Shedding Light on Heat Episode 3: Thermal Expansion Name: _____

Part A Part B

1. When the liquid in a thermometer gets hot, it _____ and rises up the tube.
2. Solids (and most liquids and gases) _____ when they get hot and they _____ when they cool down.
3. If you raise the temperature of a 20-metre-long steel beam from 10°C to 50°C it will expand by _____.
4. If you raise the temperature of a 20-metre-long aluminium beam from 10°C to 50°C it will expand by _____.
5. If you raise the temperature of a 40-metre-long steel beam from 10°C to 50°C it will expand by _____.
6. If you raise the temperature of a 40-metre-long aluminium beam from 10°C to 50°C it will expand by _____.
7. Describe why bridges are built with expansion gaps. Draw a diagram to help with the explanation.

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   _____
   _____
   _____
   _____

8. Why does hot glassware often crack if it suddenly comes into contact with cold water?

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   _____
   _____
   _____

9. Why does an iron rod expand when it is heated?

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   _____

Part C

10. Briefly describe how a thermometer works.

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    _____

11. If the temperature of all the oceans increases, what will happen to the sea level? Why?

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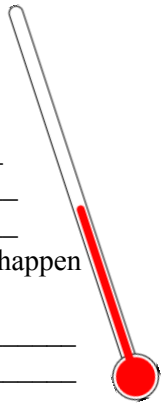
    _____
    _____

12. If a balloon filled with air is hanging outside in the cold and it's then taken into a warm room, what will happen to its volume? Why?

    _____
    _____
    _____



13. If 1 litre of water is boiled and it turns into steam, it will expand to _____ litres (at normal atmospheric pressure).
14. Why is heating an unopened can of food (such as a can of baked beans) in the oven a bad idea?

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    _____

15. Briefly describe how a steam turbine in a power station works?

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    _____
    _____
    _____

16. What happens to the volume of water as it cools down from 4°C until it freezes? _____

    _____
    _____

17. If you start with exactly 1 litre of water at 4°C, it will end up with a volume of _____ litres when it freezes.
18. Why should you avoid placing drink cans and bottles in the freezer? _____

    _____
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