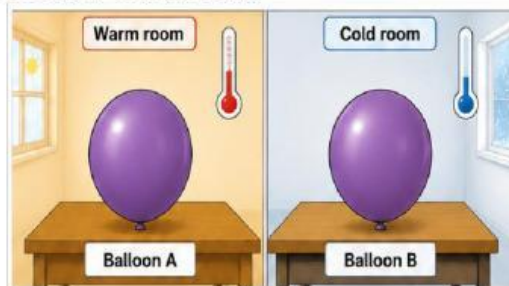


Section A: Choose the best answer. (5 marks)

1. When a metal rod is heated, it expands. What does the word expands mean?
A. Gets heavier C. Changes into a liquid
B. Gets colder D. Gets bigger in size
2. According to the particle model, what happens to particles when a substance is heated?
A. They stop moving C. They become smaller
B. They gain energy and move faster D. They disappear
3. A metal jar lid is difficult to open. Which action will help loosen the lid?
A. Put the jar in a freezer C. Add cold water to the lid
B. Pour hot water over the lid D. Shake the jar strongly
4. Two identical balloons are filled with air. Balloon A is placed in a warm room while Balloon B is placed in a cold room.



- Which statement best explains what happens?
- A. Balloon A becomes smaller because particles move faster.
 - B. Balloon B becomes larger because particles slow down.
 - C. Balloon A becomes larger because air particles spread further apart.
 - D. Both balloons stay the same size.
5. Engineers leave small gaps between sections of a railway track.

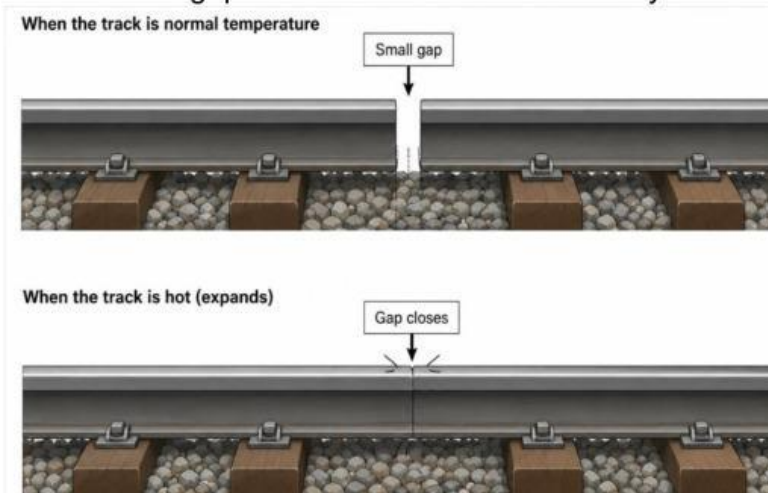


Figure 1

Why are these gaps necessary?

- A. To make trains move faster
- B. To reduce the mass of the track
- C. To allow expansion without bending the rails
- D. To make the track look straight



Section B: Answer ALL of the questions. (15 marks)

6. Below is real-life examples of expansion and contraction. **Write A – D for the scientific explanation. [4] Scientific explanations:**

- | | |
|---|---|
| A. Thermal expansion of metals | B. Insulators are poor conductors of heat |
| C. Thermal contraction of gas particles | D. Expansion can occur if there is insufficient space |

Situation	Scientific explanations
1. Balloon shrinks in a cold room	
2. Plastic spoon stays cool longer than a metal spoon	
3. Railway tracks may bend on very hot days	
4. Metal lid loosens when heated	

7. A bridge like in Figure 1 above is made mainly of metal. Engineers leave expansion gaps between bridge sections.

a. What is thermal expansion? [1]

b. Explain why engineers leave gaps between sections of the bridge. [2]

8. Match column A with column B.[8]

- | | | |
|------------------------|-----------------------|---|
| a. Thermal Expansion | ☐ | ☐ Allows heat energy to pass through easily. |
| b. Thermal Contraction | ☐ | ☐ Becomes easier to open when heated because the metal expands. |
| c. Conductor | ☐ | ☐ A material gets bigger when heated. |
| d. Insulator | ☐ | ☐ A material gets smaller when cooled. |
| e. Particle Theory | ☐ | ☐ Explains that particles gain energy and move further apart when heated. |
| f. Railway Track Gaps | ☐ | ☐ Leaves space for metal rails to expand in hot weather. |
| g. Hot Air Balloon | ☐ | ☐ Rises because the heated air inside expands and becomes less dense. |
| h. Metal Jar Lid | ☐ | ☐ Slows down or prevents heat transfer. |