**Тема:** «Единицы измерения».

**Цель:** Выучить лексику по теме.

**Задачи:** Отработать навык работы (в т.ч. перевода) с профессиональной лексикой по теме «основные единицы измерения, система ЕИ», повторить тематический материал, актуализировать имеющиеся знания.

**Специальность:** ОГСЭ.03

**Время выполнения:** 90 минут

1. **Study the glossary.**
2. **Read the text**
3. **Do the tasks.**

**Glossary:**

[base units](https://en.wikipedia.org/wiki/SI_base_unit)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

[coherent](https://en.wikipedia.org/wiki/Coherence_(units_of_measurement))\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

physical quantities\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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artefact\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

significant concern\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

diverse quantities\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The **International System of Units** (**SI**, abbreviated from the [French](https://en.wikipedia.org/wiki/French_language) *Système international (d'unités)*) is the modern form of the [metric system](https://en.wikipedia.org/wiki/Metric_system), and is the most widely used [system of measurement](https://en.wikipedia.org/wiki/System_of_measurement). It comprises a [coherent](https://en.wikipedia.org/wiki/Coherence_(units_of_measurement)) system of [units of measurement](https://en.wikipedia.org/wiki/Units_of_measurement) built on seven [base units](https://en.wikipedia.org/wiki/SI_base_unit), which are the [ampere](https://en.wikipedia.org/wiki/Ampere), [kelvin](https://en.wikipedia.org/wiki/Kelvin), [second](https://en.wikipedia.org/wiki/Second), [metre](https://en.wikipedia.org/wiki/Metre), [kilogram](https://en.wikipedia.org/wiki/Kilogram), [candela](https://en.wikipedia.org/wiki/Candela), [mole](https://en.wikipedia.org/wiki/Mole_(unit)), and a set of twenty [prefixes](https://en.wikipedia.org/wiki/Metric_prefix) to the unit names and unit symbols that may be used when specifying multiples and fractions of the units. The system also specifies names for 22 [derived units](https://en.wikipedia.org/wiki/SI_derived_unit), such as [lumen](https://en.wikipedia.org/wiki/Lumen_(unit)) and [watt](https://en.wikipedia.org/wiki/Watt), for other common physical quantities.

The base units are derived from invariant constants of nature, such as the [speed of light](https://en.wikipedia.org/wiki/Speed_of_light) in vacuum and the [triple point of water](https://en.wikipedia.org/wiki/Triple_point_of_water), which can be observed and measured with great accuracy, and one physical artefact. The artefact is the [international prototype kilogram](https://en.wikipedia.org/wiki/International_prototype_kilogram), certified in 1889, and consisting of a cylinder of [platinum-iridium](https://en.wikipedia.org/wiki/Platinum-iridium_alloy), which nominally has the same mass as one litre of water at the freezing point. Its stability has been a matter of significant concern, culminating in a [revision of the definition of the base units](https://en.wikipedia.org/wiki/2019_redefinition_of_SI_base_units) entirely in terms of constants of nature, scheduled to be put into effect on 20 May 2019.

Derived units may be defined in terms of base units or other derived units. They are adopted to facilitate measurement of diverse quantities. The SI is intended to be an evolving system; units and prefixes are created and unit definitions are modified through international agreement as the technology of measurement progresses and the precision of measurements improves. The most recent derived unit, the [katal](https://en.wikipedia.org/wiki/Katal" \o "Katal), was defined in 1999.

**Do the tasks.**

1. **Answer the following question:**
2. What are the main 7 units?
3. What is an artefact?
4. What substance is used as a prototype for kilogram?
5. What is the last derived unit?
6. **Find English equivalents from the text for the following Russian word combinations:**
7. Семь основных единиц
8. Определяет имена
9. Общие физические величины
10. Единицы и префиксы
11. Недавно полученный (открытый)
12. **Give a proper translation:**
13. The diameter of a CD or DVD is 12 cm.

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1. 1 mL = 1 cm3

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1. 1 milliliter is the same volume as 1 cubic centimeter.

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1. 1 mL of water has a mass of approximately 1 g

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1. The mass of 1 milliliter of water is approximately 1 gram.

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1. 1 L of water has a mass of approximately 1 kg

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1. The mass of 1 liter of water is therefore approximately 1 kilogram.

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1. 1 m3 of water has a mass of approximately 1 t

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1. There are 1000 liters in a cubic meter, so the mass of 1 cubic meter of water is approximately 1000

kilograms or 1 metric ton.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. The mass of a nickel is 5 g

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1. A US nickel weighs 5 grams, and a penny weighs 2.5 grams

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1. 1 hectare is 10 000 square meters, equivalent to the area of a square 100 meters on a side. A football field is about 100 meters long, so imagine a square the length of a football field on each side, and that’s 1 hectare.

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1. **Listen to the text and fill in the gaps:**

Welcome to ProEdify TEAS Prep, this is part one of the Lesson on Units of Measure. In this video, we will discuss various units of 1)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and we'll also introduce the SI system of measurement. To begin, let’s define what a measurement is and what it actually means to measure something. Well in science, a measurement is the assignment of a numerical value to an objects’ physical property. Measuring physical properties, such as length, 2)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and density is very common. For example, you might want to know the length of a line, the volume of a sphere, or the density of a liquid. Whenever we take measurements, we also have to assign units to the numerical quantity, in order to convey the relative size or magnitude of the property in question. For instance, if I said the length of my shoe was 10 you wouldn’t actually know how long my shoe was because there would be no context for what the 10 represents. In fact, this measure would only make sense if the number 10 had a 3)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of measure to go along with it. So what is a unit of measure? In order to have accurate and reproducible ways to define magnitudes of length, volume, density, etc., scientists have developed various systems of measure. These systems are made up of units of measure which are basically standardized amounts of various physical quantities. The SI system is the 4)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ system of measure used by scientists. It is a very comprehensive system with many units of measure. However, we will only need to cover a few of these units in order to prepare for the TEAS. The fundamental physical properties you will need to know for the TEAS are as follows: Mass, Length, Temperature and Time. You can see that for each property there is a mathematical label, which is used in 5)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and the actual name of the corresponding SI unit or measure. Please feel free to pause the video and familiarize yourself with the information on this chart. Notice that the chart refers to these units as “base” units, because they help to define more 6)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ units, which are called “derived units.”

For example, Area is a physical property that uses a unit called “meters squared”. Since meters squared, requires the meter in order to be defined, it is considered a derived measure, or unit. Let’s walk through an example that will illustrate how the meter is used to define Area in meters squared. If we take a line that is 2m in length, and then create a square from 4 of these same lines, we can find out the Area or 2 dimensional 7)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that this square occupies by squaring the length of the original line. We’re not going to talk about the math concept of squaring in much detail here, but just know that in essence, we are multiplying a base length measurement by another base length measurement. Which is 2 meters times 2 meters. And this, results in an entirely new derived unit called meters squared. Now that we understand a little bit about derived units, let’s take a look at some important ones that you will need to know for the TEAS. By looking at this chart, you might have noticed that things like Mass per Unit Volume and Meters per Second are also considered units of measure, just like the “Liter” or the Newton. The only difference is that some measures, such as Liters and Newtons, have a unique unit name while other measures have unit names based on their 8)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ formula. Also note that some derived units require other derived units to be defined, which is the case with both Density and Pressure. Don’t worry if you are a little confused about these measurements and what they are used for. We will discuss them in more detail as they are used throughout the series. This concludes our discussion on the SI system of measurement.

<https://www.youtube.com/watch?v=oAtDAoqdExw&ab_channel=ProEdify>

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