

Grade 7 Natural Science Worksheet

Assessment Task: Earth Science: soil

Soil pH

Indira's grandmother loved blue and purple flowers. Indira bought a beautiful pot of blue hydrangeas for her grandmother on her 80th birthday. Her grandmother was overjoyed at the thoughtful gift. She put it on her patio and both she and Indira got much pleasure from the pretty pot plant. When the winter came, the plant stopped flowering.

In spring, Indira excitedly waited for the new buds to open. Imagine her disappointment when the buds did open – and the flowers were pink! Indira was very annoyed and wanted to take the plant back to the nursery she bought it from to complain that they had tricked her. But Indira's grandmother just laughed and began to throw her old lemon tea over the soil in her hydrangea pot. Occasionally, Indira saw her grandmother emptying the liquid from pickle jars into the soil.

Indira thought her grandmother had gone crazy! But her grandmother just said, "Wait until next year!" Well, the following year, when the hydrangea bush began to flower, Indira's grandmother took Indira out onto her patio and told her she had a big surprise for her – she showed her the hydrangea – it was covered in blue flowers! Indira was ecstatic, but looked carefully at her grandmother and asked, "Are you a witch, Granny?"

Is Indira's grandmother a witch? Explain, scientifically, what had happened to the hydrangea.

[20 marks]

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Suggested Solutions

Possible marks	Solution
20	<p>Indira's grandmother is not a witch! She just knows about hydrangeas! Hydrangeas are plants that are called 'soil indicators'. ✓✓ Hydrangea plants are indicators of the pH of the soil. ✓✓ An acidic soil will produce blue flowers ✓✓ and a neutral to slightly alkaline soil will produce pink flowers. ✓✓ The soil had originally been treated by the nursery to make it acidic. ✓✓ When Indira bought the plant, the flowers were thus blue. By the time the next season had arrived, the soil had become less acidic, and the plant produced pink flowers. ✓✓ Grandmother began to add acidic substances to the soil – lemon, tea, vinegar – all of which helped to lower the pH of the soil. ✓✓ The next season, the plant produced blue flowers again! ✓✓</p> <p>Award ✓✓ for logical flow of paragraph.</p>