

Student Discussion Worksheet

Directions: Discuss the first set of questions as instructed by your teacher. Then read the *Science News* article "[The metric system is growing. Here's what you need to know](#)" and answer the second set of questions. A version of the article, "The metric system has gained new prefixes," appears in the January 7, 2023 issue of *Science News*.

Prefixing the metric system

1. Give at least four examples of words with prefixes and underline each prefix. Leave the root of the word without an underline. Compare the prefixes. What is similar about them and what is different?
2. What does each prefix in your examples tell you about the meaning of each word? Based on your examples, how would you define a prefix?
3. Give examples of root words used in the metric system, or the International System of Units (SI). What's the purpose of these words? Give at least three examples, making sure to include their abbreviations and explain what the words mean.
4. What are four common metric, or SI, prefixes. What do the prefixes mean on their own and how are they abbreviated?
5. Based on your answers to the previous questions, define the terms "kilogram" and "milliliter."

Converting units

1. The *Science News* article pairs the new metric prefixes ronna-, quetta-, ronto- and quecto- with grams, the base metric unit of mass. Is each prefixed unit (ronnagram, quettagram, rontogram and quectogram) larger or smaller than the base unit (gram)? Write a conversion factor, or unit factor, that converts each prefixed unit to the base unit.

2. According to the online *Science News* article, Earth is six ronnagrams, Jupiter is two quettagrams, an electron is about one rontogram and one bit of data on a mobile phone is roughly one quectogram. Using the conversion factors you came up with, convert each mass to grams. Show how your units cancel using dimensional analysis, or the Factor Label Method.

3. Why are prefixes useful for expressing measurements? Think about your answers to the previous two questions.