Name_____

Period_____

Date_____

Google **PhET pH scale html5**

CLICK!

pH Scale

Macro

Setting up: The boxes in the picture, right, are pieces that move and affect the concentration and or amount of solution
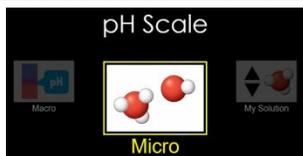
Move the concentration sensor into the solution (circle, arrow)

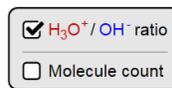Review the controls. Try them out, see what they do. When done exploring them, click the reset button.

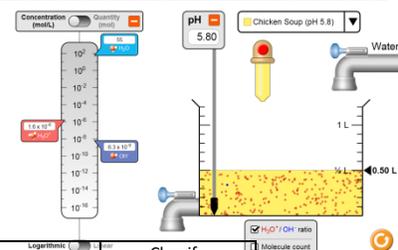**Part 1 Macro**: Add some chicken soup to the beaker. How can you change the pH of the solution?

_____
_____
_____

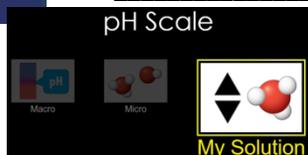**Part 2 Micro**: Click   then check

☑ H_3O^+ / OH^- ratio

☐ Molecule count

← Choose the substance and fill in the table, below.

Substance	pH	Describe the dots	Concentration [H_3O^+]	Concentration [OH^-]	pOH (14 - pH)	Classify A – Acid B – Base N -- Neutral
Battery Acid	1.00	a. More red (circled) b. Equal red and blue c. More blue	1.0×10^{-1} H_3O^+	1.0×10^{-13} OH^-	14 – 1 = 13	A
Vomit		a. More red b. Equal red and blue c. More blue				
Soda		a. More red b. Equal red and blue c. More blue				
Coffee		a. More red b. Equal red and blue c. More blue				
Milk		a. More red b. Equal red and blue c. More blue				
Water		a. More red b. Equal red and blue c. More blue				
Spit		a. More red b. Equal red and blue c. More blue				
Blood		a. More red b. Equal red and blue c. More blue				
Soap		a. More red b. Equal red and blue c. More blue				
Drain Cleaner		a. More red b. Equal red and blue c. More blue				

https://phet.colorado.edu/sims/html/ph-scale/latest/ph-scale_en.html

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PhET INTERACTIVE SIMULATIONS

pH Scale

Macro   Micro   My Solution

Part 3 pH Scale: Click [ ] then check the box →

Fill in table following example for pH7.

☑ H_3O^+ / OH^- ratio
☐ Molecule count

Concentration (mol/L) — Quantity (mol)

pH 7.00

pH	$[H_3O^+]$	$[^-OH]$	Red/blue?	ABN
pH 7.00	1.0×10^{-7} H_3O^+	1.0×10^{-7} OH^-	equal	**N**eutral
pH 9.00	H_3O^+	OH^-		**B**ase
pH 11.00	H_3O^+	OH^-		
pH 13.00	H_3O^+	OH^-		
pH 5.00	H_3O^+	OH^-		**A**cid
pH 3.00	H_3O^+	OH^-		
pH 1.00	H_3O^+	OH^-		

1 L
½ L ◄ 0.50 L

3.01×10^{16}
3.01×10^{16}
1.66×10^{25}

☑ H_3O^+ / OH^- ratio
☑ Molecule count

Post lab Questions:

In part 2, what relationship is there between pH and the dot color?

In part 2, what relationship is there between pH and the pOH?

In parts 2+3, what relationship is there between $[H_3O^+]$ and $[^-OH]$ (the sliders)?

In part 3, what relationship is there between pH and $[H_3O^+]$ (there is a cool numerical relationship!)?

Going further

Using the data in part 3, predict what goes in the boxes:

pH 8.00	H_3O^+	OH^-
pH 4.00	H_3O^+	OH^-

Using the data from part 2, what would you predict the pOH's to be for these entries in table 3?

pH	H_3O^+	OH^-	pOH
2.00	H_3O^+	OH^-	
10.00	H_3O^+	OH^-	
6.00	H_3O^+	OH^-	
12.00	H_3O^+	OH^-	

Rate your understanding of pH

☺   :/   ☹

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https://phet.colorado.edu/sims/html/ph-scale/latest/ph-scale_en.html