Name	Block	Date
Introduction to Acids & Bases		
We have all heard about acids and What do we mean by pH?	bases, but what make	es a solution acidic or basic?
The purpose of this activity is to in solutions on a molecular level.	vestigate the differend	ces between acidic and basic
Go to the PhET simulation named the simulation to see what the var	•	v moments to play around with
Choose the "Macro" screen.		
1. Look at the scale to the left.		
A. What does it measure?		
B. Which numbers represent	an acidic solution?	
C. Which numbers represent	a basic solution?	
D. A solution that is neither a neutral solution?		l "neutral". What is the pH of a
Look at the list of solutions. List pH and indicate if the solution		• •

Solution	рН	Acidic/basic/neutral

	hat is the meaning of the page.	of pH? Choose the "mic	ro" screen from the options at the			
A.	What are the thre	ree quantities measured by the scale on the left?				
В.	Toggle the top scale to concentration.					
	What are the units of concentration?					
	2. Remember from the last chapter. What is another name for these units?					
C.	The switch below the scale should read logarithmic. What is the range of values for concentration?					
	a) Change these values to standard notation (without the exponent)					
	2. Which is the la	_	ale (as an exponent)?			
D.		the boxes are H ₂ O, H ₃ O lanced chemical equation	[†] and OH ⁻ . Relate these three on.			
Ε.	-	ons and look at the cond constant?	entration values. Which concentratio			
F.	How are the concentration values of the other two substances related?					
G.	• •		o basic solutions from the previous concentration or the OH concentration			
Ac	idic/basic/neutral	solution	Which is higher, H ₃ O ⁺ or OH ⁻ ?			
	Acidic					
	Acidic					
	Basic					
	Basic					

H. Change the logarithmic scale to linear. What do you notice about the position of the boxes on the scale? Why is a logarithmic scale preferred when measuring the concentration of H_3O^+ and OH^- ?

- 4. Now, let's see what is happening on a molecular level. Choose the "custom" screen from the options at the bottom of the page
 - A. Let's see how the pH is affected by these species. Move the sliders on the scale to make the pH read 1. Record the $[H_3O^+]$ and $[OH^-]$. Indicate if the solution is acidic, basic or neutral

рН	[H₃O+]	[OH ⁻]	Acidic/basic/neutral
1			
3			
5			
7			
9			
11			
13			

- B. Look at the concentration values of H_3O^+ and OH^- . Which one of these values relates to pH? How does it relate?
- C. In acidic solutions, which is greater? $[H_3O^{\dagger}]$ and $[OH^{-}]$? Give an example.
- D. In basic solutions, which is greater? $[H_3O^{\dagger}]$ and $[OH^{-}]$? Give an example.
- E. In neutral solutions, which is greater? $[H_3O^{\dagger}]$ and $[OH^{-}]$? Give an example.
- F. Now, get out your calculator. Multiply the $[H_3O^+]$ by the $[OH^-]$ for a few of the solutions. What do you notice?
- 5. **Putting it together.** Use the information from the simulation to answer these questions.
 - A. On a molecular scale, what is the difference between an acid and a base?
 - B. In solutions, how are the $[H_3O^+]$ and $[OH^-]$ related?
 - C. What does pH measure?