



Science

Worksheet 3 : 18/07/2020

Class - VII

**CHAPTER 9 : HEAT AND TEMPERATURE****Instructions:**

- ✓ Read the chapter in your book - quickly and thoroughly, preferably more than once.
- ✓ Watch the uploaded video class from school's website/YouTube channel. For becoming more clear about the basics, watch more than once, if needed.

**(Questions given in this worksheet are important for all exams)**

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**Analytical Question (Mark-2)****1. Why there is a gap between two consecutive rails of a rail line?**

Ans.: Most of the substances expand in volume when they are heated. It is natural that the expansion of solid is minor due to application of heat. Rail lines are the iron strips. When trains run on the rail lines, the rail lines get heated due to the friction of wheels of the train.

As a result, the lines increase in length. If there is no gap kept between the rails, the lines will be curved causing accident. Therefore, keeping gaps between two consecutive rails, the rails increase in length and fill up the gaps, so that the lines do not twist or bend at the time of running of a train on it.

**2. We feel warm by the side of a fire. We feel warmer or hot if we keep our hand over fire. Why does that happen?**

Ans.: We feel warm while standing by the side of fire. But if we put our hand over the fire carefully, we will feel warmer. Because, by the process of convection, the

particles of air get heated and go up but do not go aside. So we feel warmer keeping our hands over the fire rather standing aside.

**3. Why does the pressure of atmosphere decrease when temperature increases?**

Ans.: The particles of air move to and fro in air. They apply force when they are obstructed. As a result, pressure exists in air. Their applied force per unit area is called the pressure of air. The air exerts pressure at all directions. The atmospheric pressure of anywhere depends on the temperature. Air pressure is increased within a confined pot when the temperature rises. But atmosphere is not confined, it is open. Air gets lighter and goes up when heated. For this, the density of air decreases and air pressure decreases. This is why if the temperature of a place increases then air pressure falls down. i. e. depression takes place. High atmospheric pressure takes place where temperature is low.

**4. Why we do not hold cooking hot pot with bare hand? Why do we use a piece of cloth?**

Ans.: Cooking pots are usually made of Aluminium or iron which are conductor of heat. When a cooking pot is put on a fire, the whole body of the pot gets hot after a while by the process of conduction of heat. In this situation if we touch it, we must experience extreme heat on our hand and our hand may burn causing an accident.

On the contrary, a piece of cloth is a bad conductor of heat. So, to avoid the risk of falling in an accident like burn, we never hold cooking hot pot bare hand, rather we use a piece of cloth for this purpose.

**5. Why expansion of liquid is much than the expansion of a solid in volume due to increase of temperature?**

Ans.: A substance expands in volume subject to application of heat on the body. But naturally a liquid substance expands more than a liquid substance. Because the molecular force of liquid substances is less than that of solid substances. As a result, molecules of liquid substances spread more from each other compared to the molecules of solid substances on application of heat.

**6. Write down the distinctions among conduction, convection and radiation.**

Ans.: The distinctions among conduction, convection and radiation are given below:

<b><i>Conduction</i></b>	<b><i>Convection</i></b>	<b><i>Radiation</i></b>
i. Heat flows through solid substances by conduction.	i. Heat flows through liquid or gaseous substances by convection.	i. In case of radiation, heat flows without any medium.
ii. In this process particles of substances do not change their position during transmission of heat.	ii. In this process particles of substances easily change their position and transmit heat.	ii. In this process heat is transmitted through radiation.

**Creative Questions**

**(Solve yourself)**

**1.** Kajal observes daily activities that happen in his life very carefully. One day he saw that the lid of the cooking pot fell down due to heat. On the other hand he noticed some gaps in their door in winter season, where he found no gap in the summer. Both the incidents made him thoughtful.

- a) Explain the cause of incident which Kajal observed while cooking was going on.
- b) Analyze the cause of different behavior of wooden door during winter and summer seasons which Kajal observed.

- 2.** Rana usually basks in the sun just after taking his bath in winter season. But he uses cold water for bathing in the summer and he never gets out of door without an umbrella.
- Explain the influence of heat over Rana in bath of the winter season and the summer.
  - Justify that sweating of our body takes place during the month of Sraban and Bhadro.
- 3.** A, B and C are the three types of heat transmission. Temperature of an iron bar is  $200^{\circ}\text{C}$ . In this rod heat transmitted through type-A. There are some water at  $25^{\circ}\text{F}$ . In this water heat transmitted through type-B. Heat comes from the sun to our earth through the process C.
- What is the temperature of iron bar in Fahrenheit scale?
  - What are the difference among A, B and C? Analyze.

### MCOs

#### (Solve yourself)

- Which acts as a well absorber of atmosphere?
  - nitrogen
  - water vapor
  - oxygen
  - dust
- Which one expands more with the same rise in temperature?
  - solid substance
  - liquid substance
  - gaseous substance
  - all substances expand equally
- In how many process, heat flows from one place to another place?
  - 2
  - 3
  - 4
  - 5
- Which of the following expands less due to heat?
  - solid matter
  - liquid matter
  - gaseous matter
  - helium
- High atmospheric pressure takes place where temperature is -
  - high
  - low
  - medium
  - all the above
- In what process, heat from the sun is transmitted to the earth?
  - conduction
  - convection
  - radiation
  - all the above

**7.** Which of the following may be called an absorber of heat?

- a) the sun
- b) the earth
- c) the moon
- d) the venus

**8.** Which of the following is a good conductor of heat?

- a) air
- b) gold
- c) cane
- d) woolen cloth

**9.** Which of the following is a radiator of heat?

- a) the sun
- b) the moon
- c) the mars
- d) the mercury

**10.** In which process are the cold bodies in touch with hotter bodies heated?

- a) conductiob
- b) convection
- c) radiation
- d) none

**11.** What is necessary for heat conduction?

- a) solid medium
- b) vacuum medium
- c) liquid medium
- d) none

**12.** How the heat flows from one part to another part by conduction process?

- a) changing the position of the molecules
- b) vibrating the molecules
- c) absence of the molecules
- d) none of the above

**13.** Heat flows from places of-

- a) lower temperature to higher temperature
- b) higher temperature to lower temperature
- c) higher temperature to higher temperature
- d) none of the above

**14.** The increase in temperature of a substance depends on -

- a) shape of the body
- b) materials of the body
- c) weight of the body
- d) environment

**15.** Which one is the process of heat transmission?

- a) conduction
- b) convection
- c) radiation
- d) all the above