

## pH Worksheet

1. What colour will litmus paper turn when it is dipped in each of the substances in the table below?

Substance	Litmus paper
Table salt dissolved in water	
Apple juice	
Vinegar	
Liquid soap	
Lemon juice	

2. Answer the questions, using the information in the table below.

Fruit	pH	Fruit	pH
Lime	2.5	Tomato (juice)	4.4
Grapefruit	3.5	Banana	4.5

- Which fruit is the most acidic?
  - Which fruit is the least acidic?
  - How many times less acidic is the banana than the lime?
  - How many times more acidic is the lime than the grapefruit?
3. How many times more basic is a solution of pH 10 than a solution of pH 7?

4. Use the table below to answer the questions.

pH	1	2	3	4	5	6	7	8	9	10	11	12	13
Ind A	Yellow				orange						Red		
Ind B	red	blue		yellow									
Ind C	Blue						green	yellow					
Ind D	red							purple				blue	
Ind E	colorless								blue		dark blue		

- What color would indicator B give if a substance that has a pH of 5 is used? \_\_\_\_\_
- What color would indicator D give if it has a pH of 2? \_\_\_\_\_
- What is the pH of a substance if it becomes yellow with A and yellow with B? \_\_\_\_\_
- What is the pH of a substance if it becomes purple with D and colorless with E? \_\_\_\_\_
- What is the pH of a substance if it becomes purple with D and dark blue with E? \_\_\_\_\_
- What is the pH range if indicator E is colourless? \_\_\_\_\_

5. The following table gives the colours of the indicators methyl orange and bromothymol blue in solutions whose pH values vary from 0 to 14.

Methyl Orange	Colour	Red	Orange	Yellow				
	pH	1	3	5	7	9	11	13
Bromothymol Blue	Colour	Yellow			Green	Blue		

A solution turns yellow when methyl orange is added; it also turns yellow when bromothymol blue is added. What could the pH of this solution be?

6. The pH of certain substances were taken using a universal indicator. The following results were recorded. Which substances are basic?

<b>pH</b>	3	11	10	3	4	9
<b>solution</b>	Cola	Cleaning liquid	Antacid	Grape juice	Vinegar	Window cleaner

- A) cola, grape juice and vinegar  
 B) cleaning liquid, antacid and window cleaner  
 C) cola, grape juice and vinegar  
 D) they are all acidic
7. The following table gives the colours of an acid-base indicator after it is added to solutions with the pH value ranging from 2 to 12. A few drops of the indicator is added to a highly acidic solution. What will the color of the indicator be?

<b>PH</b>	2	3	4	5	6	7	8	9	10	11	12
<b>Colour</b>	Yellow			Green			Blue	Violet			

- A) yellow  
 B) green  
 C) blue  
 D) violet
8. You want to wash your greasy pots, which substance would you use?  
 A) Something with a pH below 7  
 B) Something with a pH above 7  
 C) Something with a pH of 7  
 D) Its pH is irrelevant
9. Scientific studies show that the number of aquatic species declines when a lake becomes more acidic. The pH of the water in four lakes was measured to determine whether aquatic species are threatened. The table below lists the pH values obtained.

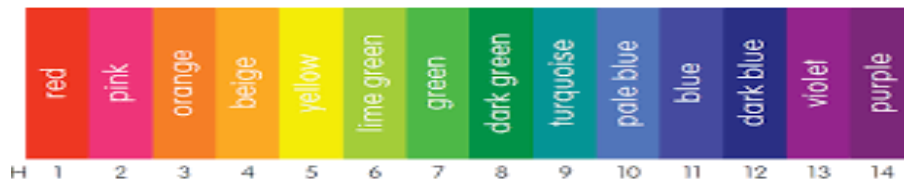
Table I - pH of the lakes examined

Lake	pH
1	4.2
2	6.5
3	7.0
4	7.8

Which of these lakes poses the greatest threat to aquatic species?

- A) Lake 1  
 B) Lake 2  
 C) Lake 3  
 D) Lake 4

10. The optimum pH of pool water is 7.4 since this is the same pH as human eyes and mucous membranes. You test your pool water and see that the indicator paper turns beige. Using the pH colour chart below, which answer is correct?



- A) The pool water is presently acidic, an alkaline solution must be added to the pool water until the indicator paper turns green.
- B) The pool water is presently acidic, an acidic solution must be added to the pool water until the indicator paper turns green.
- C) The pool water is presently alkaline, an alkaline solution must be added to the pool water until the indicator paper turns green.
- D) The pool water is presently acidic, an alkaline solution must be added to the pool water until the indicator paper turns pink.

11. Table 1 below gives the colours of two acid base indicators after they are added to solutions with different pH values.

Table 1 - COLOURS OF INDICATOR X AND INDICATOR Y AT DIFFERENT PH VALUES

Indicator \ pH	2	3	4	5	6	7	8	9	10	11	12
X	yellow			green		blue					
Y	blue		violet		red						

Table II below gives the colours of the two indicators after they were added to four solutions with different pH values.

Table II - COLOURS OF INDICATOR X AND INDICATOR Y

Solution	Indicator X	Indicator Y
1	yellow	blue
2	yellow	violet
3	green	red
4	blue	red

Which of these 4 solutions can be used to neutralize a solution with a pH of 3.5?

- A) Solution 1
- B) Solution 2
- C) Solution 3
- D) Solution 4

12. The following table gives the pH value of four liquids. Which liquid is strongly acidic?

Liquid	Tap water	Lemon juice	Human blood	Liquid bleach
pH	6.8	2.2	7.3	11

- A) Tap water
- B) Lemon juice
- C) Human blood
- D) Liquid bleach