Topic Introduction

Summarize your understanding of each paragraph.

Solid is one of the four fundamental states of matter. Molecules are closely packed. It is characterized by structural rigidity and resistance to changes of shape or volume. A solid object does not flow (liquid) - or expand to fill the entire volume available to it like a gas does.

Solids cannot be compressed with little pressure whereas gases can be compressed with little pressure because in gases molecules are loosely packed.

The branch of physics that deals with solids is called solid-state physics, and is the main branch of condensed matter physics (which also includes liquids). Materials science is primarily concerned with the physical and chemical properties of solids.

Solids have several measurable physical properties. Properties include odor, color, volume, density, melting point, boiling point, heat capacity, physical form and shape at room temperature, hardness, porosity, index of refraction and many others.

https://en.wikipedia.org/wiki/Solid

Read/Summarize Text

1. **Read the passage.**
2. **Underline key expressions in each sentence.**
3. **Re-write each word (or expression) you underlined.**
4. **Summarize the passage.**

Wikipedia: Solid

1

2

A solid does not exhibit macroscopic flow, as fluids do. Any degree of departure from its original shape is called deformation. The proportion of deformation to original size is called strain.

If the applied stress is sufficiently low, almost all solid materials behave in such a way that the strain is directly proportional to the stress (Hooke's law). The coefficient of the proportion is called the modulus of elasticity or Young's modulus. Three models can describe how a solid responds to an applied stress: Elasticity; Viscoelasticity; Plasticity.

https://en.wikipedia.org/wiki/Solid

Re-write words you underlined

3

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_____ _____ _____

Using a complete sentence, summarize or rephrase the passage

4

Read Text for Comprehension

Read this article for deeper understanding. No summary is required, although you may want to circle, underline, or mark key ideas and words.

In medieval European cathedrals, the glass sometimes looks odd. Some panes are thicker at the bottom than they are at the top. The seemingly solid glass appears to have melted. This is evidence, say tour guides, Internet rumors and even high school chemistry teachers, that glass is actually a liquid. And, because glass is hard, it must be a supercooled liquid.

Glass, however, is actually neither a liquid—supercooled or otherwise—nor a solid. It is an amorphous solid—a state somewhere between those two states of matter. And yet glass's liquidlike properties are not enough to explain the thicker-bottomed windows, because glass atoms move too slowly for changes to be visible.

Solids are highly organized structures. They include crystals, like sugar and salt, with their millions of atoms lined up in a row, explains Glasses, though more organized than liquids, do not attain the rigid order of crystals. "Amorphous means it doesn't have that long-range order.

When glass is made, the material (often containing silica) is quickly cooled from its liquid state but does not solidify when its temperature drops below its melting point. At this stage, the material is a supercooled liquid, an intermediate state between liquid and glass. To become an amorphous solid, the material is cooled further, below the glass-transition temperature. Past this point, the molecular movement of the material's atoms has slowed to nearly a stop and the material is now a glass. This new structure is not as organized as a crystal, because it did not freeze, but it is more organized than a liquid. For practical purposes, such as holding a drink, glass is like a solid, though a disorganized one.

Like liquids, these disorganized solids can flow, albeit very slowly. Over long periods of time, the molecules making up the glass shift themselves to settle into a more stable, crystallike formation. The closer the glass is to its glass-transition temperature, the more it shifts; the further away from that changeover point, the slower its molecules move and the more solid it seems.

Why old European glass is thicker at one end probably depends on how the glass was made. At that time, glassblowers created glass cylinders that were then flattened to make panes of glass. The resulting pieces may never have been uniformly flat and workers installing the windows preferred, for one reason or another, to put the thicker sides of the pane at the bottom. This gives them a melted look, but does not mean glass is a true liquid.

https://www.scientificamerican.com/article/fact-fiction-glass-liquid/

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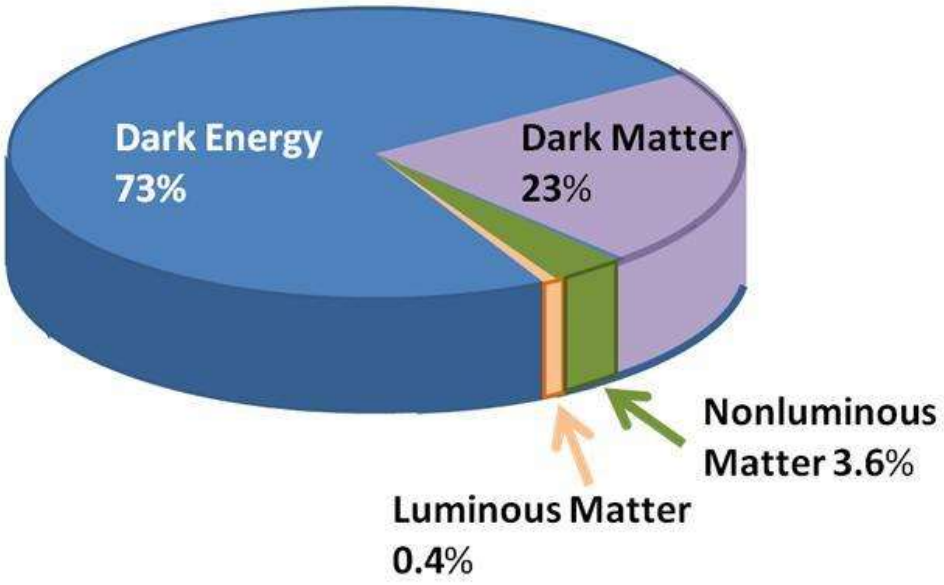

https://en.wikipedia.org/wiki/Matter

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