



Unbox Science Worksheet

Chapter 2: Acids, Bases, and Salts

PART 2: NATURAL INDICATORS AROUND US

Name: _____

Date: _____

Grade: 7

A. Multiple Choice Questions

1. Turmeric paste turns which colour in a basic solution?

- ☐ Yellow ☒ Red
☐ Green ☐ Blue

3. China rose indicator turns acidic solutions into:

- ☒ Dark pink (magenta) ☐ Green
☐ Blue ☐ Yellow

5. Which plant's flowers act as natural indicators by changing colour based on soil pH?

- ☐ Sunflower ☒ Hydrangea
☐ Lotus ☐ Marigold

7. Purple cabbage juice is an example of:

- ☒ A natural indicator ☐ A strong acid
☐ A strong base ☐ A synthetic indicator

2. Which of these is a natural indicator?

- ☐ Phenolphthalein ☐ Litmus
☐ China rose ☒ Both Litmus and China rose

4. What colour will China rose indicator turn when mixed with baking soda solution?

- ☐ Magenta ☐ Red
☒ Green ☐ Orange

6. When soap is rubbed on a turmeric stain, the stain becomes:

- ☐ Invisible ☐ Yellow
☒ Red ☐ Blue

8. If you spray a basic liquid on paper written with turmeric, what happens?

- ☐ The letters disappear ☒ The letters turn red
☐ The paper dissolves ☐ The letters turn green

B. Fill in the Blanks

1. Indicators that are found in nature are called natural indicators.
2. Turmeric remains the same in acidic solutions.
3. Hydrangea flowers can be either pink or blue depending on the soil.
4. China rose indicator turns green in a basic solution.
5. Phenolphthalein is an example of a synthetic indicator made in laboratories.

C. True or False

1. Turmeric changes to red in acidic solutions. (True / False): F
2. China rose is a natural indicator. (True / False): T
3. Hydrangea flowers are always pink. (True / False): F
4. Washing a turmeric-stained shirt with soap turns the stain red because soap is acidic. (True / False): F
5. Red cabbage extract can be used to test for acids and bases. (True / False): T

D. Give Reasons

1. Why does a turmeric stain on a white shirt turn red when washed with soap?

Solution
Soap is a basic and if you put a basic like soap on a turmeric stain it will turn red.

2. Why does the same red turmeric stain turn yellow again after being washed with plenty of water?

Water is a neutral so if you wash the stain with a lot of water, it will turn yellow again.

3. Why are Hydrangea flowers useful to gardeners and scientists?

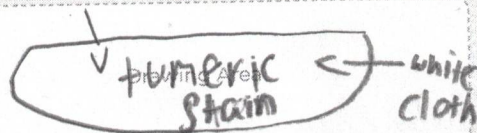
Hydrangeas are useful to gardeners and scientists because their flower colors can help show the acidity of the soil.

4. Why is China rose considered a natural indicator?

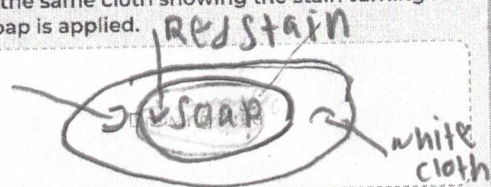
China rose is considered a natural indicator because it comes from a plant and changes color in acids and bases.

E. Scientific Illustration

1. Draw a white cloth with a yellow turmeric stain.



2. Draw the same cloth showing the stain turning red when soap is applied.



F. Read & Respond

Hydrangea is a plant that grows in cooler climates, like the Himalayan region. It is unique because its flower colour acts as a natural soil indicator. If the soil is acidic, the Hydrangea flowers bloom blue. If the soil is basic, the flowers bloom pink. Gardeners often add specific chemicals to the soil just to change the colour of the flowers!

1. Where does the Hydrangea plant commonly grow in India?

The hydrangea plant is commonly grown in the Himalayan Region.

2. What colour are Hydrangea flowers in acidic soil?

Hydrangea flowers are blue in acidic soil.

3. How can a gardener change the colour of these flowers?

The gardener can change the color of these flowers by adding different types of chemicals in the soil.

G. Case Studies

Case 1: For a science fair, a student writes a "secret message" on paper using turmeric paste. They spray a liquid on the paper, and the message magically appears in red. What kind of liquid was sprayed?

Soap was sprayed because when it turns red it means a basic solution was sprayed and soap is a basic solution.

Case 2: A chef is preparing a dish with turmeric and accidentally squeezes lemon juice on it. Will the turmeric change colour? Why or why not?

The color of the turmeric will not change because lemon juice is an acid and an acid won't change color.

H. Essay Question (100+ Words)

Describe what natural indicators are and explain how you can prepare a China rose indicator at home. Include the colour changes it shows when tested with acidic and basic substances.

Natural indicators are substances from nature that change color in acidic and basic solution and to prepare the indicator you will pick up the rose petals (or hibiscus) then put them in to warm water till the water is colored, after that strain the rose petals or (hibiscus) then move some

of the rose petal water into another glass, then in that glass add an acid like lemon juice, and in the glass you poured the rose water from add a basic solution like baking soda.

Acid color = dark pink or magenta (from the lemon juice)

basic solution color = green (from baking soda)