

Textbook questions

Homework III

Instructions for students: Follow your teacher's instruction. Also you can attempt this test online and see your result.

[Attempt online and know results](#)

Topic: Textbook questions

Dates: 05.10.2022 until unlimited

Question count: 3

Total marks: 28

1. Intext - Activity - I (10 m.)

Materials required:

1. 3 bowls of equal shape and size
2. Water
3. Heater
4. Ice cubes

Procedure:

- Take three bowls.
- Pour very cold water in the first bowl. (you can also add ice cube for cooling).
- Place Luke warm water in the second.
- Half fill the third with hot water (-not hot enough to burn!).
- Set them in a row on the table, with the lukewarm water in the centre.
- Place your right hand in the cold water, and

your left hand in the hot water.

- Keep them in for a few minutes.
- Now take them out, shake off the water and put both into the middle bowl.

How do you feel?

When you placed your left hand in the hot tub, the heat from the bowl made the molecules on your hand

- A) vibrate faster**
- B) vibrate slower**

because the energy (heat) moved from the

- A) water**
- B) hand**

, which was hotter than

- A) your hand**
- B) water**

, to

- A) water**
- B) your hand**

, making it feel

- A) cool**
- B) warm**

When you keep the same hand in the second bowl the vibrations transferred from your hand

to make the particles in the water vibrate because the water in the second bowl was

- A) colder
- B) hotter

than your hand. The energy (heat)

- A) left your hand
- B) flowed into your hand

and

- A) left the water
- B) flowed into the water

Therefore you feel

- A) addition of heat
- B) loss of heat

and hence your hand feels

- A) warm
- B) cold

In the same way, When you placed your right hand in the cold tub, the

- A) molecules in the cold tub
- B) heat from your hand

made the

- A) heat from your hand

B) molecules in the cold tub

vibrate faster because the energy moved

- A) from your hand**
- B) from the cold tub**

, making it feel

- A) warm**
- B) cold**

When you keep the same cold hand in the second bowl the vibrations transferred from

- A) molecules in your hand**
- B) second bowl (Luke warm water)**

to make the

- A) second bowl (Luke warm water)**
- B) molecules in your hand**

vibrate faster because the water in the second bowl was

- A) hotter**
- B) colder**

than your hand. The energy (heat) transferred from

- A) your hand**
- B) second bowl**

to

- A) second bowl
- B) your hand

Your right hand which was placed in cold water, feels

- A) cold
- B) hot

when you insert it into the lukewarm water.

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2. Intext - Activity - II (4 m.)

Activity: To measure the temperature of a boiling water

Materials Required:

1. Vessel
2. Thermometer
3. Water
4. Stove (Heat source)

Procedure:

- Take a vessel and fill it with water.
- Put the vessel on the stove.

- Fix the thermometer over the water as shown below.
- Observe the reading in the thermometer and tabulate it.

Important!

The thermometer should not be in contact with the vessel in which the water is being heated. Otherwise, the thermometer will be broken at a high temperature.

You will be able to see that,

The water starts to boil when the water temperature reaches

- A) $0^{\circ}C$
- B) $273.15^{\circ}C$
- C) $100^{\circ}C$
- D) $37^{\circ}C$

The temperature of the boiling water

- A) rise further
- B) starts to decrease
- C) does not rise further

after

- A) $100^{\circ}C$
- B) $37^{\circ}C$
- C) $273.15^{\circ}C$
- D) $0^{\circ}C$

The point at which the water **boils** and temperature

- A) becomes stable
- B) starts to increase further
- C) starts to decrease

is called the **boiling point of water**.

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3. Intext - Activity - III (14 m.)

Materials Required:

1. Vessel
2. Thermometer
3. Water
4. Stove (Heat source)

Procedure:

Take one litre water in a pan, and heat it on a stove.

Calculate the time taken to start boiling. (i.e. the time taken to thermometer reading goes up to $100^{\circ}C$).

Take five litre water in another pan and heat it on the same stove.

Calculate the time taken by the water to start boiling.

Solution:

In which pan the water starts to boil earlier?

- A) One litre water**
- B) Five litre water.**

Both, however, show a temperature of $100^{\circ}C$ at the boiling point. Five litre water takes

- A) more time**
- B) less time**

to boil i.e.

- A) more heat**
- B) less heat**

is needed to boil the larger amount of water.
So, five litre boiling water has

- A) less heat energy**
- B) more heat energy**

than one litre water.

Place an open can of lukewarm water in each pan. Observe their temperature to find out which can gets hotter.

In which can water shows quick rise in temperature?

- A) Can in five litre boiled water**
- B) Can in One litre boiled water**

You can see that,

- A) five litre water pan**
- B) one litre water pan**

will raise the can of water to a higher temperature. Though, both pans of boiling water have the temperature of $100^{\circ}C$ the five litre water can give off

- A) more heat energy**
- B) less heat energy**

than one litre water. Because it has

- A) less heat energy**
- B) more heat energy**

, and gives

- A) less energy**

B) more energy

to the water in the can

Which has more heat energy in each pair?

- A) A spoon of boiling water at 100°C**
- B) A cup of boiling water at 100°C**

- A) 90°C Hot Water**
- B) 60°C Hot Water**

Examples:

You are holding a hot cup of coffee, would the Heat energy transfer from:

- A) Your body to the coffee**
- B) The coffee to your body**

You are standing outside on a summer day. It is 40°C outside. Would the Heat energy transfer from:

- A) Your body to the air particles**
- B) The air particles to your body**

You are standing outside on a winter day. It is 23°C outside. Would the heat energy

transfer from:

- A) The air particles to your body**
- B) Your body to the air particles**

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