

Answers for Student Inquiry Graphic Story

Antioxidant Fare at the Science Fair

1. What is Jan's first testable question?

Is there a color change when brown iodine solution is added to blueberry juice?

2. What is Jan's second testable question?

Is there a color change when brown iodine solution is added to orange juice?

3. What is Jan's third testable question?

When brown iodine solution is added to blueberry juice, does the brown iodine color disappear?

4. What is Jan's fourth testable question?

If blueberry juice is added to brown iodine solution, is the iodine color change more visible?

5. What can Jan claim after the four tests she did with juice and brown iodine solution?

She can claim that the brown color of iodine disappears in blueberry and orange juice, and that the color change is easier to see if the juice is added to the iodine.

6. How does each result from a testable question help Jan understand how blueberry juice reacts with brown iodine solution?

After the first test, Jan wasn't sure if there was a color change with iodine solution in blueberry juice. After the second test, Jan wasn't sure if there was a color change with iodine solution in orange juice. After the third test, Jan was sure she saw the iodine lose its brown color, but the change was hard to see. After the fourth test, Jan could clearly see the iodine lose its brown color.

7. Even though Jan had done a lot of reading and four tests on juice and iodine solution, her teacher said she did not have a science fair project question. Do you agree with Jan's teacher? Why or Why not?

Jan did conduct multiple science tests that answered her testable questions. But, Jan's teacher was right that these testable questions were not science fair project questions. Answering a good science fair question requires investigating variables by collecting and analyzing data.

8. What claim can Jan make about which part of the blueberry contains more antioxidants?

Jan can claim that the skins of the blueberry contain more antioxidants than the skin and pulp combined.

9. What evidence and reasoning supports this claim?

The juice of skins alone causes the brown iodine color to disappear with fewer drops than the juice of the skin and pulp combined. This means that the amount of antioxidant in each drop of

the juice from the skins was greater than in each drop of the pulp and skin combined. However, Jan does not know whether the pulp alone contains antioxidants.

10. Do you agree with Jan's description of oxidation, why or why not?

Jan's thinking about oxidation and antioxidants is correct. Oxidation is defined as the loss of one or more electrons from an element or molecule. An oxidant causes oxidation, or the loss of electrons. When the antioxidant is present in the body, the antioxidant is oxidized instead of other biochemical molecules. So, those biochemical molecules are protected from oxidation that may have caused them harm and negatively affected cell function.

11. Which of the friends did the best job of explaining Jan's science fair project? Give reasons to support your answer.

Tonya's answer is not correct, because iodine is not an antioxidant and also, the body does not need to be protected from antioxidants.

Bob's answer has some correct ideas. Vitamin C is an antioxidant, and blueberries are known to contain vitamin C. However, Jan's experiment did not specifically demonstrate that the antioxidant in blueberries is vitamin C.

Karri had the best answer. Jan did show that blueberries contain antioxidants because the iodine color disappeared. Jan showed that the skins were a better source of antioxidants than the skin and pulp combined because less juice from skins was needed to make the brown color disappear.