



NAP–SL online
Public demonstration site user guide

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WHAT IS THE NAP – SCIENCE LITERACY ASSESSMENT?

NAP – Science Literacy (NAP–SL) is one of three national sample assessments which are conducted with random samples of Australian students in a rolling three-year cycle. The other two assessments in this suite are NAP Sample Assessment – Civics and Citizenship (NAP–CC) and NAP Sample Assessment – Information and Communication Technology Literacy (NAP–ICTL).

The results from these sample assessments contribute to an understanding of student progress towards the achievement of the Educational Goals for Young Australians specified in the Melbourne Declaration¹.

Previous NAP–SL assessments were conducted in 2003, 2006, 2009, 2012, 2015 and 2018.

What does NAP–SL measure?

NAP–SL measures the science literacy of a sample of students in Australian schools. Before 2018, NAP–SL assessed a sample of Year 6 students only. From 2018 onwards, samples of both Year 6 and Year 10 students will be assessed.

NAP–SL assesses the ability to think scientifically in a world in which science and technology are increasingly shaping children’s lives. Specifically, it assesses students’ ability to apply broad conceptual understandings of science in order to make sense of the world, to understand natural phenomena, and to interpret media reports about scientific issues. It also assesses the ability to ask investigable questions, conduct investigations, collect and interpret data, and make informed decisions.

How is NAP–SL delivered?

Before 2015 the NAP–SL assessment took the form of printed booklets containing both the test questions and space for students to answer them.

In 2015 NAP–SL was delivered online for the first time. This move to online test delivery is part of a general move towards online testing that has been implemented progressively in the National Assessment Program.

Who participates in the NAP–SL assessment?

A stratified random sample of approximately five per cent of the total Australian Year 6 and Year 10 student populations take part in the assessment. Student samples are drawn from government, Catholic and independent schools in all states and territories.

Where can I find out more about NAP–SL?

Further information, including public reports, technical reports and assessment frameworks, is available from the NAP website – www.nap.edu.au.

¹ In December 2019, the Melbourne Declaration on the Educational Goals for Young Australians was superseded by the Alice Springs (Mparntwe) Education Declaration.

STARTING THE TEST

The NAP–SL demonstration test is delivered via the same site as the NAPLAN demonstration tests. As a result, there are initial NAPLAN screens that you will need to click through to access the NAP–SL demonstration test. Clicking through these screens will not be necessary for schools and students who are selected to participate in the main study assessment for NAP–SL.

In NAP assessments, students enter their login details manually to enter a test session. In the demonstration test, however, this information will be entered for the user automatically.

Session code screen

When you start the test, you will be presented with a screen showing how a session code is entered. This code will be automatically generated for the demonstration test.

The screenshot shows a light blue background with the title "NAPLAN Example Test" at the top. Below the title is a paragraph of text: "In NAPLAN online tests, students will be required to enter the session code that is provided to them. A code has been automatically generated for you. Select Next to continue or return to the NAP website to select a different test:". Below the text is a session code displayed as a sequence of grey boxes: G, K, M, a blue hyphen, X, T, a blue hyphen, G, Y, J. At the bottom center is a blue button with the text "Next".

Student code screen

A second screen will then appear for the student to enter an individual student code. Again, this will be generated automatically for the demonstration test.

The screenshot shows a light blue background with the title "NAPLAN Example Test" at the top. Below the title is a paragraph of text: "In NAPLAN tests, students will enter a student code that is provided to them on a paper slip. A code has been automatically generated for you. Select Next to continue:". Below the text is a student code displayed as a sequence of grey boxes: X, M, a blue hyphen, M, K, a blue hyphen, B, W, a blue hyphen, L, X. At the bottom center is a blue button with the text "Next".

Identity confirmation screen

The confirmation screen will then appear. This screen is to help students in a real NAPLAN or NAP assessment check that they have used their own student code and not that of another student.

For the demonstration test this will say 'Example Test Student'. Click 'Yes' to continue.

The screenshot shows a white rectangular box with a light blue border. At the top center, the text "NAP Science Literacy Demonstration" is displayed in a dark grey font. Below this, a smaller line of text reads: "In NAP online tests, students will be presented with their name and select Yes to confirm their identity. Please select Yes to continue:". Underneath, the question "Are You Example Test Student?" is centered. At the bottom, there are two dark blue rectangular buttons with white text: "No" on the left and "Yes" on the right.

Test holding screen

The screenshot shows a white rectangular box with a light blue border. At the top center, the text "NAP Science Literacy Demonstration" is displayed in a dark grey font. Below this, the text "Example Test Student" is centered in a dark grey font. At the bottom, there is a single large blue rectangular button with white text that says "Test".

During an actual NAP assessment, students will wait at this point until the test administrator commences the session. In the demonstration test, however, you do not have to wait - by clicking 'Test' you will be taken immediately to the start of the test.

NAVIGATING THROUGH THE TESTS

The test has several features to help students navigate between questions.

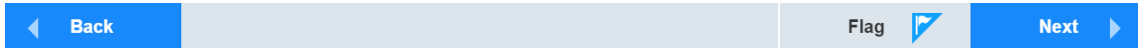
Question number

The number of the question you are currently attempting is displayed at the top of the screen.



Back / Next / Flag

At the bottom of your screen, there are three buttons.



The Back button takes you back to the previous question. The Next button takes you to the next question.

The Flag button lets you flag or highlight a question that you might want to come back to later. To turn on the flag for a question, click on the flag; to turn it off, click on it again.

N.B. In some sections of real NAP Sample or NAPLAN tests, the Flag button may not be available.

Progress summary screen

You can check your progress at any time by clicking the blue grid icon next to the question number.



When the grid icon is clicked the system displays the progress summary screen. Clicking on the icon again at this point will return you to your position in the test.

Progress summary

Show all

13

 Answered

2

 Not answered

0

 Not read

2

 Flagged

Questions

Click a number to go to that question.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

The screen above shows that:

- 13 questions have been answered.
- 2 have not been answered (Questions 7 and 11)

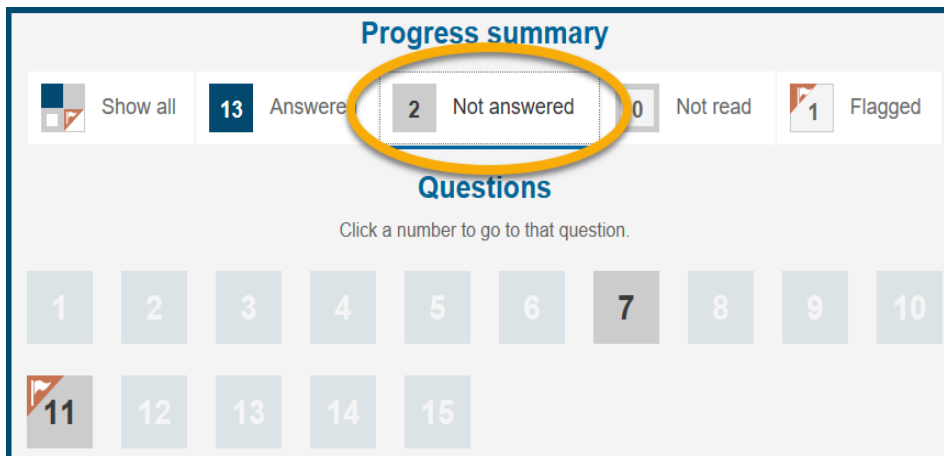
- all questions have been read
- 2 have been flagged to return to later (Questions 6 and 11)

Clicking on a question number in the progress summary screen will take you to that question, provided you have already seen that question. You can't jump ahead by using the progress summary screen.

Filtering the progress summary screen

Clicking on Show All, Answered, Not Answered, Not Read or Flagged will filter the screen to show only those questions.

Here, clicking on 'Not answered' has filtered to show only Questions 7 and 11.



TOOLS IN THE TESTS

The tests offer some useful tools.

Zoom

In the top left hand corner is a zoom icon.



The zoom icon makes the image on the screen larger or smaller. Click on the zoom to choose an option of 150, 200 or 300%. To turn magnification off, click on the same icon and select 100%. When you move to the next question the zoom will automatically reset to 100%. You may need to use the scroll bar as a result of changing the magnification.

Timer

The timer is next to the zoom icon.



This tells you how much time you have remaining to complete the test. You can choose whether to display or hide the timer by clicking on 'Hide time' or on the clock icon which displays when the time is hidden. The timer will always be locked to display in the last five minutes of the test.

The demonstration test is set to allow you 60 minutes to complete the test. As the demonstration test only includes a small sample of test items compared to the actual test – this should be plenty of time. You can take the test as many times as you like.

NAP–SL RESOURCE TEXTS

In NAP–SL you will be required to read short texts in the resource panel. The texts within the resource panels provide context to answering the question. The texts and questions will appear side-by-side.

You can click on the arrow between the text and the question to expand the text. This will show the text alone, without the question.

Question 1 of 1

0:00 / 0:44

Floating plates

Since the early 1600s, scientists have been suggesting that the continents are moving and drifting on Earth's surface.

In the early 1900s, the theory of continental drift attempted to explain why the continents looked as though they would fit together like puzzle pieces.

How the continents were arranged 20 million years ago

Tectonic plates around the Pacific Ocean

With the development of new technologies to collect data, scientists have expanded their thinking regarding the motion of continents. This new data led to the theory of plate tectonics.

Plate tectonics is the theory that Earth's crust is divided into several continental plates that move over the Earth's mantle over many millions of years.

There were several theories in the past about how the continents have moved and formed. The currently accepted theory is plate tectonics.

Which is the best explanation for why scientists accept new theories?

- Scientists do more experiments.
- Scientists discover new evidence.
- Scientists are able to tell more people about their opinions.
- Scientists today are much cleverer than scientists in the past.

You can return to the split-screen view by clicking the arrow again. It is now on the right of the screen

Question 1 of 1

0:00 / 0:44

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How the continents were arranged 20 million years ago

Tectonic plates around the Pacific Ocean

QUESTION TYPES

When you take the test, you will see a range of different test item types. For instance, you may have to click a button to answer a multiple-choice question, drag a word into an answer box, or select a area(s) (hotspot) on a picture. You will find examples of various test item types below. These examples have been drawn from both the Year 6 and the Year 10 demonstration tests on the NAP website.

Multiple-choice

In a multiple-choice item you must select one answer out of several options by clicking one radio button. To change your answer, just click a different radio button.

Producers make their own food using energy from the sun in a process called

- absorption
- digestion
- photosynthesis
- respiration

Multiple choice

In a multiple choices item, you choose all relevant responses. You may be told how many to choose or the item may be non-specific.

The students are thinking about the variables for their investigation. They want to plan a fair test. Select **all** the variables the students should keep the same.

- type of ball used
- how the ball is dropped
- height the ball is dropped from
- surface the ball is dropped onto
- height of the ball bounce

In-line choice

To answer an in-line choice item you must choose the correct answer from several options in a drop-down list. The drop-down list will display when you click on the small blue arrow in the answer box. To change your answer, just display the drop-down list again and click on a different option.

Complete the following sentence about a hard boiled egg.



Cooking an egg by boiling it in water is



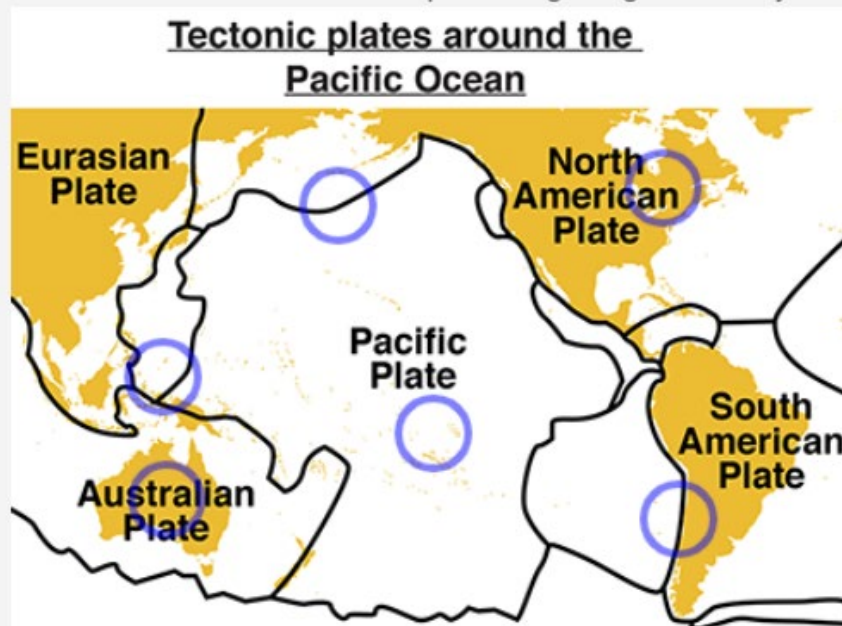
as a cooked egg



Hotspot

To answer a hotspot item, you must click on one or more areas marked on an image. When you click on an area it will turn green. To change your answer, just click on the area again and then click on a different area.

Select the locations on the map where geological activity is **most likely** to occur.



Drag and drop

To answer a drag and drop item you must move one or more items into one or more answer boxes. These items may be words, phrases, sentences, numbers, pictures, or even coordinates on a graph. You may also be asked to re-arrange a series of statements into their correct order by dragging and dropping.

To drag an item, position your cursor on it, click and hold, then drag it to the correct answer box. You can also click on an item and then click the correct answer box. To change your answer, either drag the item back to its starting position and choose a new item or click on the item and then click on its starting position and choose a new item.

An egg is being cooked in a saucepan of boiling water.

Place each state into the boxes to complete the labels on the picture.

solid liquid gas

Material	State
saucepan	
egg shell	
water	
bubble	

Extended text

To answer an extended text item, you must write your answer in an answer box. You can erase your answer by placing your cursor at the end of what you have typed and pressing the backspace key, or by highlighting your answer and hitting the delete key. You can then type in your new answer.

What change could the students make to the design of their investigation to help them make more accurate measurements? (1 mark)

FINISHING THE TEST

At the end of the test, you will be taken to the progress summary screen.

Progress summary screen

Question 15 of 15

You have reached the end of the test.

To check your answers, click a question number below.

If you are ready to finish the test, click *Finish*.

Progress summary

Show all **15** Answered **0** Not answered **0** Not read **0** Flagged

Questions

Click a number to go to that question.

1 2 3 4 5 6 7 8 9 10
11 12 13 14 15

Back Finish

Once you have checked that you have answered all the questions you can answer, click Finish. This will take you to a confirmation screen.

Confirmation screen

NAP Science Literacy Demonstration

Example Test Student

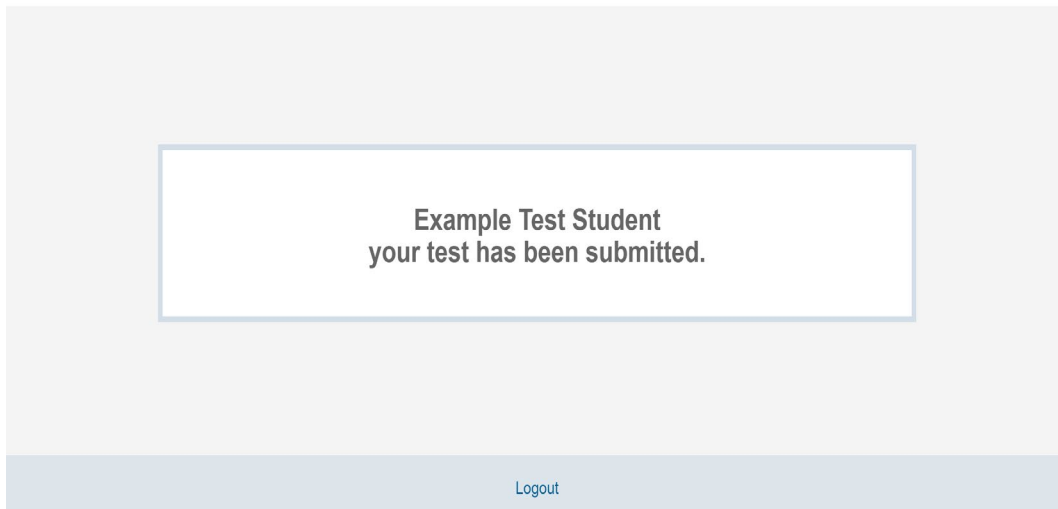
Are you sure you want to finish the test?

Have you completed all questions?
Have you reviewed all your answers?

No Yes

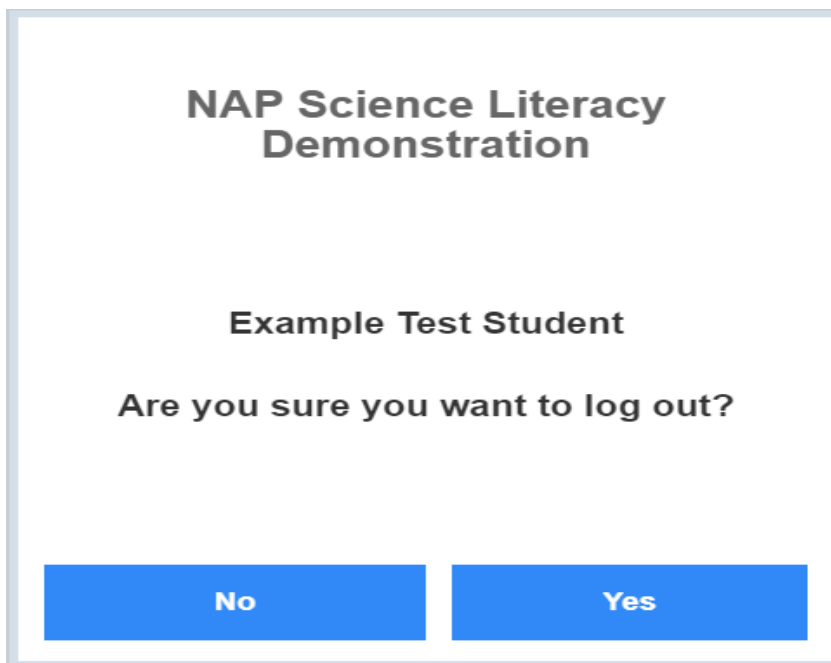
Click 'Yes'. This will take you to the exit screen.

Exit screens



In NAP-SL tests, there will be a survey for students to answer, followed by a set of logout screens.

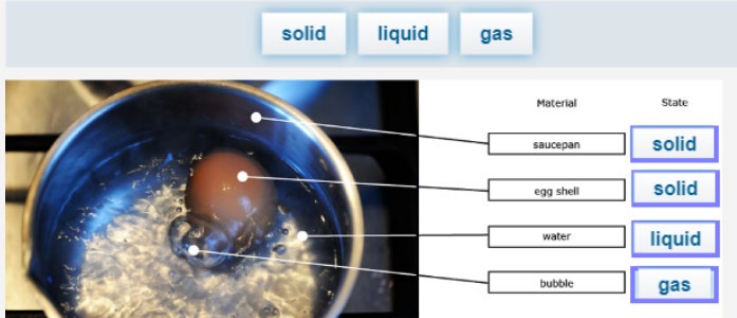
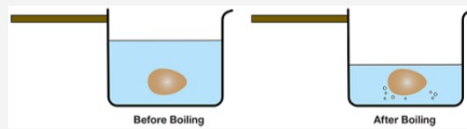
In the demonstration test, however, click 'Logout'. This will take you to the final exit screen.


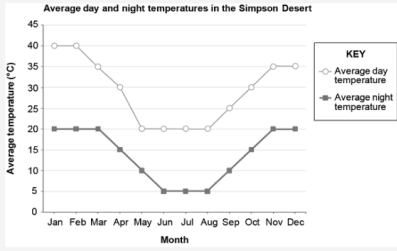



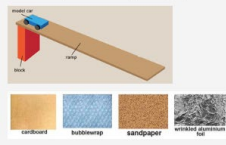
Clicking 'No' will take you back to the demonstration test. Clicking 'Yes' will take you to the first login screen again - if you have finished using the demonstration test you may simply close your browser window at this point.

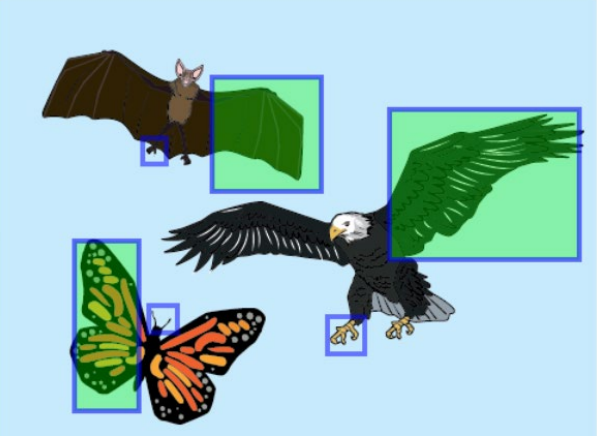
LIST OF QUESTIONS IN YEAR 6 DEMONSTRATION TEST

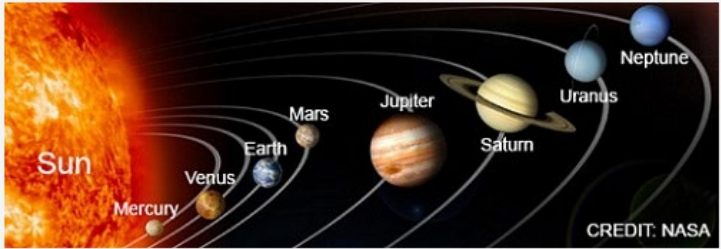
The table shows the complete list of questions in the **Year 6** demonstration test and their relationship to the Australian Curriculum: Science.


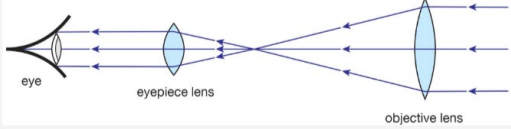
Test Item	Title	Australian Curriculum strand	Code	Sub-strand	Cognitive Domain	Correct response
1	Cooking eggs	Science Understanding	ACSSU077	Chemical sciences	Knowing and using skills	<p>An egg is being cooked in a saucepan of boiling water.</p> <p>Place each state into the boxes to complete the labels on the picture.</p> <div style="text-align: center; margin-bottom: 10px;"> solid liquid gas </div> 
2	Cooking eggs	Science Understanding	ACSSU077	Chemical sciences	Knowing and using skills	<p>After cooking an egg in boiling water, there will be less water in the saucepan than when you started cooking.</p>  <p>Why is there less water in the saucepan after boiling?</p> <p><input type="radio"/> The water was absorbed by the egg.</p> <p><input type="radio"/> The water has leaked out of the saucepan.</p> <p><input type="radio"/> The water changed into a solid as it cooled.</p> <p><input checked="" type="radio"/> The water has become a gas and evaporated.</p>

3	Cooking eggs	Science Understanding	ACSSU095	Chemical sciences	Knowing and using skills	<p>Complete the following sentence about a hard boiled egg.</p>  <p>hard boiled eggs</p> <p>Cooking an egg by boiling it in water is <input type="text" value="an irreversible change"/> as a cooked egg <input type="text" value="cannot be returned to its original form"/></p>
4	Living in a desert	Science Inquiry Skills	ACSIS107	Processing and analysing data and information	Knowing and using skills	<p>Living in a desert</p> <p>The Simpson Desert is in Central Australia. It is a dry environment with long periods of no rainfall.</p> <p>The graph shows the average day and night temperatures in the Simpson Desert for each month of the year.</p>  <p>What is the highest average day temperature in the Simpson Desert?</p> <p> <input type="radio"/> 20 °C <input type="radio"/> 35 °C <input checked="" type="radio"/> 40 °C <input type="radio"/> 45 °C </p>

5	Living in a desert	Science Understanding	ACSSU043	Biological sciences	Reasoning, analysing and evaluating	<p>Spinifex grass grows in the Simpson Desert. Spinifex has thin, tough spiky leaves. Spinifex roots can grow up to three metres long.</p>  <p>Explain how the leaves of spinifex grass help the plant survive in the desert. (1 mark)</p> <hr/> <p>Explain how the roots of spinifex grass help the plant survive in the desert. (1 mark)</p> <hr/> <p>1 mark = explains how the leaves or roots of spinifex grass help it survive in the desert 2 marks = explains how the leaves and roots of spinifex grass help it survive in the desert e.g. the leaves are spiky to stop animals eating them and the roots are very long so they can spread across a large area to find water which is rare in the desert</p>
6	Ramps and friction	Science Inquiry Skills	AC SIS104	Planning and conducting	Knowing and using skills	<p>Ramps and friction</p> <p>Students are investigating how friction determines how far a model car will travel after it moves down the ramp.</p> <p>The diagram shows how the students set up the ramps. They had covered each ramp with a different material. The materials they used were cardboard, bubble wrap, sandpaper and wrinkled aluminium foil.</p>  <p>The students knew they also needed to control (keep the same) some of the features of the model car.</p> <p>Click on the boxes to select all the features of the model car they should control.</p> <ul style="list-style-type: none"> <input type="checkbox"/> colour of the cars <input checked="" type="checkbox"/> size of the cars <input checked="" type="checkbox"/> design of the cars <input checked="" type="checkbox"/> weight of the cars

7	Ramps and friction	Science Inquiry Skills	AC SIS104	Planning and conducting	Knowing and using skills	<p>The model car that moved down the ramp covered in sandpaper travelled 150 cm. 150 cm is the same as</p> <p> <input type="radio"/> 0.15 metres <input checked="" type="radio"/> 1.5 metres <input type="radio"/> 15 metres <input type="radio"/> 150 metres </p>								
8	How do animals move?	Science Understanding	ACSSU044	Biological sciences	Knowing and using skills	<p>Some students focused on animals that can fly, such as birds, bats and butterflies. Click on the boxes to indicate the main feature of each animal that helps it to fly.</p> 								
9	How do animals move?	Science Understanding	ACSSU017	Biological sciences	Knowing and using skills	<p>Animals have different structures that help them move in different ways. Place each structure into the table to match the main way the animal moves.</p> <table border="1" data-bbox="1301 967 1995 1110"> <thead> <tr> <th colspan="2">Swim</th> <th colspan="2">Walk</th> </tr> </thead> <tbody> <tr> <td><input type="button" value="fish's fin"/></td> <td><input type="button" value="dolphin's flipper"/></td> <td><input type="button" value="ant's leg"/></td> <td><input type="button" value="wombat's leg"/></td> </tr> </tbody> </table>	Swim		Walk		<input type="button" value="fish's fin"/>	<input type="button" value="dolphin's flipper"/>	<input type="button" value="ant's leg"/>	<input type="button" value="wombat's leg"/>
Swim		Walk												
<input type="button" value="fish's fin"/>	<input type="button" value="dolphin's flipper"/>	<input type="button" value="ant's leg"/>	<input type="button" value="wombat's leg"/>											

<p>10</p>	<p>Our solar system</p>	<p>Science Understanding</p>	<p>ACSSU078</p>	<p>Earth and Space Sciences</p>	<p>Knowing and using skills</p>	 <p>Click on the boxes to select which of the following are planets.</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Mars <input checked="" type="checkbox"/> Saturn <input type="checkbox"/> Sun <input checked="" type="checkbox"/> Venus
<p>11</p>	<p>Our solar system</p>	<p>Science Understanding</p>	<p>ACSSU048</p>	<p>Earth and Space Sciences</p>	<p>Knowing and using skills</p>	<p>What causes day and night?</p> <ul style="list-style-type: none"> <input type="radio"/> the Moon moving around Earth <input type="radio"/> the Earth moving around the Sun <input type="radio"/> the Sun spinning on its own axis <input checked="" type="radio"/> the Earth spinning on its own axis

<p>12</p>	<p>Our solar system</p>	<p>Science Understanding</p>	<p>ACSSU80</p>	<p>Physical sciences</p>	<p>Knowing and using skills</p>	<p>For centuries, people have looked at the solar system using telescopes.</p>  <p>This image shows the path of light through an early telescope.</p>  <p>What property of light does this telescope use?</p> <p> <input type="radio"/> absorption <input type="radio"/> reflection <input checked="" type="radio"/> refraction </p>
<p>13</p>	<p>Bouncing balls</p>	<p>Science Inquiry Skills</p>	<p>AC SIS232</p>	<p>Questioning and predicting</p>	<p>Knowing and using skills</p>	<p>The students knew that balls that bounce high are good for handball.</p> <p>One group of students decided to find the best ball for playing handball.</p> <p>What question could they test in their investigation?</p> <p> <input checked="" type="radio"/> Does the type of ball affect the height of the bounce? <input type="radio"/> Does the drop height affect the height of the bounce? <input type="radio"/> Does the colour of the ball affect the height of the bounce? <input type="radio"/> Does the type of playing surface affect the height of the bounce? </p>

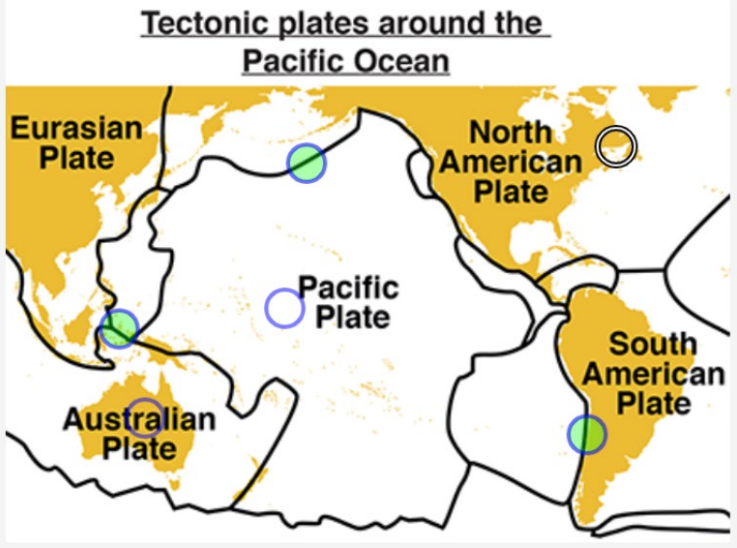
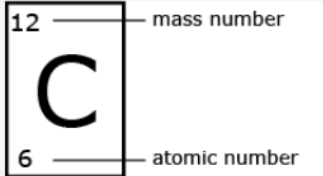
14	Bouncing balls	Science Inquiry Skills	ACSIS108	Planning and conducting	Knowing and using skills	<p>The students planned to use a ruler as a marker for the drop height and to measure the height of the bounce. They tried their investigation thinking that they would be able to easily measure the height of the bounce. However, they found it difficult to make accurate measurements.</p> <p>Select the two reasons why it was difficult for the students to make accurate measurements.</p> <p><input checked="" type="checkbox"/> The ball moved too fast.</p> <p><input type="checkbox"/> The ball was too heavy to bounce.</p> <p><input checked="" type="checkbox"/> The ruler was hard to read at a distance.</p> <p><input type="checkbox"/> The markings on the ruler were not correct.</p>
15	Bouncing balls	Science Inquiry Skills	ACSIS108	Planning and conducting	Knowing and using skills	<p>What change could the students make to the design of their investigation to help them make more accurate measurements? (1 mark)</p> <div style="border: 1px solid #ccc; height: 40px; width: 100%;"></div> <p>1 mark = suggests a method to increase the accuracy of measurements e.g. use a video camera to record the drops</p>

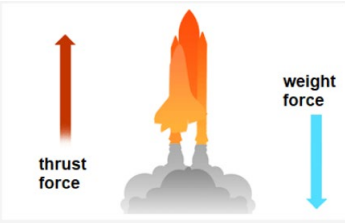
LIST OF QUESTIONS IN YEAR 10 DEMONSTRATION TEST

The table shows the complete list of questions in the **Year 10** demonstration test and their relationship to the Australian Curriculum: Science.

Test Item	Title	Australian Curriculum strand	Code	Sub-strand	Cognitive Domain	Correct response
1	Australian food web	Science Understanding	ACSSU112	Biological sciences	Knowing and using skills	<p>In food chains and food webs, living things that make their own food using energy from the sun are called producers.</p> <p>Select the producers in this food web.</p> <p><input type="checkbox"/> barn owl <input checked="" type="checkbox"/> grass</p> <p><input checked="" type="checkbox"/> grains <input type="checkbox"/> snake</p>
2	Australian food web	Science Understanding	ACSSU149	Biological sciences	Knowing and using skills	<p>Producers make their own food using energy from the sun in a process called</p> <p><input type="radio"/> absorption</p> <p><input type="radio"/> digestion</p> <p><input checked="" type="radio"/> photosynthesis</p> <p><input type="radio"/> respiration</p>

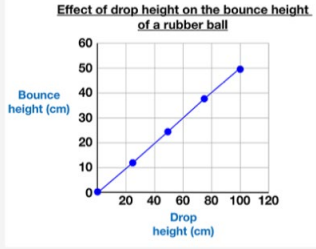
3	Plate tectonics	Science as a Human Endeavour	ACSHE191	Nature and development of Science	Knowing and using skills	<p>There were several theories in the past about how the continents have moved and formed. The currently accepted theory is plate tectonics.</p> <p>Which is the best explanation for why scientists accept new theories?</p> <p><input type="radio"/> Scientists do more experiments.</p> <p><input checked="" type="radio"/> Scientists discover new evidence.</p> <p><input type="radio"/> Scientists are able to tell more people about their opinions.</p> <p><input type="radio"/> Scientists today are much cleverer than scientists in the past.</p>
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4	Plate tectonics	Science Understanding	ACSSU180	Earth and space sciences	Reasoning, analysing and evaluating	<p>Select the locations on the map where geological activity is most likely to occur.</p> 
5	Radioactive isotopes	Science Understanding	ACSSU186	Chemical sciences	Reasoning, analysing and evaluating	<p>This is the symbol for carbon from the periodic table.</p>  <p>Using this information, how many electrons are in a neutral carbon atom?</p> <p> <input type="radio"/> 0 <input checked="" type="radio"/> 6 <input type="radio"/> 12 <input type="radio"/> 18 </p>

6	Radioactive isotopes	Science Understanding	ACSSU177	Chemical sciences	Knowing and using skills	<p>Place each label into the table to match the atomic particle with its charge.</p> <table border="1"> <thead> <tr> <th>Particle</th> <th>Charge</th> </tr> </thead> <tbody> <tr> <td>electron</td> <td>negative</td> </tr> <tr> <td>neutron</td> <td>no charge</td> </tr> <tr> <td>proton</td> <td>positive</td> </tr> </tbody> </table>	Particle	Charge	electron	negative	neutron	no charge	proton	positive
Particle	Charge													
electron	negative													
neutron	no charge													
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7	Blast off!	Science Understanding	ACSSU179	Chemical sciences	Knowing and using skills	<p>Some rockets use kerosene as a fuel. Kerosene reacts with oxygen to produce massive amounts of hot exhaust gases.</p> <p>The reaction between oxygen and kerosene is called</p> <p> <input type="radio"/> corrosion <input checked="" type="radio"/> combustion <input type="radio"/> neutralisation <input type="radio"/> precipitation </p>								
8	Blast off!	Science Understanding	ACSSU117	Physical sciences	Knowing and using skills	 <p>Complete this statement about the forces involved in a rocket launch.</p> <p>The Space Shuttle is able to blast off when the size of the thrust force is greater than the size of the weight force.</p>								

9	Bouncing balls	Science Inquiry Skills	ACSIS232	Questioning & predicting	Knowing and using skills	<p>The students knew that balls that bounce high are good for handball.</p> <p>One group of students decided to find the best ball for playing handball.</p> <p>What question could they test in their investigation?</p> <p><input checked="" type="radio"/> Does the type of ball affect the height of the bounce?</p> <p><input type="radio"/> Does the drop height affect the height of the bounce?</p> <p><input type="radio"/> Does the colour of the ball affect the height of the bounce?</p> <p><input type="radio"/> Does the type of playing surface affect the height of the bounce?</p>										
10	Bouncing balls	Science Inquiry Skills	ACSIS141	Planning and conducting	Knowing and using skills	<p>The students are thinking about the variables in their investigation.</p> <p>They know that investigations involve an independent (changed) variable, a dependent (measured) variable and controlled variables which are kept the same.</p> <p>Complete the table to classify each of the variables in their investigation.</p> <table border="1" data-bbox="1290 874 1682 1023"> <thead> <tr> <th>Variable</th> <th>Type of variable</th> </tr> </thead> <tbody> <tr> <td>surface the ball is bounced on</td> <td>controlled ▼</td> </tr> <tr> <td>height of the bounce</td> <td>dependent ▼</td> </tr> <tr> <td>type of ball used</td> <td>independent ▲</td> </tr> <tr> <td>height the ball is dropped from</td> <td>controlled ▲</td> </tr> </tbody> </table>	Variable	Type of variable	surface the ball is bounced on	controlled ▼	height of the bounce	dependent ▼	type of ball used	independent ▲	height the ball is dropped from	controlled ▲
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11	Bouncing balls	Science Inquiry Skills	ACSIS108	Planning and conducting	Knowing and using skills	<p>The students planned to use a ruler as a marker for the drop height and to measure the height of the bounce. They tried their investigation thinking that they would be able to easily measure the height of the bounce. However, they found it difficult to make accurate measurements.</p> <p>Select the two reasons why it was difficult for the students to make accurate measurements.</p> <p><input checked="" type="checkbox"/> The ball moved too fast.</p> <p><input type="checkbox"/> The ball was too heavy to bounce.</p> <p><input checked="" type="checkbox"/> The ruler was hard to read at a distance.</p> <p><input type="checkbox"/> The markings on the ruler were not correct.</p>
12	Bouncing balls	Science Inquiry Skills	ACSIS108	Planning and conducting	Knowing and using skills	<p>What change could the students make to the design of their investigation to help them make more accurate measurements? (1 mark)</p> <div style="border: 1px solid gray; height: 40px; width: 100%;"></div> <p>1 mark = suggests a method to increase the accuracy of measurements e.g. use a video camera to record the drops</p>
13	Bouncing balls	Science Inquiry Skills	ACSIS104	Planning and conducting	Knowing and using skills	<p>Another group of students decided to see what effect drop height (where the ball is dropped from) had on the height of the ball bounce.</p> <p>What changes would they need to make to the design of the first investigation, which looked at the type of ball? (2 marks)</p> <div style="border: 1px solid gray; height: 40px; width: 100%;"></div> <p>1 mark = identifies one variable that would be changed in designing the presented investigation</p> <p>2 marks = identifies two variables that would be changed in designing the presented investigation</p> <p>e.g. the type of ball would now need to be the same and the height the balls were dropped from would now be different</p>

14	Bouncing balls	Science Inquiry Skills	ACSIS107	Processing and analysing data and information	Reasoning, analysing and evaluating	<p>The second group of students carried out their investigation and then graphed the results.</p>  <p>Using the graph, what was the bounce height when the ball was dropped from 40 cm?</p> <p> <input type="radio"/> 10 cm <input checked="" type="radio"/> 20 cm <input type="radio"/> 40 cm <input type="radio"/> 80 cm </p>
15	Bouncing balls	Science Inquiry Skills	ACSIS107	Processing and analysing data and information	Reasoning, analysing and evaluating	<p>Complete the trend shown in the graph.</p> <p>As the drop height increases, the bounce height of the rubber ball <input type="text" value="increases"/> .</p> 