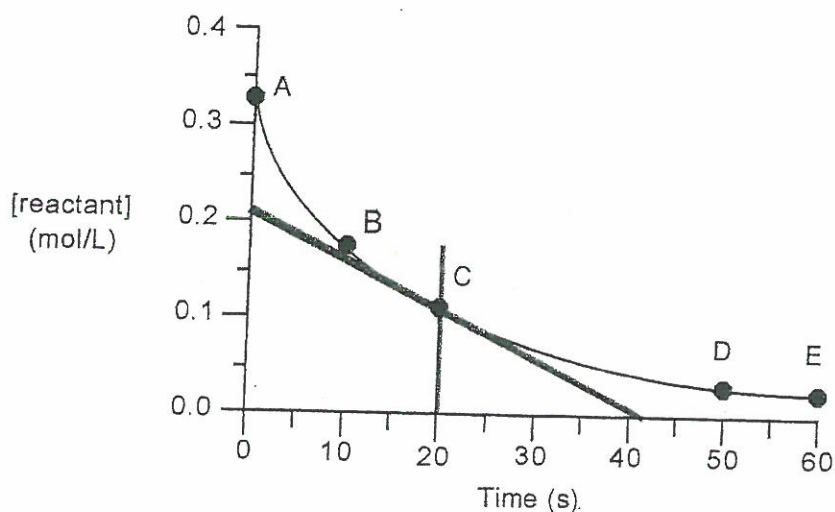


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## Chemistry 12 REACTION KINETICS

### Lesson #4+5 Calculating Reaction Rates + The Collision Theory

If the concentration of a reactant is plotted versus time, the following typical behaviour is observed.



What is the reaction rate at 20 s, according to the above graph?

The following data were collected for the reaction  $\text{Zn(s)} + 2 \text{HCl(aq)} \rightarrow \text{H}_2\text{(g)} + \text{ZnCl}_2\text{(aq)}$  in which zinc metal was reacted with 0.200 M HCl(aq).

Time (s)	Mass Zn (g)
0	31.0
60	24.6
120	20.2
180	17.4

- Calculate the average reaction rate, in g/s, from time 0 to 60 s.
- Calculate the average reaction rate, in g/s, from time 120 to 180 s.
- Explain why the average rate in part (b) is less than that in (a).

## THE COLLISION THEORY

Recall from grade 8 Science the Kinetic Molecular Theory:

- 1.
- 2.
- 3.
- 4.

In order for a reaction to occur the reactants must \_\_\_\_\_!!!!

In order for a collision to be SUCCESSFUL the chemical species must collide with:

1.

2.

**The Collision Theory** gives us a deeper understanding to what actually causes reaction rates to change when the conditions are altered:

1. **Concentration:**

2. **Temperature:**

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