

Grade 8 Natural Science Worksheet

What is science?

Part One: Discuss statements with a partner

Read the following statements and then discuss each statement with your partner. Tick the relevant column next to each statement and say why you agree or disagree.

Statements	Agree	Disagree
Statement 1: Science is a collection of facts that scientists have proven to be true over the years.		
Statement 2: Science is what scientists do in order to develop a whole lot of knowledge.		
Statement 3: “Doing science” involves doing experiments and investigations in order to discover things about our world and ourselves.		
Statement 4: The processes of science produce ideas, information, concepts, rules and theories which help us to explain the world in which we live.		
Statement 5: Science is always the same. It never changes.		
Statement 6: Science can only be done by specially trained and highly educated scientists in a laboratory.		

[24 marks]

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Part Two: Your own opinion about science

1. Write down what YOU think science is. [4]
2. Science is tentative. What do you think this statement means? [4]
3. Aristotle was a Greek scientist and philosopher who lived from 384 to 322 B.C. (A philosopher is a person who studies ideas and ways of thinking.) Aristotle proposed a number of scientific theories, based on what was understood about the world all those thousands of years ago. One of Aristotle's scientific theories was that the earth was the centre of the universe and all the planets and the sun revolved around the earth. As humans improved technology and invented stronger and stronger telescopes, their understanding of the universe changed.

Aristotle suggested many other scientific ideas which were accepted as scientific fact thousands of years ago. Have a look at these Aristotlean ideas and say which have changed today and, if you can, suggest how they have changed.

- a. The world is made up of a fixed number of people.
- b. Each individual human grows according to a pattern. It is the same for different types of animals or plants.
- c. Life forms do not change over time.
- d. Fire moves upwards towards its natural resting place in heaven.

[8]

[16 marks]

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Suggested Solutions

Question number	Possible marks	Solution		
1	24: 2 marks per statement	Award marks not simply for agreeing or disagreeing, but for substantiation of answer. Learners’ answers may differ, but some general responses are given below:		
		<table><tr><td>Statement 1: Science is a collection of facts that scientists have proven to be true over the years.</td><td>Yes, this is true – but it is too narrow a definition of science. Science also consists of ideas in the process of being verified (proven true or disproved). Science also consists of skills, methods and procedures.</td></tr></table>	Statement 1: Science is a collection of facts that scientists have proven to be true over the years.	Yes, this is true – but it is too narrow a definition of science. Science also consists of ideas in the process of being verified (proven true or disproved). Science also consists of skills, methods and procedures.
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		<table><tr><td>Statement 2: Science is what scientists do in order to develop a whole lot of knowledge.</td><td>Science is what scientists do – the scientific method of investigation is an important part of what science is.</td></tr></table>	Statement 2: Science is what scientists do in order to develop a whole lot of knowledge.	Science is what scientists do – the scientific method of investigation is an important part of what science is.
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		<table><tr><td>Statement 3: “Doing science” involves doing experiments and investigations in order to discover things about our world and ourselves.</td><td>Doing science definitely involves experimenting and investigating.</td></tr></table>	Statement 3: “Doing science” involves doing experiments and investigations in order to discover things about our world and ourselves.	Doing science definitely involves experimenting and investigating.
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<table><tr><td>Statement 4: The processes of science produce ideas, information, concepts, rules and theories which help us to explain the world in which we live.</td><td>Science helps us to understand the world around us. We organise the facts, ideas and processes into theories and explanations which help us make sense of the world and of ourselves.</td></tr></table>	Statement 4: The processes of science produce ideas, information, concepts, rules and theories which help us to explain the world in which we live.	Science helps us to understand the world around us. We organise the facts, ideas and processes into theories and explanations which help us make sense of the world and of ourselves.		
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<table><tr><td>Statement 5: Science is always the same. It never changes.</td><td>This point is not true. Science changes as we discover more and more. As technology improves and tools make our investigations more precise, sometimes wrong ideas are thrown out and new ideas take their place. We say that science is tentative – or changing.</td></tr></table>	Statement 5: Science is always the same. It never changes.	This point is not true. Science changes as we discover more and more. As technology improves and tools make our investigations more precise, sometimes wrong ideas are thrown out and new ideas take their place. We say that science is tentative – or changing.		
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		<p>Statement 6: Science can only be done by specially trained and highly educated scientists in a laboratory.</p>	<p>This statement is not true. Although many scientists are indeed highly trained, science can be done by anyone who asks questions and tries to find answers for the questions in using the scientific method.</p>
2.1 and 2.2	8	Once again, award marks for the way the learners substantiate their answers. Learners need to recognise that science and scientific knowledge changes with advances in technology.	
2.3	8	<p>1. The world is made up of a fixed number of people. This idea has been proven incorrect. We now know that the number of people on earth (the human population) has grown rapidly over the last few hundred years. Over-population is a very big problem in many countries.</p> <p>2. Each individual human grows according to a pattern. It is the same for different types of animals or plants. This idea is still true today. All humans go through the same stages in their development from baby, to toddler, to young child, to adolescent, to adult and then through the aging process. This aging process is controlled by the human's genes and chemicals in their bodies. Animals and plants also go through a pattern of development that is unique to every kind (species) of organism.</p> <p>3. Life forms do not change over time. This idea has been proved false. Living organisms change over time. This process is called evolution.</p> <p>4. Fire moves upwards towards its natural resting place in heaven. Fire does indeed tend to burn upwards, but not because it is joining other fire in the sky. It moves upwards because hot air rises.</p>	