

Heat and Temperature Practice Quiz Topic 4 - Expansion and Contraction

1. When a substance is heated the particles gain energy and spread out, creating more volume (spaces between the particles). So what about the mass of the substance? What happens to the mass of a substance when it is heated?

mass increases

mass decreases

mass remains the same

mass is lost

2. Solids made of different metals were all heated to 100°C to determine how their volume and length would be affected. Which statement describes the most likely outcome of this experiment.

all the volumes changed the same amount and the lengths remained constant

all the volumes changed, but each substance was the same length

only some of the volumes changed with their length being increased

all of the volumes changed and so did their lengths

3. An experiment testing the affect of heat on different liquids was performed by some students. Which of the following variables would have been the manipulated variable.

the amount of heat used

the size and type of glass tubing each liquid would rise

the different types of liquids

the different levels each of the liquids reached in the glass tubing

4. Look at the experiment that the students set up to determine if a gas expands when heated. The experiment didn't work because the students were missing an important element to get the results they predicted. What was missing?

proper safety equipment

a larger balloon

a larger flask was needed

a heat source



5. A balloon filled with helium was put into a freezer to determine what the effect the lowering of the temperature would have on a gas. The responding variable in this experiment was the ...

amount of gas in the balloon before and after

the volume of the balloon before and after

the temperature variation of the freezer

the amount of time needed to change the balloon

Check [Answers](#)

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1. When a substance is heated the particles gain energy and spread out, creating more volume (spaces between the particles. So what about the mass of the substance? What happens to the mass of a substance when it is heated?
mass increases

mass decreases

mass remains the same (Text p. 210) Thermal energy does not have mass or volume and therefore the mass of the substance remained the same

mass is lost
2. Solids made of different metals were all heated to 100°C to determine how their volume and length would be affected. Which statement describes the most likely outcome of this experiment.
all of the volumes changed and so did their lengths (Text p. 211)
(Table 1 p. 211) The lengths of different materials have different lengths when they are heated to 100°C
all the volumes changed, but each substance was the same length

only some of the volumes changed with their length being increased the same

all the volumes changed the same amount and the lengths remained constant
3. An experiment testing the affect of heat on different liquids was performed by some students. Which of the following variables would have been the manipulated variable.
the amount of heat used

the size and type of glass tubing each liquid would rise

the different types of liquids (Text p. 216) This is what you are testing

the different levels each of the liquids reached in the glass tubing

4. Look at the experiment that the students set up to determine if a gas expands when heated. The experiment didn't work because the students were missing an important element to get the results they predicted. What was missing?

proper safety equipment

a larger balloon

a larger flask was needed

a heat source (Text p. 214) The gas will do nothing unless heat is supplied



5. A balloon filled with helium was put into a freezer to determine what the effect the lowering of the temperature would have on a gas. The responding variable in this experiment was the ...
- amount of gas in the balloon before and after**

the volume of the balloon before and after (Text p. 215) The volume is what will visibly change because as the balloon loses its thermal energy to the freezer, the volume will decrease

the temperature variation of the freezer

the amount of time needed to change the balloon