

Question 1: Identify each item below as a **pure substance** or a **mixture**.

glucose ($\text{C}_6\text{H}_{12}\text{O}_6$)	pure substance
sunscreen	mixture
oxygen	pure substance
the human body	mixture
acetaminophen ($\text{C}_8\text{H}_9\text{NO}_2$)	pure substance
hydrogen peroxide (H_2O_2)	pure substance
green tea	mixture

Question 2: Identify each pure substance below as an **element** or a **compound**.

natural gas (CH_4)	compound
nitrogen gas (N_2)	element
carbon (C)	element
table salt (NaCl)	compound
ice (H_2O)	compound
dry ice (CO_2)	compound
sodium (Na)	element

Question 3: Identify each mixture below as **homogeneous** or **heterogeneous**.

gasoline	homogeneous
skim milk	homogeneous
bag of groceries	heterogenous
watermelon	heterogenous
jar of nuts and bolts	heterogenous
mouthwash	homogeneous
water with ice cubes	heterogenous

Question 4: Fill in the table below.

state	Shape (definite or indefinite)	Volume (definite or indefinite)	Particle Distance (very close, close, far away)
gas	indefinite	indefinite	far away
liquid	indefinite	definite	close
solid	definite	definite	very close

Question 5: Describe each of the following as a **physical property** or **chemical property**.

water boils at 100°C	physical property
the density of water is 1 g/mL	physical property
water is colorless	physical property
sodium metal reacts with water	chemical property
gasoline is flammable	chemical property
neon gas does not react with air	chemical property
an iPhone 7 has a mass of 4.87 ounces	physical property

Question 6: Describe each of the following as a **physical change** or **chemical change**.

an antacid tablet reduces heartburn	chemical change
your body digests a sandwich	chemical change
butter melts in a pan	physical change
gasoline is ignited in your car engine	chemical change
juice freezes in your freezer	physical change
a piece of paper is cut in half	physical change
milk goes sour	chemical change

Question 7: Fill in the table below with the six phase changes and if each one is exothermic or endothermic.

Phase Change	Endothermic or Exothermic
melting	endothermic
freezing	exothermic
evaporation / vaporization	endothermic
condensation	exothermic
sublimation	endothermic
deposition	exothermic

Question 8: Convert each standard notation number into scientific notation.

2,002,000 2.002×10^6

0.000083 8.3×10^{-5}

0.0151 1.51×10^{-2}

0.000000009 9×10^{-9}

Question 9: Convert each scientific notation number into standard notation.

5.73×10^4 57,300

8.002×10^{-3} 0.008002

1.472×10^{-6} 0.000001472

3×10^{10} 30,000,000,000