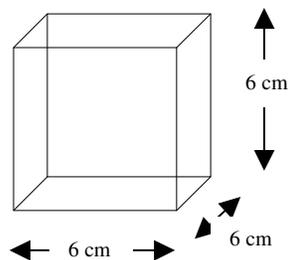




6. A cube has a length of 6 cm on each side.



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 cm<sup>2</sup>

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  $\text{MnO}_2$  on hydrogen peroxide solution.

**It makes it bubble more rapidly, producing oxygen gas**

b) The  $\text{MnO}_2$  is not a reactant but it speeds up the reaction. Therefore  $\text{MnO}_2$  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 \_\_\_\_\_**.

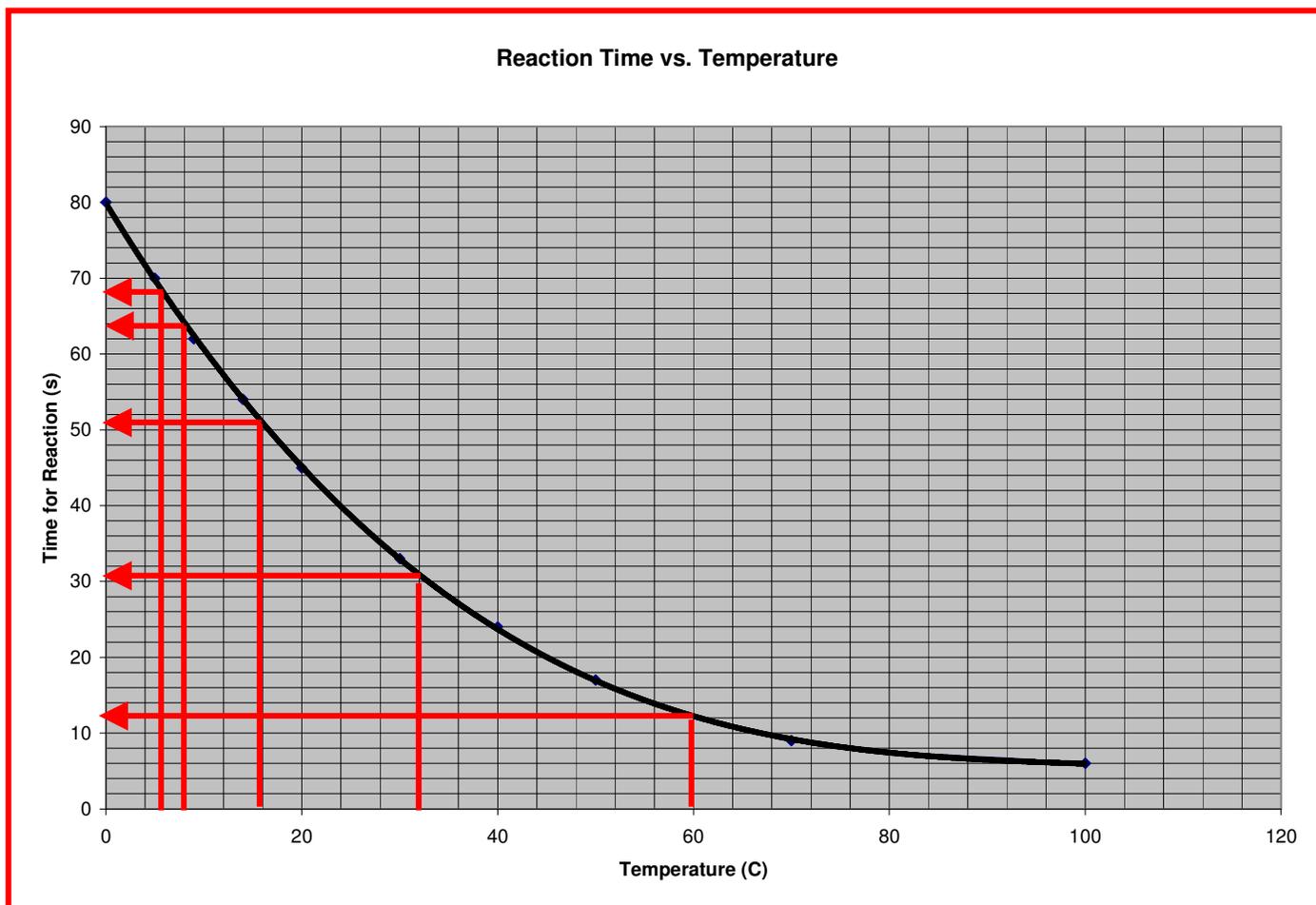
18. Two ways to slow down corrosion are

**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	<b>50 g</b>
3	Final Temperature of Water	32 °C
4	Initial Temperature of Water	24 °C
5	Change in Temperature (Δt)	<b>8 °C</b>
6	Mass of Peanut Before Burning	0.8 g
7	Mass of Peanut Remaining	0.2 g
8	Mass of Peanut that Burned	<b>0.6 g</b>

- 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**