

Part A

- 1. If a hot object and a cold object are placed next to each other, heat energy will flow from the \_\_\_\_\_ object to the \_\_\_\_\_ object.
- 2. Heat energy can transfer from one object to another by \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_.

Part B

- 3. What is conduction? Give an example of where it occurs.

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- 4. Why are the handles of the BBQ grill made of wood?




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- 5. Describe the basic process of how conduction works at the atomic level.

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- 6. Give three examples of good conductors.

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- 7. Give three examples of poor conductors.

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- 8. The recipe for a cake states that it should be baked at 170°C for 45 minutes, but, feeling hungry, a student decides to set the oven to 250°C so that it can bake faster. The student removes the cake after 20 minutes when it has browned on top. What is the problem with this approach?

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- 9. Why do surfers often wear wet suits?

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- 10. People who are feeling cold will sometimes say “I need a nice warm blanket”, but blankets don’t produce heat. How, then, do they keep us warm?

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- 11. Why are solids better at conducting heat than liquids or gases? \_\_\_\_\_

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Part C

- 12. What is convection? \_\_\_\_\_

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- 13. Fan heaters and central heating units both heat up air that passes through them, but how does the warm air then get to the occupants of the room? \_\_\_\_\_

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- 14. Even without being forced to, warm water rises (as does warm air), while cool water \_\_\_\_\_ (as does cool air).

15. Write the equation for density. \_\_\_\_\_

16. Fill in the table below. (working out space)

Temp (°C)	Mass (grams)	Volume (cm <sup>3</sup> )	Density (g/cm <sup>3</sup> )
0 (solid)	1	1.0929	
0 (liquid)	1	1.0001	
4	1	1.0000	1.0000
20	1	1.0018	0.9982
40	1	1.0078	
60	1	1.0171	
80	1	1.0290	
100 (liquid)	1	1.0434	0.9584

17. What happens to water's density as it gets warmer? \_\_\_\_\_

18. Why does warm water rise? \_\_\_\_\_

19. What is a convection current? Describe where you might find one. \_\_\_\_\_

20. Good insulation in a house is especially important above the ceiling. Why?

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21. Your friend places two trays of muffins into an oven, one near the top and one near the middle, and is really surprised to find 30 minutes later that the muffins near the top have browned more than the ones near the middle. How would you explain what happened to your friend? \_\_\_\_\_

22. Why can't the sun's heat energy reach Earth by conduction or convection? \_\_\_\_\_

23. How does the sun's heat reach the Earth? \_\_\_\_\_

24. What is an electromagnetic wave? \_\_\_\_\_

25. The electromagnetic spectrum consists of radio waves, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

26. A 2400 W radiant heater does not appear very bright compared to a 10 W light globe. What is happening to all the electrical energy that that the radiant heater is using? \_\_\_\_\_

27. When invisible infrared light (or any form of electromagnetic radiation) is absorbed by an object, what happens? \_\_\_\_\_

Part D