipe. They will also develop skills in using standard measuring instruments and calculating the average value and absolute error. This activity provides an opportunity for students to not only develop their knowledge and skills in physics, but also to explore and appreciate different cultures through the Iranian cake recipe.*

### **Activities**

*These activities are divided into three parts. Firstly, students will be introduced to the scales and the method of measuring mass. It is important for students to understand the values of the smallest division and why it is important. To facilitate learning, students will measure the mass of objects around them.*

*Secondly, students will measure the mass of ingredients needed to make a cake of Iranian origin called Sohan. Then, they will use the measured ingredients to make the cake itself.*

*Thirdly, each student will measure the mass of the cookies and select the piece with the largest and smallest mass. They will then calculate the mean value of the mass of the balls, as well as the absolute error. During these activities, students will learn how to write down the results correctly.*

*At the end of the activity, there will be a tasting where students can enjoy the cakes and cookies they have made. The ultimate goal of this activity is for students to learn how to measure mass accurately and to understand its importance in everyday life.*

## Additional materials



Figure 1 Preparing material for the cake



Figure 2 Preparing Sohan cake



Figure 3 Researching about geographical position of Iran



Figure 4 Digital scale for mass measuring