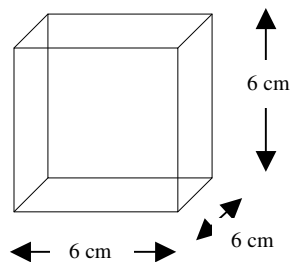


6. A cube has a length of 6 cm on each side.



Calculate the total surface area of the cube.

$$SA = 6 \times l^2 = 6 \times 6^2 = 6 \times 36 = 216 \text{ cm}^2$$

Answer 216 cm²

7. In a solution, the part present in the smaller amount is called the solute
8. In a solution, the part present in the larger amount is called the solvent
9. The amount of solute dissolved in a certain volume of solution is called the concentration of the solution.
10. 200.0 mL of water are added to 200 mL of 6M HCl.
The volume has been multiplied by **2**
The concentration would be multiplied by $\frac{1}{2}$
The final concentration after dilution is **$6 \times \frac{1}{2} = 3\text{M}$**
11. You have 30.0 mL of 4.0 M HCl and you add 90.0 mL of water to it.
The final volume is now **$30 + 90 = 120 \text{ mL}$**
The volume has been multiplied by **$120/30 = 4$**
The concentration would be multiplied by $\frac{1}{4}$
The final concentration after dilution is **$4.0 \times \frac{1}{4} = 1.0 \text{ M}$**

12. a) Describe the effect of black MnO_2 on hydrogen peroxide solution.

It makes it bubble more rapidly, producing oxygen gas

b) The MnO_2 is not a reactant but it speeds up the reaction. Therefore MnO_2 is called

a **_____ catalyst _____** for the reaction.

c) Another catalyst for this reaction can be found in what organ? **_____ the liver _____**

d) If this organ is cooked, does it still work well as a catalyst? **_____ no _____**

13. Catalysts in living organisms are called **_____ enzymes _____**

14. Two things that can deactivate enzymes are extreme **___ heat ___** and **___ poisons (chemicals) ___**

15. What is corrosion?

the breaking down of metals (usually due to the reaction with oxygen)

16. Metal roofs can turn green due to compounds of **_____ copper _____** when it reacts with air.

17. A mixture of two or more metals is called an **___ alloy _____**.

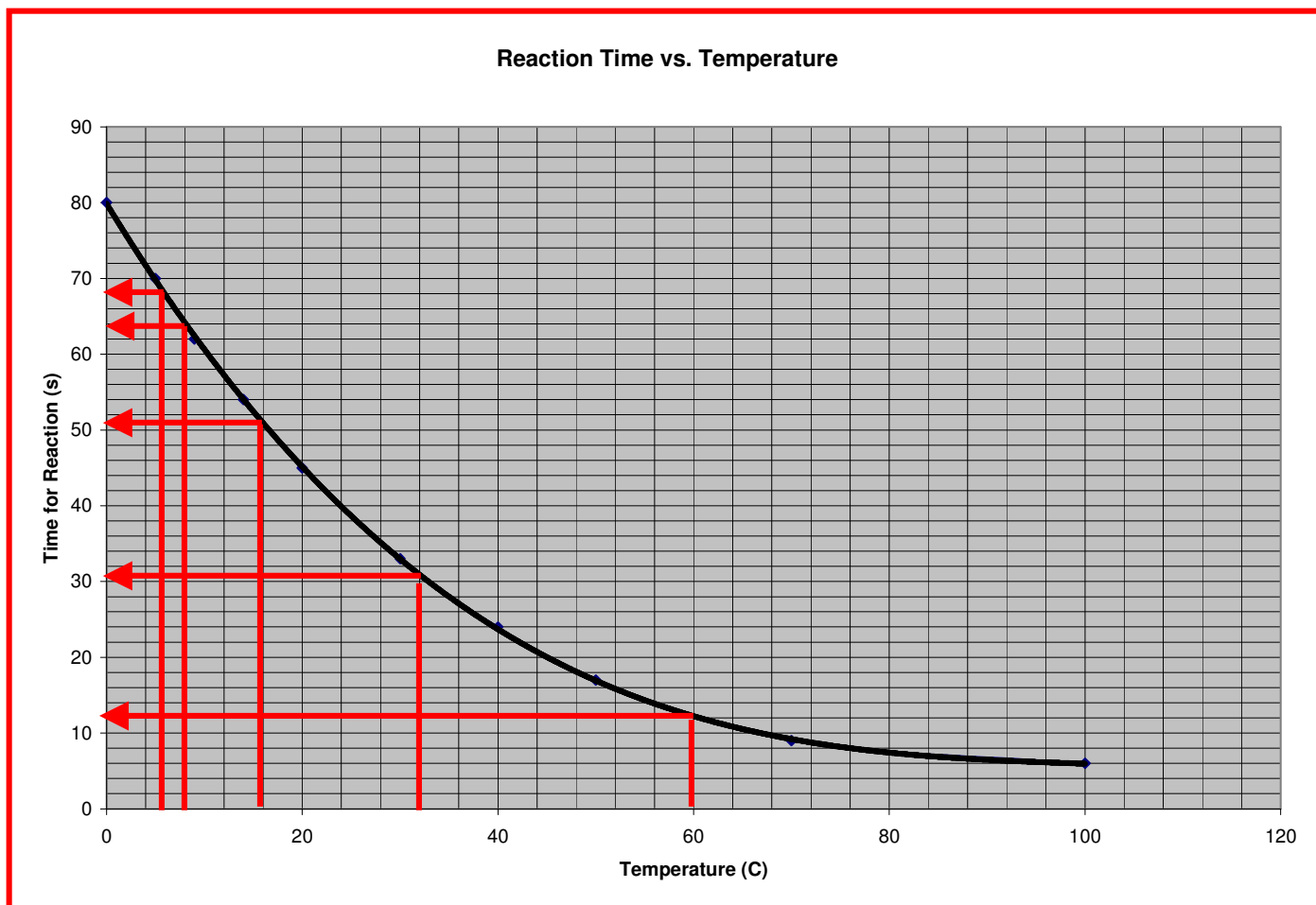
18. Two ways to slow down corrosion are

coat or paint the surface to prevent oxygen from contacting it

keep the metal very dry

attach more reactive metals like magnesium or zinc to the metal

19. Given the following graph:



- a) What would the reaction time be at a temperature of 60 °C? ~ 12 s
- b) What would the reaction time be at a temperature of 32 °C? ~ 30 - 31 s
- c) What would the reaction time be at a temperature of 16 °C? ~ 50 - 51 s
- d) What would the reaction time be at a temperature of 8 °C? ~ 64 s
- e) What would the reaction time be at a temperature of 6 °C? ~ 68 s

20. Given the following data from a lab in which a peanut is burned, answer the questions after it:

Observations: Data Table

1	Volume of Water	50 mL
2	Mass of Water	50 g
3	Final Temperature of Water	32 °C
4	Initial Temperature of Water	24 °C
5	Change in Temperature (Δt)	8 °C
6	Mass of Peanut Before Burning	0.8 g
7	Mass of Peanut Remaining	0.2 g
8	Mass of Peanut that Burned	0.6 g

- a) Calculate the mass of the water in the beaker..... **50 g**
(1 mL of water has a mass of 1 gram)
- b) Calculate the temperature change of the water (Δt) **32 - 24 = 8 °C**
- c) Calculate the mass of the peanut that burned **0.8 - 0.2 = 0.6 g**
- d) Given the formula:

$$\text{Heat Energy Given Off (J)} = \text{Mass of H}_2\text{O Heated (g)} \times 4.2 \text{ J/g} \cdot ^\circ\text{C} \times \Delta t (^{\circ}\text{C})$$

Calculate the total heat given off by the burning peanut in this experiment.

$$\text{Heat Energy} = 50 \text{ g} \times 4.2 \text{ J/g} \cdot ^\circ\text{C} \times 8 ^\circ\text{C} = 1680 \text{ J}$$

Answer = **1680 J**

- e) Calculate the heat given off per gram of peanut burned.
The formula is:

$$\text{Energy Given Off Per Gram of Peanut} = \frac{\text{Energy Given Off by Burning Peanut (J)}}{\text{Mass of Peanut that Burned (g)}}$$

$$\text{Energy Given off per gram} = \frac{1680 \text{ J}}{0.6 \text{ g}} = 2800 \text{ J/g}$$

Answer = **2800 J/g**