

Assessment Schedule – 2024

Science: Demonstrate understanding of science-related claims in communicated information (91923)

Assessment Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<p><i>Demonstrate understanding of science-related claims in communicated information</i> involves:</p> <ul style="list-style-type: none"> describing the source and intended purpose of the communicated information describing science-related claims in communicated information describing science language or conventions used in the communicated information. 	<p><i>Explain science-related claims in communicated information</i> involves:</p> <ul style="list-style-type: none"> explaining how science language or conventions are used to support science-related claims in the communicated information. 	<p><i>Examine science-related claims in communicated information</i> involves:</p> <ul style="list-style-type: none"> evaluating the use of science language or conventions used to support science-related claims in the communicated information.

Sufficiency Statement

N1	N2	A3	A4	M5	M6	E7	E8
The response does not include enough evidence to show understanding, or is substantially reproduced with little mediation by candidate.	The response is substantially produced by the candidate, but demonstrates little understanding. One part of the required response may be completely missing, or several parts may be weak.	The response shows understanding and describes the science-related claims, although some descriptions may be partial or weak.	The response securely shows understanding and describes the science-related claims.	The response explains the science-related claims, although some parts of explanation may be partial or weak.	The response securely explains the science-related claims.	The response examines the science-related claims, although some parts of discussion may be partial or weak.	The response securely examines the science-related claims.

N0 = No response; no relevant evidence.

Cut Scores

Not Achieved	Achievement	Achievement with Merit	Achievement with Excellence
0–2	3–4	5–6	7–8

Sample Evidence

Resource	Achievement	Achievement with Merit	Achievement with Excellence
<p>ONE Protein</p>	<ul style="list-style-type: none"> • Jeff Nippard is a TikTok creator who posts about fitness. He wants to educate people about how to figure out how much protein they need to consume in order to gain muscle. He says you should eat 1.6 grams of protein for every kilogram of body weight if you want to grow your muscles. He used evidence from a scientific journal to make this claim. • The New Zealand Nutrition Foundation wants to share general information about how protein is needed in our diets. It claims that an average person needs less protein each day than an athlete or gym-goer – they need more protein each day. It provided a table with headings and units to show the data. • The Harvard Medical School publishes academic articles for medical professionals. It says you can have too much protein. It uses these units to talk about protein and your body: gm / kg, grams / day, and the unit kg on its own. • The meta-study is an academic report. It's written to summarise a lot of knowledge about how protein supplements affect muscle mass. The meta-study claims that we need to eat 1.6 grams of protein per kilogram of body weight each day, but eating more than that is not helpful. Using a lot of studies instead of just one is a science convention. 	<ul style="list-style-type: none"> • All of the claims talk about protein using 'grams per kilogram' or g / kg. This unit helps people check what their weight is and how much protein they need to eat based on that weight. • 'Weight' is being used to mean 'mass'. Usually in science, weight means a downward force due to gravity, but here it refers to the common idea about weight being how much of you there is, measured in kilograms. As most people understand weight to mean mass, using weight here won't confuse people. • Two different units for mass (or weight) are being used and sometimes combined in one unit – grams and kilograms. That might be because it is confusing to say kilograms per kilogram or kg / kg. • Harvard Medical School uses gm for gram, but it should be g, which seems odd for a medical journal. • You can't really measure how much muscle you have gained by counting muscles, so instead 'mass gain' or 'muscle gain' are the ideas used to talk about getting more muscle. • The table columns have units like years or grams per day to show amounts or ages. This makes the data easier to understand. • RDI means 'recommended daily intake' and is used on a lot of food ingredients, so is something that most people will already understand, meaning this protein information can be more quickly understood. 	<ul style="list-style-type: none"> • Jeff Nippard doesn't give all the details of the meta-study, just some summaries that are easy to understand. He shortens kilograms to 'kilos', which sounds more casual and talks about protein amounts in grams. He uses the word 'gains' to talk about building more muscle but doesn't explain how gains are measured. His claim about eating 1.6 grams of protein aligns with every other source's advice in the resource, so the claim seems stronger. As a creator on TikTok with a large following, he is probably earning money from posts like this one. It is in his interests to make engaging content to attract viewers, so on the one hand he might just say anything that gets attention, but on the other hand he might want to come across as reliable and honest to avoid being called out by his followers. He uses similar terms around mass and protein as the other sources in this resource.

<p>TWO Ultrasonic pest control</p>	<ul style="list-style-type: none"> • <i>Pestrol</i> is a business that sells an electronic pest repeller. Its information is about how useful a sonic pest repeller is so that we are convinced to buy one. • <i>Pestrol</i> claims it emits ultrasonic sound waves that makes pests flee the area. • <i>Pestrol</i> says it emits 25–65 kHz sound waves and that it disrupts the nervous system of a pest, so they flee. Units like kHz and m² are used. • Louisiana State University mentions a series of studies done to measure which frequencies animals can hear to make a graph that people can use. • It claims some animals can hear sounds beyond human hearing. • It uses the words ‘frequency’ and ‘hear’, and the unit Hz. It has a graph that has a title and labelled x- and y-axes. • <i>Bug King</i> is a pest-control business that gets rid of pests. There is information that says not to get electronic pest control and that it doesn’t work. It uses words like ‘frequency’, ‘electronic’, ‘high frequency’, ‘sound waves’, ‘hear’, ‘eco-friendly’, and ‘ultrasonic’. 	<ul style="list-style-type: none"> • <i>Pestrol</i> says the frequency range of its device is 25–65 kHz, using the hertz unit for frequency, which scientists would understand. It talks about pests’ nervous systems being disrupted by these sound waves so seems to be telling us how the device gets rid of pests. It talks about the sounds being ‘high frequency’, ‘ultrasonic’, and ‘pressure waves’ because most people probably don’t know what these scientific terms actually mean, but assume that the device is good to have. • Louisiana State University has a graph that follows most of the conventions for graphs – a sentence title, labelled x- and y-axes, and evenly spaced numbers on the frequency axis. The regular number spacing helps us to compare the maximum frequency that animals can hear. It has left out the lowest frequencies that the animals can hear so we only have to focus on where the bars end, or where they stop hearing sounds. • <i>Bug King</i> uses a lot of science language but no real science conventions. It wants to convince us not to get an electronic pest device, so tells us how badly they work instead of what they can do well. It talks about studies, which are a science convention, but there is a lot of detail missing for us to check these, so they aren’t useful. 	<ul style="list-style-type: none"> • <i>Pestrol</i> says the ultrasonic frequency range of its device is 25–65 kHz, which is verified as being ultrasonic by the information from the Science Learning Hub (SLH) and Louisiana State University (LSU). It uses hertz to measure the device’s sound frequencies, which is a conventional unit, so the claim sounds more convincing. Because it says it doesn’t have chemicals and is non-toxic, it’s appealing to people who want to live a natural lifestyle. However, it doesn’t explain why a pests’ nervous system would be disrupted by these sound waves while humans and pets would be fine, so that weakens the claim. • LSU used data from six studies over a long period of time so we can assume, but not be certain, that measuring technology got better as the studies went on and that the results are valid. Data gathered from numerous studies lends weight to the claim about frequencies animals can hear up to. The data about humans hearing up to 20 000 Hz is verified by the SLH, so the claim seems stronger. • The main part of <i>Bug King</i>’s claim comes from the bottom two paragraphs about studies that disprove electronic pest control. The studies aren’t named, so we can’t easily verify them, and this weakens the claim. It mentions the US Federal Trade Commission sending letters to businesses, but we don’t know when and where exactly that happened. We can’t check if pest repellents have improved since those letters were sent or how the pest repellents were made because there isn’t enough information. The science words used all seem to be correct and make sense, but because the studies mentioned aren’t conventionally sourced, we can’t check, and the claim is weakened.
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<p>THREE Flat Earth</p>	<ul style="list-style-type: none"> • Mark Sargent claims that the Earth is not a sphere, but in fact flat. As a full-time YouTuber, he makes money from the videos he publishes about the Earth being flat. He wants to convince people that the Earth is flat and not a sphere. He wants people to stop believing NASA and the government when they say the Earth is round. • Mark Sargent talks about the flat Earth using words such as 'stars', 'planets', 'sphere', 'North Pole', and 'space'. • NASA claims that the Earth is a sphere and that satellites orbit around the Earth in space. NASA is a space and aeroplane agency that gets money from the US government and some businesses. • NASA publishes photos and video showing a marble-shaped Earth. It wants to share the research about space with the world and use it to keep exploring space. • NASA uses words like 'orbit', 'mission', 'astronaut', 'globe', 'satellite', and 'North and South Poles', which are all related to space. 	<ul style="list-style-type: none"> • Mark Sargent uses the Gleason's projection map to show the North Pole at the centre of the Earth, which shows the Earth as a flat disc. He uses words from science like 'planet', 'star', 'pole', and 'space' to describe how those things work in a flat Earth model, which is different from how a round Earth model uses those words. • NASA has a lot of evidence that the Earth is a sphere. It has satellites such as the ISS in orbit around the Earth, which you can stream video from showing it travelling around the Earth. This shows that the Earth is a sphere. NASA talks about 'orbits', 'day and night', 'hours and minutes', and 'kilometres per hour', which are words you would use when talking about space. 	<ul style="list-style-type: none"> • Mark Sargent uses a flat map and picture of an ice wall to justify his theory that the Earth is flat, but a drawing doesn't compare to a photograph taken from the Moon of the spherical Earth. He uses words that astronomers would use such as 'space', 'North Pole', 'Sun', and 'planets', but claims these are arranged in a particular way in the flat Earth model. He doesn't have any evidence of the flat Earth being visible from outside of Earth, whereas the globe theory can be observed both historically from the Moon, or today from cameras and tracking on the ISS. NASA claims to have imagery of a round Earth taken from space and talks about orbital speeds and times, poles of Earth, and day and night cycles. While both claims mostly talk about the same things, they do so in different ways. NASA uses photos and video, while Sargent uses models and drawings, which are both conventional forms of sharing information in science.
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