Conservation of Matter
How much does the air in a classroom weigh?

The air in the lab classroom weighed

A. 10 lbs
B. 100 lbs
C. 1,000 lbs
D. 10,000 lbs
E. More than 10,000 lbs
Consider a giant oak tree. Where does the largest fraction of the dry mass of the tree come from?

A. Water  
B. Minerals in the soil  
C. Sun  
D. Oxygen  
E. Carbon
Does energy have mass?

A. Yes
B. No
Sound travels

Sound carries energy. It travels through the air, but air is not the sound.
Types of Waves

Transverse Waves

Longitudinal Waves

Transverse, Longitudinal, and Periodic Waves
Does energy have mass?

A. Yes
B. No
Consider a giant oak tree. Where does the largest fraction of the dry mass of the tree come from?
A. Water
B. Minerals in the soil
C. Sun
D. Oxygen
E. Carbon
Conservation Laws

Where does most of the mass of dry wood come from?

\[ \text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{CH}_2\text{O} + \text{O}_2 \]

50% carbon
6% hydrogen
44% oxygen
Consider a giant oak tree. Where does the largest fraction of the dry mass of the tree come from?

A. Water
B. Minerals in the soil
C. Sun
D. Oxygen
E. Carbon
When you lose 15 lbs, how did the largest fraction of the weight leave your body?

A. Urine
B. Solid waste
C. Energy
D. Respiration – water vapor
E. Respiration – carbon dioxide
Conservation Laws

If you lose 15 pounds, how does most of the mass leave the body?

C_6H_{12}O + 6O_2 \rightarrow 6CO_2 + 6H_2O
When you lose 15 lbs, how did the largest fraction of the weight leave your body?

A. Urine
B. Solid waste
C. Energy
D. Respiration – water vapor
E. Respiration – carbon dioxide
When iron rusts, it chemically combines with oxygen to form iron oxide. How much does a rusty nail weigh compared to the original nail?

A. Rusty nail weighs the same
B. Rusty nail weighs less
C. Rusty nail weighs more
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