Subject: Chemistry

Topic: Rate of chemical reactions

Level: S.4

Background information::

It is very common for students to develop misconceptions from unaided learning from chemical animations. This activity introduces students to a strategy for learning from animation on their own. They are expected to learn to interpret graphics and to write about the interpretation.

Learning Objectives

1. Content:

Students should be able to explain the relationship between the rate of chemical reactions and time.

2. Language:

Students should be able to use connectives such as "result in", "lead to", "because", and so on to explain the relationship between the rate of chemical reactions and time..

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S.4 Chemistry
Rate of Reactions
Worksheet 2

Name:____________________ No.:___________ Class:____________Date:___________

Activity 2

Individual work

1. Browse the website http://members.tripod.com/chung.sic/using window/explorer.
2. Click the box "F.4 **"rate of reaction".**
3. Click the button "an improved simulation".
4. Click the button **"Add H$^+$"**. Click it several times to add more hydrogen ions.
5. Have a glance at the animation, and briefly complete the "K" and "W" of Part A, and also Part B(i) below.
6. With the help of your watch, do Part B (ii) and (iii) and "L" of Part A.

A. K-W-L chart

K (What I **know**)	W (What I **want** to know)	L (What I have **learnt**)
e.g. about reaction of zinc and acid	i.e. What to you expect to learn from this animation?	

Vocabulary tips for K-W-L chart:

Collision (n.): An event in which two or more bodies come together. Collide (v.)

Collision frequency (n.)

Microscopic level (n.): The particle level, a level that can only be seen through a microscope e.g. how the particle collides is invisible to the human eyes and can only be seen through the microscope, so the collision of particles functions at the microscopic level.

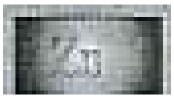
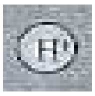
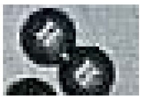
Forming a H-H single bond.

B. Strategies for learning from animation:

(i) What does the graphic mean?

Reality is always too complicated to be represented by graphics e.g. when we talk about facts of microscopic properties. To begin with, you must make sure you know the meaning of all pictorial representations of the animation.

Complete the table below.

Pictorial representation	**Meaning**
	Zinc strip
	Hydrogen ion
	(diatomic) hydrogen molecule/H_2 molecule
The blue background 	Solvent (water)
A particle is not shown in this animation as it is not involved in the chemical change.	
The spectator ion:	Chloride ion. Cl^-

(ii) How do we describe what has happened?

Observation:

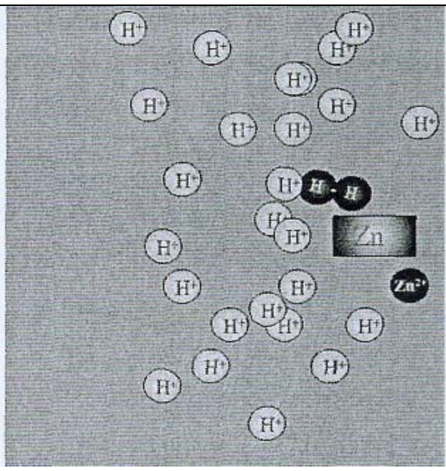
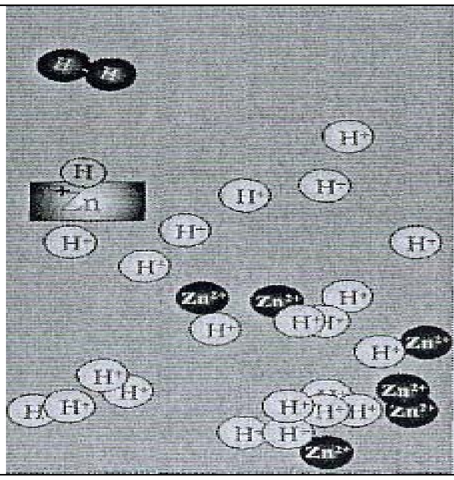
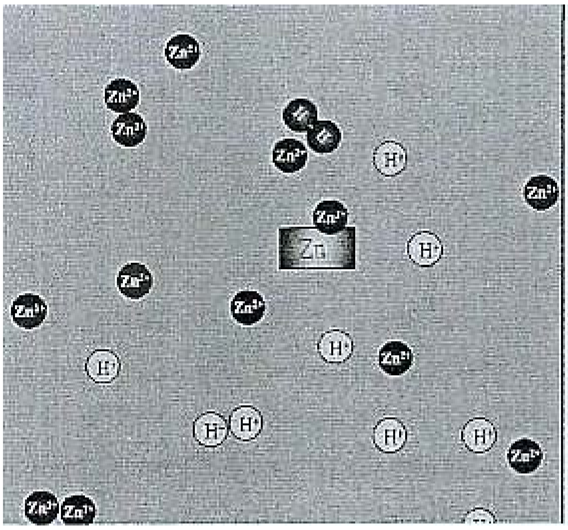
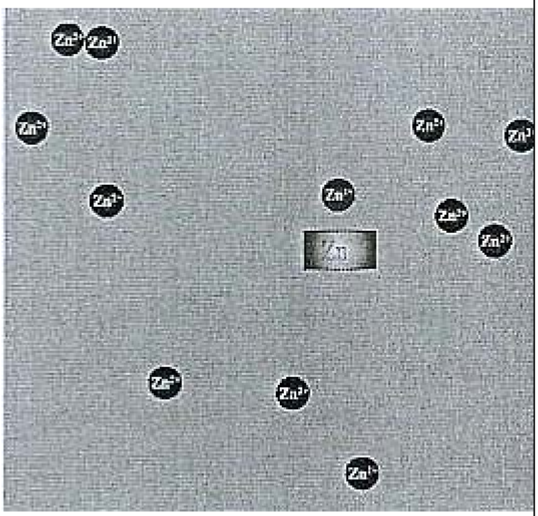
With the help of a watch, fill in all the blanks below.

1. From t=0s to t=15s, there is ________ H-H molecule(s) formed.
2. From t=16s to t=30s, there is ________ H-H molecule(s) formed.
3. From t=31s to t=45s, there is ________ ____________________________________.
4. From t=46s to t=75s, there is ________ ____________________________________.

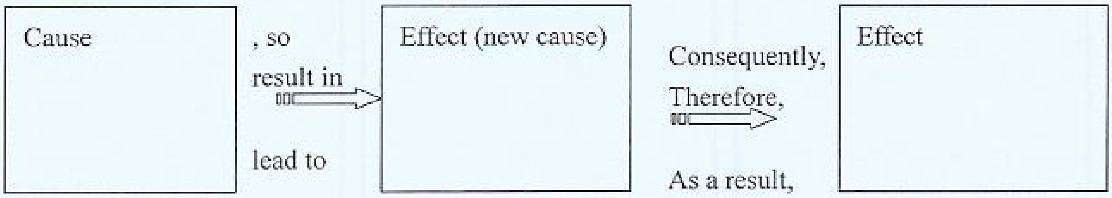
Conclusion:

We can conclude that ____.

(iii) What is/are the reason(s) behind?

	
From time to time, ____________ collide with the __________.__However, not all collision results in ___ ________________.	At the beginning, the rate of formation of the product is the ______________.
	
Why does the rate of reaction slow down? ____________________________________ ____________________________________ ____________________________________ ____________________________________ ____________________________________	Why does the rate of reaction become zero?___________________ ________________________________ ________________________________ ________________________________ ________________________________ ________________________________

Writing tip: *To give a series of causes and effects, you may use the frame below:*



(Don't forget to finish "L" of Part A!)