

Nanotechnology Research Scientists

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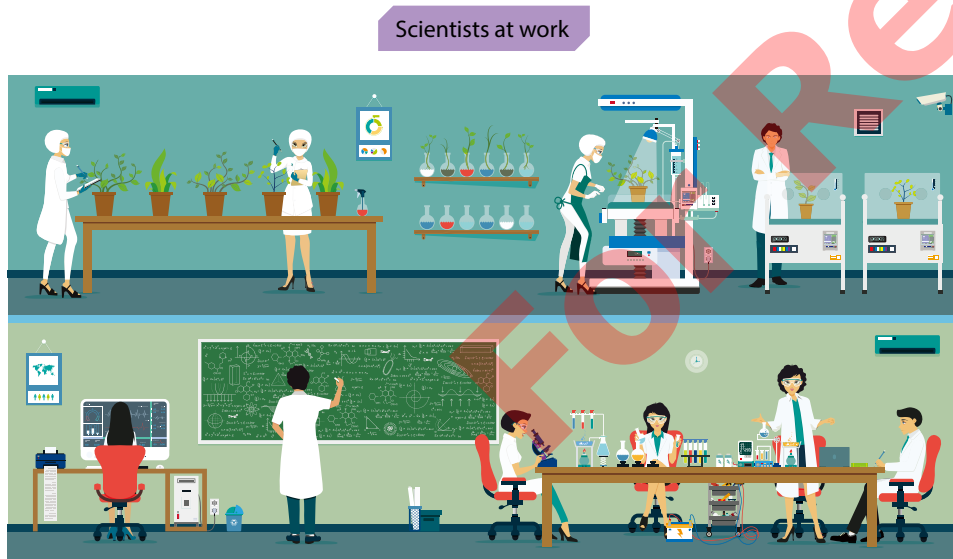
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For Review Only

What Is Nanotechnology?

A scientist is someone who studies or has expert knowledge of one or more of the natural or physical sciences. There are many types of scientists. Some study plants and animals. Some study space. And some scientists study ideas within mathematics and physics. Some even study things which may or may not really exist! But one of the newest and more cutting-edge types of scientists is a nanotechnology research scientist, or nanotechnologist.



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Nanotechnology is the moving or changing of matter at an atomic or molecular level. What does that mean? It means that a nanotechnology scientist works with things that are very, very small. Atoms and molecules are the building blocks of everything. But they are tiny. We can't see them using just our eyes. The things that nanoscientists study are even smaller than atoms. They study tiny particles called nanoparticles. The term *nano* means "one billionth" in size! That is smaller than we can see with most microscopes.



Looking at nanoparticles under a high-power microscope

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◀ The earth



A basketball ▶

In fact, nanotechnology scientists study things that are millions of times smaller than we can see with the average microscope! Imagine that you look under a microscope and see a single cell. Now imagine that cell being the size of the earth. Compared to that cell, a nanoparticle is the size of a basketball.

Why Do People Study Nanotechnology?

There are two main reasons that scientists study things this small. The first is to understand the world around us. And the second is to develop technology that we can use in our daily lives.



Researchers in a lab



Light in space



Seeking knowledge

Our world is controlled by certain rules, or laws, that are the same everywhere. For example, the speed of light is always 300 million meters per second. However, the laws of nature seem to be different at the nano level. For example, some objects with color have no color when they are very small. Some materials that are solid become like air when they are super-small.

An atomic model showing subatomic particles



Nanotechnology research scientists try and understand why these things happen. Why do particles behave differently based on their size? And how can we make use of these differences in our everyday lives?

Comprehension Questions

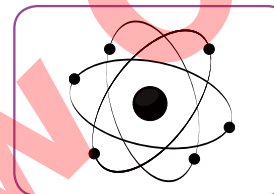
1. What is nanotechnology?
 - (a) The science of physics
 - (b) The science of very small particles
 - (c) The science of other countries
 - (d) The science of food
2. Which is NOT mentioned as something a nanotechnologist needs?
 - (a) Goggles
 - (b) A lab coat
 - (c) A microscope
 - (d) Sunscreen
3. In what ways do some things change when they are very small?
 - (a) They become cells.
 - (b) They smell different.
 - (c) Their color changes.
 - (d) They break easily.
4. According to the text, how is nanotechnology used in the food industry?
 - (a) To make safe packaging
 - (b) To grow more food
 - (c) To make food look good
 - (d) To make bigger packaging
5. A nanotechnologist should . . .
 - (a) be interested in solving problems.
 - (b) have experience building robots.
 - (c) make friends with many other scientists.
 - (d) learn to speak a second language.

Key 1. (b) 2. (d) 3. (c) 4. (a) 5. (a)

Glossary



■ **abstract** (adj.) existing as thoughts in the mind



■ **atom** (n.) the smallest unit of a molecule made up of protons, electrons, and neutrons



■ **attach** (v.) to join one thing to another



■ **billionth** (n.) one of a billion equal parts; 1/1,000,000,000



■ **biology** (n.) the scientific study of living things