

2015 NCEA Assessment Report

Earth and Space Science Level 2 91191, 91192, 91192

Part A: Commentary

Candidates who created and annotated diagrams to support their answers showed a deeper understanding of the questions than those who did not.

Part B: Report on standards

1. Assessment Report for 91191: Demonstrate understanding of the causes of extreme Earth events in New Zealand

Achieved	<p>Candidates who were assessed as Achieved commonly:</p> <ul style="list-style-type: none"> used diagrams to reinforce ideas understood the key language of the topics such as stratovolcano, submarine landslide and transform fault understood the different types and locations of plate boundaries in New Zealand described tsunamis, volcanoes and earthquakes in basic terms.
Not Achieved	<p>Candidates who were assessed as Not Achieved commonly:</p> <ul style="list-style-type: none"> displayed a lack of understanding of the language required by the standard such as transform fault and magma compared to lava did not define or accurately use key terms such as landslide in their answers provided rote learned answers that were not relevant to the question being asked.
Achieved with Merit	<p>Candidates who were assessed as Achieved with Merit commonly:</p> <ul style="list-style-type: none"> annotated diagrams and used the annotations to support their answers linked concepts to the question being asked used the bullet points in the question to fully answer the question provided definitions for key words and then used them accurately in the context of the question linked concepts in their answers such as magma formation to type of volcano, depth of focus to amount of damage in an earthquake, and submarine landslides and plate movement to formation of a tsunami.
Achieved with Excellence	<p>Candidates who were assessed as Achieved with Excellence commonly:</p> <ul style="list-style-type: none"> integrated their well labelled diagrams into their answers expanded upon key ideas in a question compared and contrasted ideas provided correct explanations that linked back to the question context.
Standard specific comments	<p>This standard requires candidates to have an understanding of the locations, orientation and types of plate boundaries within New Zealand.</p> <p>Candidates would benefit from an understanding of the specific terminology of this standard and an understanding of how the different types of magma are formed and how they relate to the different types of volcanoes in New Zealand.</p>

2. Assessment Report for 91192: Demonstrate understanding of stars and planetary systems

Achieved	<p>Candidates who were assessed as Achieved commonly:</p> <ul style="list-style-type: none"> described general star characteristics from the HR Diagram and inferred the size of the stars; some were linking large size to increased luminosity / brightness. gave the material of the inner and outer planets described the key stages of the life cycle of a large mass star.
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Not Achieved	<p>Candidates who were assessed as Not Achieved commonly:</p> <ul style="list-style-type: none"> • could not describe characteristics of stars from the HR diagram • referred only to either inner or outer planets • only described part of the life cycle of a large mass star.
Achieved with Merit	<p>Candidates who were assessed as Achieved with Merit commonly:</p> <ul style="list-style-type: none"> • linked increased / decreased luminosity to the surface area of one OR both stars • explained how inner and / or outer planets formed in reference to two clear points (often material and temperature) • were able to discuss the life cycle of a massive star with explanations of two stages with regards to fuel use, gravity and mass.
Achieved with Excellence	<p>Candidates who were assessed as Achieved with Excellence commonly:</p> <ul style="list-style-type: none"> • made the clear link between same temperature and different brightness due to different surface areas emitting the same energy • explained the formation of inner and outer planets with reasons with regards to the example, rather than our solar system • explained in detail the birth, life and death of a large mass star that had links to mass, energy changes, gravity and fuel use.
Standard specific comments	<p>This standard requires candidates to be familiar with the characteristics of planetary systems and the stages in the formation of planets and moons. Candidates commonly did not attempt the question that focussed in this area.</p>

3. Assessment Report for 91193: Demonstrate understanding of physical principles related to the Earth System

Achieved	<p>Candidates who were assessed as Achieved commonly:</p> <ul style="list-style-type: none"> • described how heat energy is absorbed at different rates by different materials to form a convection current and / or pressure difference • identified how the atmosphere's temperature would be increased by the increase in levels of carbon dioxide or greenhouse gases. • identified that visible light is made up differing wavelengths with blue being the shortest and most easily scattered by atmospheric particles.
Not Achieved	<p>Candidates who were assessed as Not Achieved commonly:</p> <ul style="list-style-type: none"> • had direction of air flow incorrect from low to high pressure. • stated that carbon dioxide refracts heat radiation • stated that carbon dioxide acts as an insulator by plugging gaps in the Earth's atmosphere to stop heat escaping • stated that visible light, sunlight or ultraviolet light heated the Earth • stated that the Earth's surface is predominantly heated by the core • incorrectly linked albedo to slow heating of water • could not identify blue and red light correctly in terms of their wavelength.
Achieved with Merit	<p>Candidates who were assessed as Achieved with Merit commonly:</p> <ul style="list-style-type: none"> • explained how carbon dioxide acts to control atmospheric temperature by absorption or re-emission of heat / infra red energy • explained how land and water heat at different rates, creating wind • explained the link the between uneven heating of the land and ocean / sea and convection currents in the air above • explained how the shorter wavelengths of visible light are scattered leaving red light to be transmitted through the atmosphere.
Achieved with Excellence	<p>Candidates who were assessed as Achieved with Excellence commonly:</p> <ul style="list-style-type: none"> • explained in detail the link between the Earth's atmospheric temperature and carbon dioxide levels as well as the relationship between carbon dioxide concentrations in the atmosphere and the re-emission of heat onto the Earth's surface • explained in detail how the differing heat capacities on land and water lead to the formation of differing pressure zones and atmospheric convection currents (on shore and off shore breezes) during the day and night • explained in detail the relationship between the scattering of light and the distance the light travels through the atmosphere and space • explained in detail why the morning sky may appear red, through the scattering of

	visible light with the resulting transmitted red light reflected off water particles in clouds.
Standard specific comments	<p>Where candidates are able to use correct scientific vocabulary in their responses they were able to give clearer answers and often achieve higher grades.</p> <p>Diagrams form an important part of candidates' answers in this standard and may be the major component of the candidate response if sufficient full and detailed annotations are provided.</p>