Name D.D.

## Science Video

## Atoms; V.1; Size

DIRECTIONS—Read these questions then watch the video and answer them.

1) Ludwig Boltzman argued that matter cannot be infinitely divided into individual pieces but that matter is made of basic building blocks called…

Atoms…

2) Describe how understanding steam helped scientists understand the atom more…

If steam and water molecules were imagined as small spheres they could be used mathematically to study the properties of steam

3) Describe what Albert Einstein contributed to the understanding of the atom with his 1905 study of pollen grains in water;

Al said that the jiggling of pollen grains was due to the grain being pushed by unseen particles called atoms. The Brownian motion of the grains seen by Robert Brown in 1827 was due to atoms.

4) What did Rutherford’s famous Gold Leaf experiment show?

It showed that atoms are made of mostly just empty space because every so often an alpha particle would bounce back from the gold leaf.

5) What two things did Niels Bohr set out to discover?

Why the atom is mostly empty space and why the atom didn’t collapse

6) Describe how Bohr’s model of the atom explains how different pure elements give off colored light

When an electron moves down toward the nucleus in energy level it gives off a specific color of light depending on how many energy levels it moves.

7) What did Heisenberg say in his “Uncertainty Principle”?

That the truth about the atom is that we can never know the position and speed of an atom; they behave like both a wave and a particle; there is a contradiction in the world; that everything we see is made of atoms yet atoms are unknowable except by mathematics.

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