

Acid and Base Testing 1 - Micro

Task Information

- Grade:** 8th Grade
- Content:** Block H (The Chemistry of Matter). Section VI, 1 and 2. page 29 - 30
- Format:** Manipulative
- Purpose:** The student will use indicators to identify an acid and a base.
- Skills:**
Primary; Interpreting data, recording data
Secondary; observing
- Time:** 10 - 15 minutes

Materials:

- | | |
|---|------------------------------------|
| • solution A : water | • disposable pipettes |
| • solution B: citric Acid (Fruit Fresh) | • plastic reaction plates |
| • solution C: Lime water, Ca(OH) ₂ | OR |
| • Red litmus paper | transparency paper |
| • Blue litmus paper | • cassette case |
| • phenolphthalein | • waste container |
| • goggles | • small plastic cup |
| • paper towels | • permanent fine line black marker |
| | • water for cleaning |

Teacher Preparation:

1. **Stock Solution Preparation;**
 - a. Solution A - water
 - b. Solution B - acid solution - dilute citric acid (ex.: Fruit FreshTM dissolved in water)
 - c. Solution C - base solution - dilute lime water, Ca(OH)₂
2. **Materials Preparation:**
 - a. Label disposable pipettes "A", "B", "C", and "Phenolphthalein".
 - b. Pour individual stock solutions in small plastic cups. To fill pipettes, place a handful of pipettes into the solutions (tips down), and squeeze bulbs simultaneously. Capillarity will keep solutions in the pipettes without sealing.
 - c. For best results, fill phenolphthalein pipettes just prior to the activity.
 - d. Pipettes will fit inside of the cassette case with tips up for easy storage and handling. Styrofoam can be used as spacers between pipettes
 - e. Pipette Source; Specialty Transfer Pipettes (1 ml, 43 drops/ml)
 - f. For best results, keep litmus paper in closed containers.
 - g. Use the permanent marker or a copy machine to transfer the attached template onto the transparency. Use the smooth side of the transparency to avoid contamination. Discard after use.
 - h. Alternative: purchase reaction plates (24 wells). Use flat sides of both lids and bottoms of reaction plates. Wash between uses.

Safety:

Students must wear safety goggles.
 Check MSDS (Materials Safety Data Sheet) for further laboratory precautions.
 Laboratory safety procedures required.

Extensions/Modifications:

- Variations of this task include Acid and Base Testing 2, and 3 with different degrees of structure.
- Acid and Base Testing 1, 2, and, 3 - Micro, with different materials.

Student ID _____
Male or Female (circle one)

Acid & Base Testing 1 - Micro
Scoring Form

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

Question	Circle Point Breakdown	Points Earned
5. Litmus Paper Data Table 1 Blue Litmus Solutions A & C Solution B Red Litmus Solutions A & B Solution C	 0 1 0 1 0 1 0 1	 _____
7. Phenolphthalein Data Table 2 Solutions A & B Solution C	 0 1 0 1	 _____
9. Acidic Solution Solution Named Reason for choice	 0 1 0 1 2	 _____
10. Basic Solution Solution Named Reason for choice	 0 1 0 1 2	 _____

Total Score _____

Highest Possible Score - 12 points

Student ID 6024

Acid & Base Testing 1 - Micro

Male or Female (circle one)

Scoring Form

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

Question	Circle Point Breakdown	Points Earned
5. Litmus Paper Data Table 1 Blue Litmus Solutions A & C Solution B Red Litmus Solutions A & B Solution C	0 1 0 1 0 1 0 1	 <u>0</u>
7. Phenolphthalein Data Table 2 Solutions A & B Solution C	0 1 0 1	 <u>0</u>
9. Acidic Solution Solution Named Reason for choice	0 1 0 1 2	 <u>0</u>
10. Basic Solution Solution Named Reason for choice	0 1 0 1 2	 <u>0</u>

Total Score 0

Highest Possible Score - 12 points

Acid and Base Testing 1 - Micro

#1

Task: At this station, you will experiment to determine which of three solutions is acidic and which is basic.

GS-24

MATERIALS:

disposable pipettes A - C
chem plate marked A - C (3 rows)
disposable pipette with phenolphthalein
blue litmus paper
red litmus paper

safety goggles
waste cup
paper towels
cassette case

BACKGROUND:

Phenolphthalein turns pink in a basic solution.
Blue litmus paper turns red (pink) when dipped in an acidic solution.
Red litmus paper turns blue (purple) when dipped in a basic solution.

DIRECTIONS:

1. Put your safety goggles on.
2. Place one drop of each solution on the circle with the same letter in each of the three rows.
3. Dip the end of a blue litmus paper into each of the three solutions in row 1 and lay them on the plate.
4. Immediately record the **COLOR** of the litmus paper on the data table.
5. Repeat steps 2-4 using the red litmus paper in row 2 and lay them on the table.

Indicator	Solution A	Solution B	Solution C
Blue Litmus	BASE	Acid	Acid
Red Litmus	BASE	BASE	BASE
lecl	BASE BASE	ACID	ACID
Dip phenolphthalein	A	B	C
cloudy	cloudy	cloudy	cloudy

undick

Please Continue on the Next Page

6. Add one drop of phenolphthalein to each of the three solutions. in row 3.
7. Record the **COLOR** of the phenolphthalein on the data table below.

Indicator	Solution A	Solution B	Solution C
Phenolphthalein	cloudy	Acid	cloudy

8. Blot the chem plate with a paper towel. Throw any garbage into the waste cup.
9. Using the data you have collected and the background information, which solution is acidic?

A, B, & C

In the space below, explain the reason for your answer.

when I put the litmus paper in those solutions they turned to acid colors.

10. Using the data you have collected and the background information, which solution is basic?

A

In the space below, explain the reason for your answer.

when I put the litmus paper in that solution they turned base colors

Acid and Base Testing 1 - Micro

Task: At this station, you will experiment to determine which of three solutions is acidic and which is basic.

GS-19

MATERIALS:

- disposable pipettes A - C
- chem plate marked A - C (3 rows)
- disposable pipette with phenolphthalein
- blue litmus paper
- red litmus paper

- safety goggles
- waste cup
- paper towels
- cassette case

BACKGROUND:

Phenolphthalein turns pink in a basic solution.
Blue litmus paper turns red (pink) when dipped in an acidic solution.
Red litmus paper turns blue (purple) when dipped in a basic solution.

DIRECTIONS:

- Put your safety goggles on.
- Place one drop of each solution on the circle with the same letter in each of the three rows.
- Dip the end of a blue litmus paper into each of the three solutions in row 1 and lay them on the plate.
- Immediately record the **COLOR** of the litmus paper on the data table.
- Repeat steps 2-4 using the red litmus paper in row 2 and lay them on the table.

Indicator	Solution A	Solution B	Solution C
Blue Litmus	same	pink	pink
Red Litmus	pink	pink	pink

Please Continue on the Next Page

- o Add one drop of phenolphthalein to each of the three solutions. in row 3.
- 7. Record the COLOR of the phenolphthalein on the data table below.

Indicator	Solution A	Solution B	Solution C
Phenolphthalein	cloudy	light cloudiness	cloudy

- 8. Blot the chem plate with a paper towel. Throw any garbage into the waste cup.
- 9. Using the data you have collected and the background information, which solution is acidic?

Solution B and C

In the space below, explain the reason for your answer.

Because Solution B when dipped with blue litmus paper and red litmus paper it turned pink. but when mixed with Phenolphthalein it was lightly clouded. and didn't get no results of a acid or basic.

- 10. Using the data you have collected and the background information, which solution is basic?

none

In the space below, explain the reason for your answer.

because none of the solutions turned ~~red~~ purple with both pink and blue litmus papers.

Student ID GS-17

Acid & Base Testing 1 - Micro

#3

Male or Female (circle one)

Scoring Form

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

Question	Circle Point Breakdown	Points Earned
5. Litmus Paper Data Table 1 Blue Litmus Solutions A & C Solution B Red Litmus Solutions A & B Solution C	0 (1) 0 (1) 0 (1) (0) 1	 <u>3</u>
7. Phenolphthalein Data Table 2 Solutions A & B Solution C	0 (1) (0) 1	 <u>1</u>
9. Acidic Solution Solution Named Reason for choice	0 (1) 0 1 (2)	 <u>3</u>
10. Basic Solution Solution Named Reason for choice	0 (1) 0 1 (2)	 <u>3</u>

Total Score 10

Highest Possible Score - 12 points

Acid and Base Testing 1 - Micro

Task: At this station, you will experiment to determine which of three solutions is acidic and which is basic.

MATERIALS:

disposable pipettes A - C
chem plate marked A - C (3 rows)
disposable pipette with phenolphthalein
blue litmus paper
red litmus paper

safety goggles
waste cup
paper towels
cassette case

GS-17

BACKGROUND:

Phenolphthalein turns pink in a basic solution.

Blue litmus paper turns red (pink) when dipped in an acidic solution.

Red litmus paper turns blue (purple) when dipped in a basic solution.

DIRECTIONS:

1. Put your safety goggles on.
2. Place one drop of each solution on the circle with the same letter in each of the three rows.
3. Dip the end of a blue litmus paper into each of the three solutions in row 1 and lay them on the plate.
4. Immediately record the **COLOR** of the litmus paper on the data table.
5. Repeat steps 2-4 using the red litmus paper in row 2 and lay them on the table.

Indicator	Solution A	Solution B	Solution C
Blue Litmus	blue	red	blue
Red Litmus	red	red	red

Please Continue on the Next Page

6. Add one drop of phenolphthalein to each of the three solutions. In row 9.
7. Record the COLOR of the phenolphthalein on the data table below.

Indicator	Solution A	Solution B	Solution C
Phenolphthalein	white	white	white

8. Blot the chem plate with a paper towel. Throw any garbage into the waste cup.
9. Using the data you have collected and the background information, which solution is acidic?

Solution B

In the space below, explain the reason for your answer.

The solution changed the litmus (blue) paper.

10. Using the data you have collected and the background information, which solution is basic?

I didn't get any results to show the answer.

In the space below, explain the reason for your answer.

The red litmus paper didn't change blue.