

Grade 9 Natural Sciences Worksheet

Yeast is a living organism

You know that yeast makes bread rise. But did you know that yeast is a living organism?



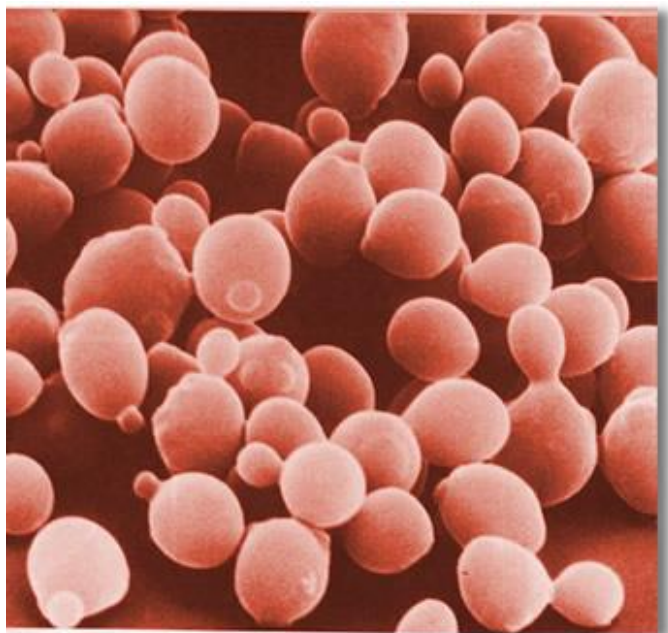
You can buy instant yeast in little packets from a grocery store. The yeast looks like little brown grains. It certainly doesn't look alive, but it is!

This assessment task will test your ability to prove scientifically that the yeast is alive.

(www.glyn.dk)

Instructions

- ⊗ Get a clean Petri dish or a small flat glass dish.
- ⊗ Spread 10 -12 grains of yeast across your plate.
- ⊗ Take some warm tap water and stir in some sugar.
- ⊗ Add several drops of this water mixture to the grains of yeast. You have now made a yeast culture.
- ⊗ Keep in a warm place – such as on a sunny window sill.
- ⊗ Observe every ten minutes and record your observations. You can throw out your yeast culture after one day.



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1. If you have access to a microscope, your teacher will help you to make a slide of the culture to view under the microscope. Make drawings of what you see. If you do not have access to a microscope, use books or the internet to research what yeast cells look like. This picture will also help you. (Look at the rubric to see how you will be assessed.)

[20 marks]

2. What did your culture smell like? [1]
3. What did your culture look like? [2]
4. What did your culture taste like? [2]
5. What do you think the gas bubbles were made of? Give reasons. [3]
6. Based on your investigation, do you think the yeast was alive? [7]

Rubric for Assessing a Diagram

Criteria	2 marks	1 mark	0
Does drawing have a heading?	Yes		No
Has drawing been made with a sharp pencil?	Yes		No
Are drawing lines clear and bold, not sketchy and feathery?	Yes	Mostly	No
Are label lines drawn with a ruler and parallel?	Yes		No
Is the drawing large enough?	Yes	Not really	No
Is the drawing neat?	Yes	Fairly neat	No
Is this drawing a good representative of what it is meant to depict?	Yes x 4 = 8	In most ways x 4 = 4	No
	Total marks:		20

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How well are you doing?

The level indicator below will show you what you need to achieve in order to attain each level.

Level 4	Level 3	Level 2	Level 1
Learners are able to draw competent and accurate diagrams of microscopic organisms; they are able to make precise observations from a practical scenario; they are able to relate theory learned to the practical context.	Learners are able to draw good diagrams of microscopic organisms; they are able to make acceptable observations from a practical scenario; they are able to relate most of the theory learned to the practical context.	Learners are able to draw good diagrams of microscopic organisms; they are able to make acceptable observations from a practical scenario; they are able to relate most of the theory learned to the practical context.	Learners are unable to draw diagrams of microscopic organisms; they are unable to make acceptable observations from a practical scenario; they are unable to relate the theory learned to the practical context.

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Suggested Solutions

Question number	Possible marks	Solution
1	20 – See rubric A below	If learners do have access to a microscope, then they should be able to see tiny ‘bulbs’ or individual cells of yeast under a high power. If the yeast sample is fresh, they should see budding of the yeast too.
2	1	The yeast has a typical smell like bread or alcohol.
3	2	The culture begins to bubble and grow.
4	2	The culture has a sweet alcohol taste.
5	3	The bubbles of gas are carbon dioxide. Learners may need some prompting to give reasons. The yeast is undergoing respiration. It is breaking down the sugar to produce energy for growth and reproduction. Alcohol and carbon dioxide are the waste products.
6	7	Learners should be able to refer to the characteristics of life and conclude that their yeast culture is alive. (Growth, reproduction, cells, respiration, nutrition, excretion, movement were all demonstrated by the yeast under the microscope and in the culture. To demonstrate irritability, introduce some vinegar or salt to the culture and the yeast cells will die.)

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