

Name: _____ Period: _____ Date: _____

Indicators Assignment – Student Edition

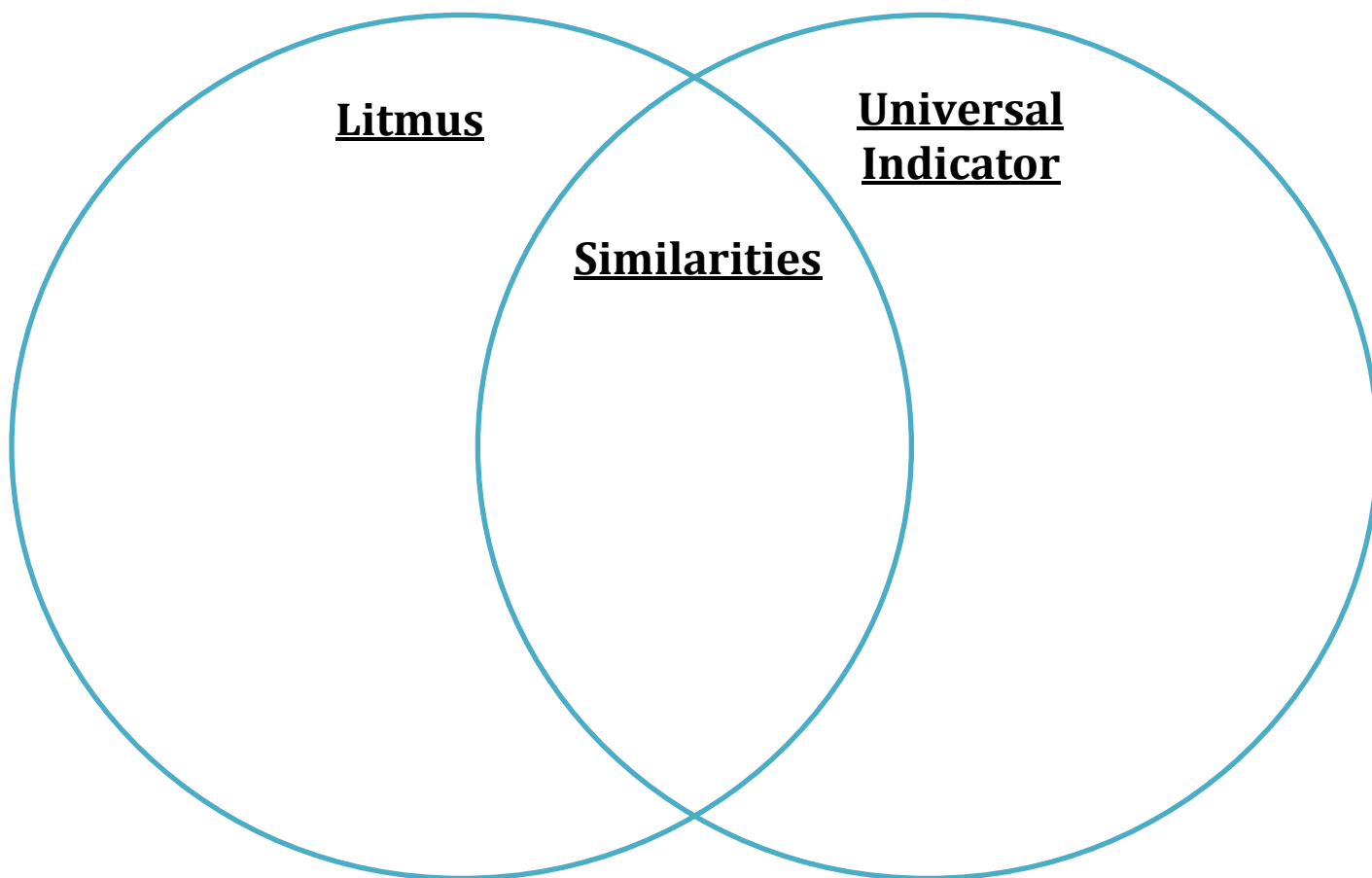
I. Fill in the gaps

Litmus indicator determines whether a solution is _____ or _____. Red litmus paper stays _____ in acidic solutions and turns _____ in alkaline solutions. Blue litmus paper does the opposite and remains blue in _____ solutions and changes to red in _____ solutions.

Universal indicator shows us how _____ acidic or alkaline a solution is. This measurement relates to the _____ where strong acids turn _____, weak acids turn yellow or _____. Solutions which are neutral turn green while _____ bases turn dark green. Solutions which are strongly alkaline will turn dark _____ or _____.

II. Comparing Indicators

Complete the Venn diagram to compare the two indicators - litmus and universal indicator.



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III. Interpreting Information:

Use the indicator chart below to answer the questions which follow

| Indicator | Color when solution is acidic | | | | | Color when solution is neutral | | | | | Color when solution is basic | | | | |
|---------------------|-------------------------------|---|---|---|---|--------------------------------|---|---|---|---|------------------------------|----|----|----|----|
| Bromothymol blue | | | | | | | | | | | | | | | |
| Litmus | | | | | | | | | | | | | | | |
| Methyl orange | | | | | | | | | | | | | | | |
| Phenolphthalein | | | | | | | | | | | | | | | |
| Phenol red | | | | | | | | | | | | | | | |
| Universal indicator | | | | | | | | | | | | | | | |
| pH | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |

Questions:

1. What color is phenol red in a basic solution?

2. What color is litmus when placed in vinegar?

3. What color is litmus when placed in ammonia solution?

4. What color would you expect methyl orange to turn in tap water?

5. What color would you expect methyl orange to be in a solution with a pH of 2?

6. What color would a solution with a pH of 9 be in phenolphthalein indicator?

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7. Dishwashing liquid has a pH of 12. What color would you expect it to turn in phenol red indicator?

8. A student added some phenolphthalein to a solution, and it remained colorless. He then added bromothymol blue and it turned yellow. Is the solution acid, base or neutral? Justify your answer.

9. Universal indicator was added to hydrochloric acid, which has a pH of 1. Sodium hydroxide was then added to neutralize the pH. How would the colors change after the two chemicals were added?

10. Water containing bromothymol blue turns yellow when carbon dioxide is bubbled into it. Suggest why this happens.

11. A student placed blue litmus into an unknown solution and observed no color change. When she added bromothymol blue indicator it remained blue. What can you infer from these results?

12. Which indicator is the most useful for giving an accurate pH reading? Justify your choice.
